

Antarctic Conservation Act of 1978

(Public Law 95-541)

as amended by

Antarctic Science, Tourism, and Conservation Act of 1996

(Public Law 104-227)

with

Regulations



**Management Plans with Maps for
Antarctic Specially Protected Areas**



List of Historic Sites and Monuments



Permit Application Form



**The Protocol on Environmental Protection to the
Antarctic Treaty (1991)**



**NATIONAL SCIENCE FOUNDATION
JULY 2001**

Contents

Introduction	i
Summary of this book	ii
SECTION ONE: REGULATIONS PURSUANT TO THE ANTARCTIC CONSERVATION ACT AS AMENDED BY THE ANTARCTIC SCIENCE, TOURISM, AND CONSERVATION ACT ... 1	
Part 670—Conservation of Antarctic Animals and Plants	5
Subpart A—Introduction.....	5
670.1 Purpose of regulations	5
670.2 Scope.....	5
670.3 Definitions	5
Subpart B—Prohibited Acts, Exceptions	6
670.4 Prohibited acts	7
670.5 Exceptions in extraordinary circumstances	7
670.6 Prior possession exception.....	7
670.7 Food exception	8
670.8 Foreign permits exceptions	8
670.9 Antarctic Conservation Act enforcement exception.....	8
670.10 [Reserved]	
Subpart C—Permits	8
670.11 Applications for permits	8
670.12 General issuance criteria	10
670.13 Permit administration.....	10
670.14 Conditions of permits	11
670.15 Modification, suspension, and revocation	11
670.16 [Reserved]	
Subpart D—Native Mammals, Birds, Plants, and Invertebrates	11
670.17 Specific issuance criteria	11
670.18 Content of permit applications	12
670.19 Designation of native mammals	12
670.20 Designation of native birds.....	13
670.21 Designation of native plants.....	14
670.22 [Reserved]	
Subpart E—Specially Protected Species of Mammals, Birds, and Plants	14
670.23 Specific issuance criteria	15
670.24 Content of permit applications.....	15
670.25 Designation of specially protected species of native mammals, birds, and plants.....	15
670.26 [Reserved]	

Subpart F—Antarctic Specially Protected Areas	15
670.27 Specific issuance criteria	15
670.28 Content of permit applications	16
670.29 Designation of Antarctic specially protected areas	16
670.30 [Reserved]	
Subpart G—Import into and Export from the United States	17
670.31 Specific issuance criteria for imports	17
670.32 Specific issuance criteria for exports	18
670.33 Content of permit applications	18
670.34 Entry and exit ports	18
670.35 [Reserved]	
Subpart H—Introduction of Non-Indigenous Plants and Animals	19
670.36 Specific issuance criteria	19
670.37 Content of permit applications	19
670.38 Conditions of permits	20
670.39 [Reserved]	
Part 671—WASTE REGULATION	20
Subpart A—Introduction	20
671.1 Purpose of regulations	20
671.2 Scope	20
671.3 Definitions	20
Subpart B—Prohibited Acts, Exceptions	21
671.4 Prohibited acts	22
671.5 Exceptions	22
Subpart C—Permits	22
671.6 Applications for permits	22
671.7 General issuance criteria	23
671.8 Permit administration	23
671.9 Conditions of permit	24
671.10 Review, modification, suspension, and revocation	24
Subpart D—Waste Management	25
671.11 Waste storage	25
671.12 Waste disposal	26
671.13 Waste management for the USAP	27
Subpart E—Designation of Banned Substances; Reclassification of Pollutants	28
671.14 Annual review	28
671.15 Publication of preliminary determination	29
671.16 Designation and redesignation of pollutants	29

Subpart F—Cases of Emergency	29
671.17 Cases of emergency	29
Part 672 – Enforcement and Hearing Procedures	30
Part 673 – Antarctic Non-Governmental Expeditions	30
673.1 Purpose of regulations	30
673.2 Scope	30
673.3 Definitions	30
673.4 Environmental protection information	30
673.5 Emergency response plan	31
 SECTION TWO: ANTARCTIC SPECIALLY PROTECTED AREAS:	 33
ASPA Locator Maps.....	34
Map 1	34
Legend	35
Map 2	36
Map 3	37
Map 4	38
Map 5	38
 ASPA Management Plans	 39
No. 101 (SPA-1), Taylor Rookery, MacRobertson Land	39
No. 102 (SPA-2), Rookery Islands, Holme Bay.....	45
No. 103 (SPA-3), Ardrey Island and Odbert Island, Budd Coast.....	49
No. 104 (SPA-4), Sabrina Island, Balleny Islands	54
No. 105 (SPA-5), Beaufort Island, Ross Sea	55
No. 106 (SPA-7), Cape Hallett, Victoria Land	64
No. 107 (SPA-8), Dion Islands, Marguerite Bay, Antarctic Peninsula.....	65
No. 108 (SPA-9), Green Island, Berthelot Islands, Antarctic Peninsula	67
No. 109 (SPA-13), Moe Island, South Orkney Islands	69
No. 110 (SPA-14), Lynch Island, South Orkney Islands.....	75
No. 111 (SPA-15), Southern Powell Island and adjacent islands, South Orkney Islands.....	88
No. 112 (SPA-16), Coppermine Peninsula, Robert Island	94
No. 113 (SPA-17), Litchfield Island, Arthur Harbor, Palmer Archipelago	96
No. 114 (SPA-18), North Coronation Island, South Orkney Islands.....	97
No. 115 (SPA-19), Lagotellerie Island, Marguerite Bay.....	99
No. 116 (SPA-20, SSSI-10), ‘New College Valley’, Caughley Beach, Cape Bird, Ross Island.....	111
No. 117 (SPA-21), Avian Island, Northwest Marguerite Bay	119
No. 118 (SPA-22), Cryptogam Ridge, Mount Melbourne, Victoria Land.....	122
No. 119 (SPA-23), Forlidas Pond and Davis Valley Ponds.....	124
No. 120 (SPA 24), Pointe-Geologie Archipelago.....	126
No. 121 (SSSI-1), Cape Royds, Ross Island.....	132
No. 122 (SSSI-2), Arrival Heights, Hut Point Peninsula, Ross Island.....	134
No. 123 (SSSI-3), Barwick Valley, Victoria Land.....	136
No. 124 (SSSI-4), Cape Crozier, Ross Island.....	138

No. 125 (SSSI-5), Fildes Peninsula, King George Island, South Shetland Islands.	140
No. 126 (SSSI-6), Byers Peninsula, Livingston Island, South Shetland Islands.	141
No. 127 (SSSI-7), Haswell Island.	143
No. 128 (SSSI-8), Western Shore of Admiralty Bay, King George Island.	145
No. 129 (SSSI-9), Rothera Point, Adelaide Island.	151
No. 130 (SSSI-11), Tramway Ridge, Mt. Erebus, Ross Island.	158
No. 131 (SSSI-12), Canada Glacier, Lake Fryxell, Taylor Valley, Victoria Land.	165
No. 132 (SSSI-13), Potter Peninsula, King George Island, South Shetland Islands.	174
No. 133 (SSSI-14), Harmony Point.	181
No. 134 (SSSI-15), Cierva Point and nearby islands.	189
No. 135 (SSSI-16), Bailey Peninsula, Budd Coast, Wilkes Land.	196
No. 136 (SSSI-17), Clark Peninsula, Budd Coast, Wilkes Land.	198
No. 137 (SSSI-18), Northwest White Island, McMurdo Sound.	210
No. 138 (SSSI-19), Linnaeus Terrace, Asgard Range, Victoria Land.	212
No. 139 (SSSI-20), Biscoe Point, Anvers Island.	218
No. 140 (SSSI-21), Shores of Port Foster, Deception Island, South Shetland Islands.	220
No. 141 (SSSI-22), Yukidori Valley, Langhovde, Lutzow-Holm Bay.	222
No. 142 (SSSI-23), Svarthamaren Mountains, Muhlig-Hofmann Mountains, Queen Maud Land.	231
No. 143 (SSSI-25), Marine Plain, Mule Peninsula, Vestfold Hills, Princess Elizabeth Land. ...	239
No. 144 (SSSI-26), Chile Bay (Discovery Bay).	243
No. 145 (SSSI-27), Port Foster, Deception Island, South Shetland Islands.	245
No. 146 (SSSI-28), South Bay, Doumer Island, Palmer Archipelago.	247
No. 147 (SSSI-29), Ablation Point-Ganymede Heights, Alexander Island.	249
No. 148 (SSSI-31), Mount Flora, Hope Bay, Antarctic Peninsula.	251
No. 149 (SSSI-32), Cape Shirreff, Livingston Island, South Shetland Islands.	253
No. 150 (SSSI-33), Ardley Island, Maxwell Bay, King George Island, South Shetland Islands.	256
No. 151 (SSSI-34), Lions Rump, King George Island, South Shetland Islands.	259
No. 152 (SSSI-35), Western Bransfield Strait, off Low Island, South Shetland Islands.	266
No. 153 (SSSI-36), East Dallmann Bay, off Brabant Island.	268
No. 154 (SPA-25, HSM-16, HSM-17), Cape Evans Historic Site.	270
No. 155 (SPA-26), Lewis Bay Tomb.	277
No. 156 (SPA-27, HSM-15), Hut and Associated Artifacts, Backdoor Bay, Cape Royds, Ross Island.	282
No. 157 (SPA-28, HSM-18), Discovery Hut, Hut Point, Ross Island.	289
No. 158 (SPA-29, HSM-22), Huts and Associated Artifacts, Cape Adare.	295
No. 159 (SSSI-24), Summit of Mt. Melbourne, North Victoria Land.	302
No. 160 (SSSI-37), Botany Bay, Cape Geology, Victoria Land.	306
SECTION THREE: HISTORIC SITES AND MONUMENTS IN ANTARCTICA.	315
SECTION FOUR: PERMIT APPLICATION FORM.	325
Appendix A: The Antarctic Conservation Act of 1978 as Amended by the Antarctic Science, Tourism, and Conservation Act of 1996.	329
Appendix B: The Protocol on Environmental Protection to the Antarctic Treaty.	345

INTRODUCTION

The Antarctic Conservation Act of 1978, Public Law 95-541, as amended by the Antarctic Science, Tourism, and Conservation Act of 1996, Public Law 104-227 (hereafter referred to as the ACA), conserves and protects the native mammals, birds, and plants of Antarctica and the ecosystems of which they are a part.

The law applies to –

- The area south of 60° South latitude
- U.S. citizens in Antarctica,
- certain persons in Antarctica who participate in U.S. government activities,
- U.S. corporations or other legal entities that organize expeditions into the Antarctic, and
- U.S. persons wherever located, or foreign persons while in the United States, who import certain antarctic animals and plants.

A permit system authorized by the ACA allows certain activities, otherwise prohibited, when performed within prescribed restrictions for scientific or other worthwhile purposes.

The ACA provides penalties of up to \$25,000 and 1 year imprisonment for violations.

The National Science Foundation (NSF), the agency of the U.S. Government that funds and manages the U.S. Antarctic Program (USAP), administers the ACA and its permit system.

Certain NSF employees in Antarctica are designated enforcement officers. These Federal officials are responsible for ensuring compliance with the ACA implementing regulations, and issuing permits. They are also available to help people understand their obligations. They may review permits to ensure terms and conditions are fulfilled and are authorized to serve warrants; search and seize property without a warrant; take affidavits; detain for inspection and inspect packages, crates, or other containers; and make an arrest with or without a warrant.

If you believe you may have witnessed a violation of the ACA report your observation to an enforcement officer, an observer, or other authority.

SUMMARY OF THIS BOOK

This book contains the ACA its regulations, and supplementary information.

SECTION ONE:

Regulations Pursuant to the Antarctic Conservation Act as amended by the Antarctic Science, Tourism, and Conservation Act

It is unlawful, unless authorized by permit, to:

1. take native mammals, birds, or plants,
2. engage in harmful interference of native mammals, birds, or plants,
3. enter specially designated areas,
4. introduce species to Antarctica,
5. introduce substances designated as pollutants,
6. discharge designated pollutants, or
7. import certain antarctic items into the United States.

1. Taking or harmful interference of native mammals, birds or plants

It is unlawful, unless authorized by permit, to take Antarctic native mammals, birds, or plants. To take means to kill, injure, capture, handle, or molest native mammal or bird, or to adversely impact a significant number of native plants.

For example, herding a seal or a penguin into position for a photograph constitutes an illegal taking. An ornithologist with a grant to study penguin population dynamics must have a permit before banding the penguins (a grant and a permit are two different things). Further, a scientist permitted to handle ten skuas would be performing an illegal taking if he or she handled eleven skuas.

Entering a bird nesting area or approaching seals with their pups will almost certainly stimulate agitation or defensive behavior. Any action that alters the normal behavior of wildlife may be considered harassment and therefore a taking. Section 5 of this book explains how to apply for a permit.

2. Engaging in harmful interference

It is unlawful, unless authorized by permit, for any person to engage in harmful interference in Antarctica of native mammals, native birds, native plants or native invertebrates. To engage in harmful interference means to fly or land aircraft, to use vehicles or vessels, or to using explosives or firearms in a way that disturbs concentrations of birds or seals. Harmful interference also includes willfully disturbing birds or seals by persons on foot, significantly damaging concentrations of native terrestrial plants by landing aircraft, driving vehicles, walking on them, or by other means, and any activity that results in habitat degradation of any species or population.

3. Entering specially designated areas

Some precisely defined places in Antarctica are designated under the Antarctic Treaty, and in the U.S. law, as Antarctic Specially Protected Areas (ASPAs). You

must have a legitimate need to enter an ASPA, and you must have a permit. A permit is required for entry into ASPAs, and all entries must be consistent with the site specific management plan. Section 2 of this book contains the management plans for all ASPAs.

4. Introducing species

You need a permit to introduce nonindigenous species to Antarctica. Only domestic plants and animals and laboratory plants and animals may be considered for a permit.

5. Introducing substances designated as pollutants

Waste regulations authorized under the ACA ban certain substances from Antarctica. The banned substances include pesticides (other than those required for science, medical, or hygiene purposes), polychlorinated biphenyls (PCBs), nonsterile soil, and polystyrene beads and plastic chips.

The ACA identifies certain substances as designated pollutants. Designated pollutants must be used, stored, and disposed of in a way that prevents their release to or adverse impact on the environment. Designated pollutants include any substance listed by name or characteristic (ignitability, corrosivity, reactivity, and toxicity) in the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, and other U.S. regulations specified in 45 CFR Part 671.

Many research and industrial supplies and common substances such as fuels, lighter fluid, and fingernail polish remover contain designated pollutants. A permit is required to use or release these substances into Antarctica. See section 4 of this book.

6. Management of designated pollutants

The USAP employs specialists to handle and remove designated pollutants in accordance with the regulations. Program participants receive assistance and instructions in the Antarctic, but are required to keep track of the designated pollutants they use, to sort and store them according to instructions provided, and to turn the waste over to USAP officials in accordance with specified procedures.

Any U.S. citizen or expedition planning to use or release designated pollutants or release wastes in Antarctica must make a plan for the use, storage, and disposal of these materials and apply for a waste management permit, if they are not already covered by a Master Permit (see section 4 for a discussion of the USAP Master Permit).

Some categories of waste must be removed from Antarctica. The list includes materials that have designated pollutants as constituents (these materials are antarctic hazardous wastes) as well as other substances that are not designated pollutants but that are persistent in the environment and could pose an inherent hazard to wildlife. Radioactive materials, batteries, fuel, wastes containing harmful levels of heavy metals, lubricants, treated timbers, poly-vinyl chloride and other plastic wastes (except low-density storage bags), solid non-combustibles, and fuel drums are

explicitly listed in antarctic waste regulations as materials that must be removed from Antarctica.

7. Importing into and exporting from the United States

In the United States it is unlawful, unless authorized by permit, to have or sell or to import or export antarctic plants, antarctic mammals, or antarctic birds. An application for a permit must demonstrate that the import or export would further the purposes for which the species was taken or collected, demonstrate that the import or export is consistent with the purposes of the ACA and state which U.S. port will be used.

Mailing items to or from the United States constitutes an import or an export.

Non-governmental expeditions

An additional regulation, Part 673, which deals with non-governmental expeditions in Antarctica, is expected to be finalized as of September 2001. The regulation implements certain of the amendments to the Antarctic Conservation Act contained in the Antarctic Science, Tourism, and Conservation Act. The new Part 673 requires U.S. tour operators to distribute educational materials to their passengers. The regulation also requires U.S. non-governmental operators using non-U.S. flagged vessels to have emergency response plans.

SECTION TWO:

Antarctic Specially Protected Areas

Some areas of Antarctica have features that require special protection. Antarctic Specially Protected Areas (ASPAs) were created to protect areas of special environmental, scientific, historic, aesthetic, or wilderness value. Designated ASPAs are required to have management plans that aim to prevent the degradation of their special values. A permit is required to enter these areas, and adherence to the management plans is required. Before the Protocol, protected areas in Antarctica were designated as Sites of Special Scientific interest (SSSIs) or as Specially Protected Areas (SPAs). All SSSIs and SPAs became ASPAs following the implementation of Annex V to the Protocol into U.S. law under the Antarctic Science, Tourism, and Conservation Act.

Section two includes the management plans (or descriptions where management plans have not yet been adopted by the Treaty parties) for each site. These sites require permits for entry and/or activity. It is important to contact NSF to obtain permit information and any information on revisions or additions to the sites.

SECTION THREE:

Historic Sites and Monuments

Just as the ecosystems of Antarctica are important, so also is Antarctica's exploration and development. It was decided at the first Antarctic Treaty Consultative Meeting to protect artifacts and areas that commemorate Antarctica's exploration. At the 5th Antarctic Treaty Consultative Meeting it was agreed that lists of historic sites and

monuments would be created. Since that meeting, lists have been consolidated into one list that has been updated continually. The monument areas have special provisions to ensure their protection. Section four of this book includes a list of the historic sites and monuments, with brief descriptions of each.

SECTION FOUR:

Permits

Individual or group permit

Individuals and groups traveling to Antarctica are responsible for obtaining any required permits. An initial assessment of permit needs should be made by the individual (or group) based on planned itinerary, the nature of interactions with wildlife, materials to be handled and shipped to and from Antarctica, and a thorough review of the ACA and associated waste management regulations. For assistance, call or write an Office of Polar Programs science manager or the Permit Officer at the address shown at the end of this summary. Or simply fill out and send in an application using the permit form in this book that is appropriate for all but waste management permits. Waste management permit applications should include the information outlined in the waste regulations, 45 CFR Part 671. Applicants should first check with the NSF Permit Officer to verify that the planned activities are not already covered by an existing permit. Permit requirements should be assessed well in advance (a minimum of 3 months) of planned travel dates to allow for public review periods and resolution of any issues that may arise. The Permit Officer may determine that no permits are required.

Once an application is received, a minimum of 65 days is required for NSF to review the application and decide on a permit. During that time, a summary of your application is published in the Federal Register so that any member of the public can comment on it during the 30-day comment period mandated by the ACA. The Foundation evaluates the public comments and performs an internal review. It then approves the application, approves it with modifications, or disapproves it.

You may not do things that require a permit unless you have a permit. Activities authorized by a permit may not take place before the permit is issued. Violating the terms of a permit can lead to a fine of up to \$25,000, imprisonment, removal from Antarctica, rescission of a grant, or sanctions by an employer.

A copy of a permit issued under the ACA must be in the personal possession of the individual directing or performing the permitted activity. An ACA permit is required in addition to any permit issued under other applicable acts (*e.g.*, the Marine Mammal Protection Act of 1972, Endangered Species Act of 1973, Migratory Bird Treaty Act, and the Convention on the Conservation of Antarctic Marine Living Resources).

Master permit (U.S. Antarctic Program)

In 1999 NSF's Antarctic support contractor, applied for and was issued a Master Permit, which expires on 30 September 2004. This Master Permit covers all USAP related activities and establishes requirements for management of all designated

pollutants and wastes, including requirements for removal and recycling or proper disposal in the United States of most wastes and excess materials generated by the USAP. Each USAP participant is required to adhere to procedures established by the Master Permit for handling, inventorying, storing, monitoring, and disposing of these wastes.

APPENDIX A:

Antarctic Conservation Act of 1978 as amended by the Antarctic Science, Tourism and Conservation Act of 1996

The Antarctic Conservation Act of 1978 (Public Law 95-541) as amended by the Antarctic Science, Tourism and Conservation Act of 1996 (Public Law 104-227) formalizes U.S. adherence to Antarctic Treaty conservation rules, notably the 1991 Protocol on Environmental Protection. The regulations in section one of this book derive from and implement this statute.

APPENDIX B:

The Protocol on Environmental Protection to the Antarctic Treaty

The Protocol on Environmental Protection to the Antarctic Treaty and its five annexes comprise a comprehensive system to protect the antarctic environment. The parties to the Antarctic Treaty held a special consultative meeting to discuss and explore proposals for protection of the antarctic environment and its dependent and associated ecosystems. This meeting consisted of several sessions held over a year. At the final session in Madrid, Spain in October 1991, representatives of the Antarctic Treaty nations adopted the Protocol on Environmental Protection to the Antarctic Treaty, including annexes I–IV. The 16th Antarctic Treaty Consultative Meeting, also held in October 1991, adopted Annex V. The Protocol and Annexes I-IV entered into force in January 1998, though as of July 2001, Annex V had not. In the Protocol, the representatives agree to the comprehensive protection of Antarctica’s environment and dependent and associated ecosystems to preserve the region as a natural reserve devoted to peace and science.

The United States implemented the Protocol and its five annexes into law with the

Antarctic Science, Tourism, and Conservation Act of 1996.

For further information

Laws change periodically. Consult the United States Code, the U.S. Code of Federal Regulations or contact the NSF Office of Polar Programs for any updated information.

Address questions or correspondence to:

Permit Office
Office of Polar Programs, Room 755
National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230

Tel: (703) 292-7405

Fax: (703) 292-9081

E-mail: nkennedy@nsf.gov (permits)

SECTION ONE:
Regulations Pursuant to Antarctic Conservation Act as Amended
by the Antarctic Science, Tourism, and Conservation Act

PART 670—CONSERVATION OF ANTARCTIC ANIMALS AND PLANTS

Subpart A—Introduction

- 670.1 Purpose of regulations.
- 670.2 Scope.
- 670.3 Definitions.

Subpart B—Prohibited Acts, Exceptions

- 670.4 Prohibited acts.
- 670.5 Exceptions in extraordinary circumstances.
- 670.6 Prior possession exception.
- 670.7 Food exception.
- 670.8 Foreign permit exceptions.
- 670.9 Antarctic Conservation Act enforcement exception.
- 670.10 [Reserved]

Subpart C—Permits

- 670.11 Applications for permits.
- 670.12 General issuance criteria.
- 670.13 Permit administration.
- 670.14 Conditions of permits.
- 670.15 Modification, suspension, and revocation.
- 670.16 [Reserved]

Subpart D—Native Mammals, Birds, Plants, and Invertebrates

- 670.17 Specific issuance criteria.
- 670.18 Content of permit applications.
- 670.19 Designation of native mammals.
- 670.20 Designation of native birds.
- 670.21 Designation of native plants.
- 670.22 [Reserved]

Subpart E—Specially Protected Species of Mammals, Birds, and Plants

- 670.23 Specific issuance criteria.
- 670.24 Content of permit applications.
- 670.25 Designation of specially protected species of native mammals, birds, and plants.
- 670.26 [Reserved]

Subpart F—Antarctic Specially Protected Areas

- 670.27 Specific issuance criteria.
- 670.28 Content of permit applications.
- 670.29 Designation of Antarctic specially protected areas.
- 670.30 [Reserved]

Subpart G—Import into and Export from the United States

- 670.31 Specific issuance criteria for imports.
- 670.32 Specific issuance criteria for exports.
- 670.33 Content of permit applications.
- 670.34 Entry and exit ports.
- 670.35 [Reserved]

Subpart H—Introduction of Non-Indigenous Plants and Animals

- 670.36 Specific issuance criteria.
- 670.37 Content of permit applications.
- 670.38 Conditions of permits.
- 670.39 [Reserved]

Part 671—WASTE REGULATION

Subpart A—Introduction

- 671.1 Purpose of regulations.
- 671.2 Scope.
- 671.3 Definitions.

Subpart B—Prohibited Acts, Exceptions

- 671.4 Prohibited acts.
- 671.5 Exceptions.

Subpart C—Permits

- 671.6 Applications for permits.
- 671.7 General issuance criteria.
- 671.8 Permit administration.
- 671.9 Conditions of permit.
- 671.10 Review, modification, suspension, and revocation.

Subpart D—Waste Management

- 671.11 Waste storage.
- 671.12 Waste disposal.

671.13 Waste management for the USAP.

Subpart E—Designation of Banned Substances; Reclassification of Pollutants

671.14 Annual review.

671.15 Publication of preliminary determination.

671.16 Designation and redesignation of pollutants.

Subpart F—Cases of Emergency

671.17 Cases of emergency

PART 672 – ENFORCEMENT AND HEARING PROCEDURES

PART 673 – ANTARCTIC NON-GOVERNMENTAL EXPEDITIONS

673.1 Purpose of regulations.

673.2 Scope.

673.3 Definitions.

673.4 Environmental protection information.

673.5 Emergency response plan.

PART 670-CONSERVATION OF ANTARCTIC ANIMALS AND PLANTS

Subpart A-Introduction

§ 670.1 Purpose of regulations.

The purpose of the regulations in this part is to conserve and protect the native mammals, birds, plants, and invertebrates of Antarctica and the ecosystem upon which they depend and to implement the Antarctic Conservation Act of 1978, Public Law 95-541, as amended by the Antarctic Science, Tourism, and Conservation Act of 1996, Public Law 104-227.

§ 670.2 Scope.

The regulations in this part apply to:

- (a) Taking mammals, birds, or plants native to Antarctica.
- (b) Engaging in harmful interference of mammals, birds, invertebrates, or plants native to Antarctica.
- (c) Entering or engaging in activities within Antarctic Specially Protected Areas.
- (d) Receiving, acquiring, transporting, offering for sale, selling, purchasing, importing, exporting or having custody, control, or possession of any mammal, bird, or plant native to Antarctica that was taken in violation of the Act.
- (e) Introducing into Antarctica any member of a non-native species.

§ 670.3 Definitions.

In this part:

Act means the Antarctic Conservation Act of 1978, Public Law 95-541 (16 U.S.C. 2401 *et seq.*) as amended by the Antarctic Science, Tourism, and Conservation Act of 1996, Public Law 104-227.

Antarctic Specially Protected Area means an area designated by the Antarctic Treaty Parties to protect outstanding environmental, scientific, historic, aesthetic, or wilderness values or to protect ongoing or planned scientific research, designated in subpart F of this part.

Antarctica means the area south of 60 degrees south latitude.

Director means the Director of the National Science Foundation, or an officer or employee of the Foundation designated by the Director.

Harmful interference means--

- (a) Flying or landing helicopters or other aircraft in a manner that disturbs concentrations of birds or seals;
- (b) Using vehicles or vessels, including hovercraft and small boats, in a manner that disturbs concentrations of birds or seals;
- (c) Using explosives or firearms in a manner that disturbs concentrations of birds or seals;
- (d) Willfully disturbing breeding or molting birds or concentrations of birds or seals by persons on foot;
- (e) Significantly damaging concentrations of native terrestrial plants by landing aircraft, driving vehicles, or walking on them, or by other means; and

(f) Any activity that results in the significant adverse modification of habitats of any species or population of native mammal, native bird, native plant, or native invertebrate.

Import means to land on, bring into, or introduce into, or attempt to land on, bring into or introduce into, any place subject to the jurisdiction of the United States, including the 12-mile territorial sea of the United States, whether or not such act constitutes an importation within the meaning of the customs laws of the United States.

Management plan means a plan to manage the activities and protect the special value or values in an Antarctic Specially Protected Area designated by the United States as such a site consistent with plans adopted by the Antarctic Treaty Consultative Parties.

Native bird means any member, at any stage of its life cycle, of any species of the class Aves which is indigenous to Antarctica or occurs there seasonally through natural migrations, that is designated in subpart D of this part. It includes any part, product, egg, or offspring of or the dead body or parts thereof excluding fossils.

Native invertebrate means any terrestrial or freshwater invertebrate, at any stage of its life cycle, which is indigenous to Antarctica. It includes any part thereof, but excludes fossils.

Native mammal means any member, at any stage of its life cycle, of any species of the class Mammalia, which is indigenous to Antarctica or occurs there seasonally through natural migrations, that is designated in subpart D of this part. It includes any part, product, offspring of or the dead body or parts thereof but excludes fossils.

Native plant means any terrestrial or freshwater vegetation, including bryophytes, lichens, fungi, and algae, at any stage of its life cycle which is indigenous to Antarctica that is designated in subpart D of this part. It includes seeds and other propagules, or parts of such vegetation, but excludes fossils.

Person has the meaning given that term in section 1 of title 1, United States Code, and includes any person subject to the jurisdiction of the United States and any department, agency, or other instrumentality of the Federal Government or of any State or local government.

Protocol means the Protocol on Environmental Protection to the Antarctic Treaty, signed October 4, 1991, in Madrid, and all annexes thereto, including any future amendments to which the United States is a Party.

Specially Protected Species means any native species designated as a Specially Protected Species that is designated in subpart E of this part.

Take or taking means to kill, injure, capture, handle, or molest a native mammal or bird, or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected or to attempt to engage in such conduct.

Treaty means the Antarctic Treaty signed in Washington, DC on December 1, 1959.

United States means the several states of the Union, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and other commonwealth, territory, or possession of the United States.

Subpart B-Prohibited Acts, Exceptions

§ 670.4 Prohibited acts.

Unless a permit has been issued pursuant to subpart C of this part or unless one of the exceptions stated in §670.5 through §670.9 is applicable, it is unlawful to commit, attempt to commit, or cause to be committed any of the acts described in paragraphs (a) through (g) of this section.

(a) *Taking of native mammal, bird or plants.* It is unlawful for any person to take within Antarctica a native mammal, a native bird, or native plants.

(b) *Engaging in harmful interference.* It is unlawful for any person to engage in harmful interference in Antarctica of native mammals, native birds, native plants or native invertebrates.

(c) *Entry into Antarctic specially designated areas.* It is unlawful for any person to enter or engage in activities within any Antarctic Specially Protected Area.

(d) *Possession, sale, export, and import of native mammals, birds, and plants.* It is unlawful for any person to receive, acquire, transport, offer for sale, sell, purchase, export, import, or have custody, control, or possession of, any native bird, native mammal, or native plant which the person knows, or in the exercise of due care should have known, was taken in violation of the Act.

(e) *Introduction of non-indigenous animals and plants into Antarctica.* It is unlawful for any person to introduce into Antarctica any animal or plant which is not indigenous to Antarctica or which does not occur there seasonally through natural migrations, as specified in subpart H of this part, except as provided in §670.7 and §670.8.

(f) *Violations of regulations.* It is unlawful for any person to violate the regulations set forth in this part.

(g) *Violation of permit conditions.* It is unlawful for any person to violate any term or condition of any permit issued under subpart C of this part.

§ 670.5 Exception in extraordinary circumstances.

(a) *Emergency exception.* No act described in §670.4 shall be unlawful if the person committing the act reasonably believed that the act was committed under emergency circumstances involving the safety of human life or of ships, aircraft, or equipment or facilities of high value, or the protection of the environment.

(b) *Aiding or salvaging native mammals or native birds.* The prohibition on taking shall not apply to any taking of native mammals or native birds if such action is necessary to:

- (1) Aid a sick, injured or orphaned specimen;
- (2) Dispose of a dead specimen; or
- (3) Salvage a dead specimen which may be useful for scientific study.

(c) *Reporting.* Any actions taken under the exceptions in this section shall be reported promptly to the Director.

§ 670.6 Prior possession exception.

(a) *Exception.* §670.4 shall not apply to:

- (1) any native mammal, bird, or plant which is held in captivity on or before October 28, 1978; or
- (2) Any offspring of such mammal, bird, or plant.

(b) *Presumption.* With respect to any prohibited act set forth in §670.4 which occurs after April 29, 1979, the Act creates a rebuttable presumption that the native mammal, native bird, or native plant involved in such act was not held in captivity on or before October 28, 1978, or was not an offspring referred to in paragraph (a) of this section.

§ 670.7 Food exception.

Paragraph (e) of §670.4 shall not apply to the introduction of animals and plants into Antarctica for use as food as long as animals and plants used for this purpose are kept under carefully controlled conditions. This exception shall not apply to living species of animals. Unconsumed poultry or its parts shall be removed from Antarctica unless incinerated, autoclaved or otherwise sterilized.

§ 670.8 Foreign permit exception.

Paragraphs (d) and (e) of § 670.4 shall not apply to transporting, carrying, receiving, or possessing native mammals, native plants, or native birds or to the introduction of non-indigenous animals and plants when conducted by an agency of the United States Government on behalf of a foreign national operating under a permit issued by a foreign government to give effect to the Protocol.

§ 670.9 Antarctic Conservation Act enforcement exception.

Paragraphs (a) through (d) of § 670.4 shall not apply to acts carried out by an Antarctic Conservation Act Enforcement Officer (designated pursuant to 45 CFR 672.3) if undertaken as part of the Antarctic Conservation Act Enforcement Officer's official duties.

§ 670.10 [Reserved]

Subpart C-Permits

§ 670.11 Applications for permits.

(a) *General content of permit applications.* All applications for a permit shall be dated and signed by the applicant and shall contain the following information:

(1) The name and address of the applicant;

(i) Where the applicant is an individual, the business or institutional affiliation of the applicant must be included; or

(ii) Where the applicant is a corporation, firm, partnership, or institution, or agency, either private or public, the name and address of its president or principal officer must be included.

(2) Where the applicant seeks to engage in a taking,

(i) The scientific names, numbers, and description of native mammals, native birds or native plants to be taken; and

(ii) Whether the native mammals, birds, or plants, or part of them are to be imported into the United States, and if so, their ultimate disposition.

(3) Where the applicant seeks to engage in a harmful interference, the scientific names, numbers, and description of native birds or native seals to be disturbed; the scientific

names, numbers, and description of native plants to be damaged; or the scientific names, numbers, and description of native invertebrates, native mammals, native plants, or native birds whose habitat will be adversely modified;

(4) A complete description of the location, time period, and manner in which the taking or harmful interference would be conducted, including the proposed access to the location;

(5) Where the application is for the introduction of non-indigenous plants or animals, the scientific name and the number to be introduced;

(6) Whether agents as referred to in § 670.13 will be used; and

(7) The desired effective dates of the permit.

(b) *Content of specific permit applications.* In addition to the general information required for permit applications set forth in this subpart, the applicant must submit additional information relating to the specific action for which the permit is being sought. These additional requirements are set forth in the sections of this part dealing with the subject matter of the permit applications as follows:

Native Mammals, Birds, Plants, and Invertebrates--Section 670.17

Specially Protected Species--Section 670.23

Specially Protected Areas--Section 670.27

Import and Export--Section 670.31

Introduction of Non-Indigenous Plants and Animals--Section 670.36

(c) *Certification.* Applications for permits shall include the following certification:

I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. Any false statement will subject me to the criminal penalties of 18 U.S.C. 1001.

(d) *Address to which applications should be sent.* Each application shall be in writing, addressed to:

Permit Officer, Office of Polar Programs, National Science Foundation, Room 755, 4201 Wilson Boulevard, Arlington, Virginia 22230.

(e) *Sufficiency of application.* The sufficiency of the application shall be determined by the Director. The Director may waive any requirement for information, or request additional information as determined to be relevant to the processing of the application.

(f) *Withdrawal.* An applicant may withdraw an application at any time.

(g) *Publication of permit applications.* The Director shall publish notice in the **Federal Register** of each application for a permit. The notice shall invite the submission by interested parties, within 30 days after the date of publication of the notice, of written data, comments, or views with respect to the application. Information received by the Director as a part of any application shall be available to the public as a matter of public record.

§ 670.12 General issuance criteria.

Upon receipt of a complete and properly executed application for a permit and the expiration of the applicable public comment period, the Director will decide whether to issue the permit. In making the decision, the Director will consider, in addition to the specific criteria set forth in the appropriate subparts of this part:

- (a) Whether the authorization requested meets the objectives of the Act and the requirements of the regulations in this part;
- (b) The judgment of persons having expertise in matters germane to the application; and
- (c) Whether the applicant has failed to disclose material information required or has made false statements about any material fact in connection with the application.

§ 670.13 Permit administration.

(a) *Issuance of the permits.* The Director may approve any application in whole or part. Permits shall be issued in writing and signed by the Director. Each permit may contain such terms and conditions as are consistent with the Act and this part.

(b) *Denial.* The applicant shall be notified in writing of the denial of any permit request or part of a request and of the reason for such denial. If authorized in the notice of denial, the applicant may submit further information or reasons why the permit should not be denied. Such further submissions shall not be considered a new application.

(c) *Amendment of applications or permits.* An applicant or permit holder desiring to have any term or condition of his application or permit modified must submit full justification and supporting information in conformance with the provisions of this subpart and the subpart governing the activities sought to be carried out under the modified permit. Any application for modification of a permit that involves a material change beyond the terms originally requested will normally be subject to the same procedures as a new application.

(d) *Notice of issuance or denial.* Within 10 days after the date of the issuance or denial of a permit, the Director shall publish notice of the issuance or denial in the **Federal Register**.

(e) *Agents of the permit holder.* The Director may authorize the permit holder to designate agents to act on behalf of the permit holder.

(f) *Marine mammals, endangered species, and migratory birds.* If the Director receives a permit application involving any native mammal which is a marine mammal as defined by the Marine Mammal Protection Act of 1972 (16 U.S.C. 1362(5)), any species which is an endangered or threatened species under the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*) or any native bird which is protected under the Migratory Bird Treaty Act (16 U.S.C. 701 *et seq.*), the Director shall submit a copy of the application to the Secretary of Commerce or to the Secretary of the Interior, as appropriate. If the appropriate Secretary determines that a permit should not be issued pursuant to any of the cited acts, the Director shall not issue a permit. The Director shall inform the applicant of any denial by the appropriate Secretary and no further action shall be taken on the application. If, however, the appropriate Secretary issues a permit pursuant to the

requirements of the cited acts, the Director still must determine whether the proposed action is consistent with the Act and the regulations in this part.

§ 670.14 Conditions of permits.

(a) *Possession of permits.* Permits issued under the regulations in this part, or copies of them, must be in the possession of persons to whom they are issued and their agents when conducting the authorized action.

(b) *Display of permits.* Any permit issued shall be displayed for inspection upon request to the Director, designated agents of the Director, or any person with enforcement responsibilities.

(c) *Filing of reports.* Permit holders are required to file reports of the activities conducted under a permit. Reports shall be submitted to the Director not later than June 30 for the preceding 12 months.

§ 670.15 Modification, suspension, and revocation.

(a) The Director may modify, suspend, or revoke, in whole or in part, any permit issued under this subpart:

(1) In order to make the permit consistent with any change to any regulation in this part made after the date of issuance of this permit;

(2) If there is any change in conditions which make the permit inconsistent with the purpose of the Act and the regulations in this part; or

(3) In any case in which there has been any violation of any term or condition of the permit, any regulation in this part, or any provision of the Act.

(b) Whenever the Director proposes any modifications, suspension, or revocation of a permit under this section, the permittee shall be afforded opportunity, after due notice, for a hearing by the Director with respect to such proposed modification, suspension or revocation. If a hearing is requested, the action proposed by the Director shall not take effect before a decision is issued by him after the hearing, unless the proposed action is taken by the Director to meet an emergency situation.

(c) Notice of the modification, suspension, or revocation of any permit by the Director shall be published in the **Federal Register**, within 10 days from the date of the Director's decision.

§ 670.16 [Reserved]

Subpart D--Native Mammals, Birds, Plants, and Invertebrates

§ 670.17 Specific issuance criteria.

With the exception of specially protected species of mammals, birds, and plants designated in subpart E of this part, permits to engage in a taking or harmful interference:

(a) May be issued only for the purpose of providing--

(1) Specimens for scientific study or scientific information; or

(2) Specimens for museums, zoological gardens, or other educational or cultural institutions or uses; or

(3) For unavoidable consequences of scientific activities or the construction and operation of scientific support facilities; and

(b) Shall ensure, as far as possible, that--

(1) No more native mammals, birds, or plants are taken than are necessary to meet the purposes set forth in paragraph (a) of this section;

(2) No more native mammals or native birds are taken in any year than can normally be replaced by net natural reproduction in the following breeding season;

(3) The variety of species and the balance of the natural ecological systems within Antarctica are maintained; and

(4) The authorized taking, transporting, carrying, or shipping of any native mammal or bird is carried out in a humane manner.

§ 670.18 Content of permit applications.

In addition to the information required in subpart C of this part, an applicant seeking a permit to take a native mammal or native bird shall include a complete description of the project including the purpose of the proposed taking, the use to be made of the native mammals or native birds, and the ultimate disposition of the native mammals and birds. An applicant seeking a permit to engage in a harmful interference shall include a complete description of the project including the purpose of the activity which will result in the harmful interference. Sufficient information must be provided to establish that the taking, harmful interference, transporting, carrying, or shipping of a native mammal or bird shall be humane.

§ 670.19 Designation of native mammals.

The following are designated native mammals:

Pinnipeds:

Crabeater seal-*Lobodon carcinophagus*.

Leopard seal-*Hydrurga leptonyx*.

Ross seal-*Ommatophoca rossii*.*

Southern elephant seal-*Mirounga leonina*.

Southern fur seals-*Arctocephalus spp.**

Weddell seal-*Leptonychotes weddelli*.

Large Cetaceans (Whales):

Blue whale-*Balaenoptera musculus*.

Fin whale-*Balaenoptera physalus*.

Humpback whale-*Megaptera novaeangliae*.

Minke whale-*Balaenoptera acutrostrata*.

Pygmy blue whale--*Balaenoptera musculus brevicauda*.

Sei whale--*Balaenoptera borealis*.

* These species of mammals have been designated as specially protected species and are subject to subpart E of this part.

Southern right whale--*Balaena glacialis australis*.
Sperm whale--*Physeter macrocephalus*.
Small Cetaceans (Dolphins and porpoises):
Arnoux's beaked whale--*Berardius arnuxii*.
Commerson's dolphin--*Cephalorhynchus commersonii*.
Dusky dolphin--*Lagenorhynchus obscurus*.
Hourglass dolphin--*Lagenorhynchus cruciger*.
Killer whale--*Orcinus orca*.
Long-finned pilot whale--*Globicephala melaena*.
Southern bottlenose whale--*Hyperoodon planifrons*.
Southern right whale dolphin--*Lissodelphis peronii*.
Spectacled porpoise--*Phocoena dioptrica*.

§ 670.20 Designation of native birds.

The following are designated native birds:

Albatross:

- Black-browed--*Diomedea melanophris*.
- Gray-headed--*Diomedea chrysostoma*.
- Light-mantled sooty--*Phoebastria palpebrata*.
- Wandering--*Diomedea exulans*.

Fulmar:

- Northern Giant--*Macronectes halli*.
- Southern--*Fulmarus glacialis*.
- Southern Giant--*Macronectes giganteus*.

Gull:

- Southern Black-backed--*Larus dominicanus*.

Jaeger:

- Parasitic--*Stercorarius parasiticus*.
- Pomarine--*Stercorarius pomarinus*.

Penguin:

- Adelie--*Pygoscelis adeliae*.
- Chinstrap--*Pygoscelis antarctica*.
- Emperor--*Aptenodytes forsteri*.
- Gentoo--*Pygoscelis papua*.
- King--*Aptenodytes patagonicus*.
- Macaroni--*Eudyptes chrysolophus*.
- Rockhopper--*Eudyptes crestatus*.

Petrel:

- Antarctic--*Thalassoica antarctica*.
- Black-bellied Storm--*Fregatta tropica*.
- Blue--*Halobaena caerulea*.
- Gray--*Procellaria cinerea*.
- Great-winged--*Pterodroma macroptera*.
- Kerguelen--*Pterodroma brevirostris*.
- Mottled--*Pterodroma inexpectata*.

Snow--*Pagodroma nivea*.
Soft-plumaged--*Pterodroma mollis*.
South-Georgia Diving--*Pelecanoides georgicus*.
White-bellied Storm--*Fregetta grallaria*.
White-chinned--*Procellaria aequinoctialis*.
White-headed--*Pterodroma lessoni*.
Wilson's Storm--*Oceanites oceanicus*.

Pigeon:

Cape--*Daption capense*.

Pintail:

South American Yellow-billed--*Anas georgica spinicauda*.

Prion:

Antarctic--*Pachyptila desolata*.

Narrow-billed--*Pachyptila belcheri*.

Shag:

Blue-eyed--*Phalacrocorax atriceps*.

Shearwater:

Sooty--*Puffinus griseus*.

Skua:

Brown--*Catharacta lonnbergi*.

South Polar--*Catharacta maccormicki*.

Swallow:

Barn--*Hirundo rustica*.

Sheathbill:

American--*Chionis alba*.

Tern:

Antarctic--*Sterna vittata*.

Arctic--*Sterna paradisaea*.

§ 670.21 Designation of native plants.

All plants whose normal range is limited to, or includes Antarctica are designated native plants, including:

Bryophytes
Freshwater algae
Fungi
Lichens
Marine algae
Vascular Plants

§ 670.22 [Reserved]

Subpart E--Specially Protected Species of Mammals, Birds, and Plants

§ 670.23 Specific issuance criteria.

Permits authorizing the taking of mammals, birds, or plants designated as a Specially Protected Species of mammals, birds, and plants in § 670.25 may only be issued if:

- (a) There is a compelling scientific purpose for such taking;
- (b) The actions allowed under any such permit will not jeopardize the existing natural ecological system, or the survival of the affected species or population;
- (c) The taking involves non-lethal techniques, where appropriate; and
- (d) The authorized taking, transporting, carrying or shipping will be carried out in a humane manner.

§ 670.24 Content of permit applications.

In addition to the information required in subpart C of this part, an applicant seeking a permit to take a Specially Protected Species shall include the following in the application:

- (a) A detailed scientific justification of the need for taking the Specially Protected Species, including a discussion of possible alternative species;
- (b) Information demonstrating that the proposed action will not jeopardize the existing natural ecological system or the survival of the affected species or population; and
- (c) Information establishing that the taking, transporting, carrying, or shipping of any native bird or native mammal will be carried out in a humane manner.

§ 670.25 Designation of specially protected species of native mammals, birds and plants.

The following two species have been designated as Specially Protected Species by the Antarctic Treaty Parties and are hereby designated Specially Protected Species:

Common Name and Scientific Name

Kerguelen Fur Seal--*Arctocephalus tropicales gazella*.

Ross Seal--*Ommatophoca rossi*.

§ 670.26 [Reserved]

Subpart F--Antartic Specially Protected Areas

§ 670.27 Specific issuance criteria.

Permits authorizing entry into any Antarctic Specially Protected Area designated in § 670.29 may only be issued if:

- (a) The entry and activities to be engaged in are consistent with an approved management plan, or
- (b) A management plan relating to the area has not been approved by the Antarctic Treaty Parties, but
 - (1) There is a compelling scientific purpose for such entry which cannot be served elsewhere, and

(2) The actions allowed under the permit will not jeopardize the natural ecological system existing in such area.

§ 670.28 Content of permit application.

In addition to the information required in subpart C of this part, an applicant seeking a permit to enter an Antarctic Specially Protected Area shall include the following in the application:

(a) A detailed justification of the need for such entry, including a discussion of alternatives;

(b) Information demonstrating that the proposed action will not jeopardize the unique natural ecological system in that area; and

(c) Where a management plan exists, information demonstrating the consistency of the proposed actions with the management plan.

§ 670.29 Designation of Antarctic specially protected areas.

The following areas have been designated by the Antarctic Treaty Parties for special protection and are hereby designated as Antarctic Specially Protected Areas. Detailed maps and descriptions of the sites and complete management plans can be obtained from the National Science Foundation, Office of Polar Programs, National Science Foundation, Room 755, 4201 Wilson Boulevard, Arlington, Virginia 22230.

ASPAs 101, Taylor Rookery, MacRobertson Land.

ASPAs 102, Rookery Islands, Holme Bay.

ASPAs 103, Ardrey Island and Odber Island, Budd Coast.

ASPAs 104, Sabrina Island, Balleny Islands.

ASPAs 105, Beaufort Island, Ross Sea.

ASPAs 106, Cape Hallett, Victoria Land.

ASPAs 107, Dion Islands, Marguerite Bay, Antarctic Peninsula.

ASPAs 108, Green Island, Berthelot Islands, Antarctic Peninsula.

ASPAs 109, Moe Island, South Orkney Islands.

ASPAs 110, Lynch Island, South Orkney Islands.

ASPAs 111, Southern Powell Island and adjacent islands, South Orkney Islands.

ASPAs 112, Coppermine Peninsula, Robert Island.

ASPAs 113, Litchfield Island, Arthur Harbor, Palmer Archipelago.

ASPAs 114, North Coronation Island, South Orkney Islands.

ASPAs 115, Lagotellerie Island, Marguerite Bay.

ASPAs 116, 'New College Valley', Caughley Beach, Cape Bird, Ross Island.

ASPAs 117, Avian Island, Northwest Marguerite Bay.

ASPAs 118, Cryptogam Ridge, Mount Melbourne, Victoria Land.

ASPAs 119, Forlidas Pond and Davis Valley Ponds.

ASPAs 120, Pointe-Geologie Archipelago

ASPAs 121, Cape Royds, Ross Island.

ASPAs 122, Arrival Heights, Hut Point Peninsula, Ross Island.

ASPAs 123, Barwick Valley, Victoria Land.

ASPAs 124 through 160, listing various locations in Antarctica and the South Shetland Islands.

ASPAs 124, Cape Crozier, Ross Island.
ASPAs 125, Fildes Peninsula, King George Island, South Shetland Islands.
ASPAs 126, Byers Peninsula, Livingston Island, South Shetland Islands.
ASPAs 127, Haswell Island.
ASPAs 128, Western Shore of Admiralty Bay, King George Island.
ASPAs 129, Rothera Point, Adelaide Island.
ASPAs 130, Tramway Ridge, Mt. Erebus, Ross Island.
ASPAs 131, Canada Glacier, Lake Fryxell, Taylor Valley, Victoria Land.
ASPAs 132, Potter Peninsula, King George Island, South Shetland Islands.
ASPAs 133, Harmony Point.
ASPAs 134, Cierva Point and nearby islands, Danco Coast, Antarctic Peninsula.
ASPAs 135, Bailey Peninsula, Budd Coast, Wilkes Land.
ASPAs 136, Clark Peninsula, Budd Coast, Wilkes Land.
ASPAs 137, Northwest White Island, McMurdo Sound.
ASPAs 138, Linnaeus Terrace, Asgard Range, Victoria Land.
ASPAs 139, Biscoe Point, Anvers Island, Palmer Archipelago.
ASPAs 140, Shores of Port Foster, Deception Island, South Shetland Islands.
ASPAs 141, Yukidori Valley, Langhovde, Lutzow-Holm Bay.
ASPAs 142, Svarthamaren Mountain, Muhlig-Hofmann Mountains, Queen Maud Land.
ASPAs 143, Marine Plain, Mule Peninsula, Vestfold Hills, Princess Elizabeth Land.
ASPAs 144, Chile Bay (Discovery Bay), Greenwich Island, South Shetland Islands.
ASPAs 145, Port Foster, Deception Island, South Shetland Islands.
ASPAs 146, South Bay, Doumer Island, Palmer Archipelago.
ASPAs 147, Ablation Point-Ganymede Heights, Alexander Island.
ASPAs 148, Mount Flora, Hope Bay, Antarctic Peninsula.
ASPAs 149, Cape Shirreff, Livingston Island, South Shetland Islands.
ASPAs 150, Ardley Island, Maxwell Bay, King George Island, South Shetland Islands.
ASPAs 151, Lions Rump, King George Island, South Shetland Islands.
ASPAs 152, Western Bransfield Strait, off Low Island, South Shetland Islands.
ASPAs 153, East Dallmann Bay, off Brabant Island.
ASPAs 154, Cape Evans Historic Site.
ASPAs 155, Lewis Bay Tomb.
ASPAs 156, Hut and associated artifacts, Backdoor Bay, Cape Royds, Ross Island.
ASPAs 157, Discovery Hut, Hut Point, Ross Island.
ASPAs 158, Huts and associated artifacts, Cape Adare.
ASPAs 159, Summit of Mt. Melbourne, North Victoria Land.
ASPAs 160, Botany Bay, Cape Geology, Victoria Land.

§ 670.30 [Reserved]

Subpart G--Import into and Export From the United States

§ 670.31 Specific issuance criteria for imports.

Subject to compliance with other applicable law, any person who takes a native mammal, bird, or plant under a permit issued under the regulations in this part may

import it into the United States unless the Director finds that the importation would not further the purpose for which it was taken. If the importation is for a purpose other than that for which the native mammal, bird, or plant was taken, the Director may permit importation upon a finding that importation would be consistent with the purposes of the Act, the regulations in this part, or the permit under which they were taken.

§ 670.32 Specific issuance criteria for exports.

The Director may permit export from the United States of any native mammal, bird, or native plants taken within Antarctica upon a finding that exportation would be consistent with the purposes of the Act, the regulations in this part, or the permit under which they were taken.

§ 670.33 Content of permit applications.

In addition to the information required in subpart C of this part, an applicant seeking a permit to import into or export from the United States a native mammal, a native bird, or native plants taken within Antarctica shall include the following in the application:

- (a) Information demonstrating that the import or export would further the purposes for which the species was taken;
- (b) Information demonstrating that the import or export is consistent with the purposes of the Act or the regulations in this part;
- (c) A statement as to which U.S. port will be used for the import or export, and
- (d) Information describing the intended ultimate disposition of the imported or exported item.

§ 670.34 Entry and exit ports.

(a) Any native mammal, native bird, or native plants taken within Antarctica that are imported into or exported from the United States must enter or leave the United States at ports designated by the Secretary of Interior in 50 CFR part 14. The ports currently designated are:

- (1) Los Angeles, California.
- (2) San Francisco, California.
- (3) Miami, Florida.
- (4) Honolulu, Hawaii.
- (5) Chicago, Illinois.
- (6) New Orleans, Louisiana.
- (7) New York, New York.
- (8) Seattle, Washington.
- (9) Dallas/Fort Worth, Texas.
- (10) Portland, Oregon.
- (11) Baltimore, Maryland.
- (12) Boston, Massachusetts.
- (13) Atlanta, Georgia.

(b) Permits to import or export at non-designated ports may be sought from the Secretary of Interior pursuant to subpart C, 50 CFR part 14.

§ 670.35 [Reserved]

Subpart H--Introduction of Non-Indigenous Plants and Animals

§ 670.36 Specific issuance criteria.

For purposes consistent with the Act, only the following plants and animals may be considered for a permit allowing their introduction into Antarctica:

- (a) Domestic plants; and
 - (b) Laboratory animals and plants including viruses, bacteria, yeasts, and fungi.
- Living non-indigenous species of birds shall not be introduced into Antarctica.

§ 670.37 Content of permit applications.

Applications for the introduction of plants and animals into Antarctica must describe:

- (a) The species, numbers, and if appropriate, the age and sex, of the animals or plants to be introduced into Antarctica;
- (b) The need for the plants or animals;
- (c) What precautions the applicant will take to prevent escape or contact with native fauna and flora; and
- (d) How the plants or animals will be removed from Antarctica or destroyed after they have served their purpose.

§ 670.38 Conditions of permits.

All permits allowing the introduction of non-indigenous plants and animals will require that the animal or plant be kept under controlled conditions to prevent its escape or contact with native fauna and flora and that after serving its purpose the plant or animal shall be removed from Antarctica or be destroyed in manner that protects the natural system of Antarctica.

§ 670.39 [Reserved]

PART 671—WASTE REGULATION

Subpart A--Introduction

§ 671.1 Purpose of regulations.

The purposes of these regulations in part 671 are to protect the Antarctic environment and dependent and associated ecosystems, to preserve Antarctica's value as an area for the conduct of scientific research, and to implement the Antarctic Conservation Act of 1978, Public Law 95-541, consistent with the provisions of the Protocol on Environmental Protection to the Antarctic Treaty, signed in Madrid, Spain, on October 4, 1991.

§ 671.2 Scope.

These regulations in part 671 apply to any U.S. citizen's use or release of a banned substance, designated pollutant or waste in Antarctica.

§ 671.3 Definitions.

(a) *Definitions.* In this part:

Act means the Antarctic Conservation Act of 1978, Public Law 95-541, 92 Stat. 2048 (16 U.S.C. 2401 et seq.)

Antarctic hazardous waste means any waste consisting of or containing one or more designated pollutants.

Antarctica means the area south of 60 degrees south latitude.

Banned substance means any polychlorinated biphenyls (PCBs), non-sterile soil, polystyrene beads, plastic chips or similar loose polystyrene packing material, pesticides (other than those required for scientific, medical or hygiene purposes) or other substance designated as such under subpart E of this part.

Designated pollutant means any substance designated as such by the Director pursuant to subpart E of this part; any pesticide, radioactive substance, or substance consisting of or containing any chemical listed by source, generic or chemical name at 40 CFR 61.01, Table 116.4A of 40 CFR 116.4; subpart D of 40 CFR part 261, 40 CFR 302.4, part 355, and part 372; and any substance which exhibits a hazardous waste characteristic as defined in subparts B and C of 40 CFR part 261; but shall not include any banned substance.

Director means the Director of the National Science Foundation, or an officer or employee of the Foundation designated by the Director.

Incinerate or *Incineration* means the processing of material by mechanisms that (1) involve the control of combustion air and/or fuel so as to maintain adequate temperature for efficient combustion; (2) contain the combustion reaction in an enclosed device with sufficient residence time and mixing for complete processing; and (3) control emission of gaseous or particulate combustion products.

Master permit means a permit issued to a federal agency, or its agents or contractors, or any other entity, covering activities conducted in connection with USAP or other group activities in Antarctica.

NSF or Foundation means the National Science Foundation.

Open burning means combustion of any material by means other than incineration.

Permit means a permit issued pursuant to subpart C of this part.

Private permit means any permit other than a master permit.

Protocol means the Protocol on Environmental Protection to the Antarctic Treaty, signed by the United States in Madrid on October 4, 1991, and any and all Annexes thereto, as amended or supplemented from time to time.

Release means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, leaching, dumping, burying or disposing of a substance, whether intentionally or accidentally.

Station means McMurdo Station, Palmer Station, Amundsen-Scott South Pole Station and any other permanent USAP facility in Antarctica designed to accommodate at least 50 persons at any one time.

Substance means any gas, liquid, or solid, or mixture thereof, including biological material.

Treaty means the Antarctic Treaty signed in Washington, D.C., on December 1, 1959.

United States means the several States of the Union, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the Virgin Islands, Guam and the Trust Territory of the Pacific Islands, including the Federated States of Micronesia and the Commonwealth of the Northern Mariana Islands.

United States Antarctic Program or USAP means the United States national program in Antarctica.

U.S. citizen means any individual who is a citizen or national of the United States; any corporation, partnership, trust, association, or other legal entity existing or organized under the laws of any of the United States; and any department agency or other instrumentality of the Federal government or of any State, and any officer, employee, or agent of such instrumentality.

Use means to use, generate or create a substance, or to import a substance into Antarctica, but does not include the shipboard use of a substance, provided that substance is not released or removed from the vessel.

Waste means any substance that will no longer be used for any useful purpose, but does not include substances to be recycled in Antarctica, or substances to be reused in a manner different than their initial use, provided such substances are stored in a manner that will prevent their dispersal into the environment, and further provided that they are recycled, reused or disposed of in accordance with the provisions of this Part within three years. Recycling includes, but is not limited to, the reuse, further use, reclamation or extraction of a waste through a process or activity that is separate from the process or activity that produced the waste.

(b) *Pollutants, generally.* All banned substances, designated pollutants and waste shall be considered pollutants for purposes of the Antarctic Conservation Act.

Subpart B--Prohibited Acts, Exceptions

§ 671.4 Prohibited acts.

Unless one of the exceptions stated in § 671.5 is applicable, it is unlawful for any U.S. citizen to:

- (a) Use or release any banned substance in Antarctica;
- (b) Use or release any designated pollutant in Antarctica, except pursuant to a permit issued by NSF under subpart C of this part;
- (c) Release any waste in Antarctica, except pursuant to a permit issued by NSF under subpart C of this part; or
- (d) Violate any term or condition of a permit issued by NSF under subpart C of this part, or any term or condition of any of the regulations issued under this part.

§ 671.5 Exceptions

A permit shall not be required for any use or release of designated pollutants or waste allowed under the Act to Prevent Marine Pollution from Ships (33 U.S.C. 1901 et seq.), as amended, or for any shipboard use of banned substances or designated pollutants, provided such substances are not removed from the vessel in Antarctica.

Subpart C--Permits

§ 671.6 Applications for permits.

(a) *General content of permit applications.* Each application for a permit shall be dated and signed by the applicant, and shall include the following information:

(1) The applicant's name, address and telephone number, the business or institutional affiliation of the applicant, or the name, address and telephone number of the president, principal officer or managing partner of the applicant, as applicable;

(2) A description of the types, expected concentrations and volumes of wastes and designated pollutants to be released in Antarctica; the nature and timing of such releases; arrangements for waste management, including, without limitation, plans for waste reduction, minimization, treatment and processing, recycling, storage, transportation and disposal; arrangements for training and educating personnel to comply with these waste management requirements and procedures, and arrangements for monitoring compliance; and other arrangements for minimizing and monitoring the environmental impacts of proposed operations and activities;

(3) A description of the types, expected concentrations and volumes of designated pollutants to be used in Antarctica; the nature and timing of such uses; the method of storage of designated pollutants; and a contingency plan for controlling releases in a manner designed to minimize any resulting hazards to health and the environment;

(4) The desired effective date and duration of the permit; and

(5) The following certification:

"I certify that, to the best of my knowledge and belief, and based upon due inquiry, the information submitted in this application for a permit is complete and accurate. Any

knowing or intentional false statement will subject me to the criminal penalties of 18 U.S.C. 1001."

(b) *Address to which application should be sent.* Each application shall be in writing, and sent to: Permits Office, Office of Polar Programs, National Science Foundation, 4201 Wilson Boulevard, Arlington, VA 22230.

(c) *Sufficiency of application.* The sufficiency of the application shall be determined by the Director. The Director may waive any requirement for information, or require such additional information as he determines is relevant to the processing and evaluation of the application.

(d) *Publication of permit applications.* The Director shall publish notice in the **Federal Register** of each application for a permit and the proposed conditions of its issuance (including duration). The notice shall invite the submission by interested parties, the Environmental Protection Agency and other federal agencies, within 30 days after the date of publication of notice, of written data, comments, or views with respect to the application. Information received by the Director as a part of any application shall be available to the public as a matter of public record.

§ 671.7 General issuance criteria.

(a) Upon receipt of a complete and properly executed application for a permit, the Director will decide whether and on what conditions he will issue a permit. In making this decision, the Director will carefully consider any comments or suggestions received from interested parties, the Environmental Protection Agency and other federal agencies pursuant to § 671.6(d), and will determine whether the permit requested meets the objectives of the Act, the Protocol, and the requirements of these regulations.

(b) Permits authorizing the use or release of designated pollutants or wastes may be issued only if, based on relevant available information, the Director determines that such use or release will not pose a substantial hazard to health or the environment, taking into account available information on the possible cumulative impact of multiple releases.

§ 671.8 Permit administration.

(a) *Issuance of permits.* The Director may approve an application for a permit in whole or in part, and may condition such approval upon compliance with additional terms and conditions. Permits shall be issued in writing, shall be signed by the Director, shall specify duration, and shall contain such terms and conditions as may be established by the Director and as are consistent with the Act and this part.

(b) *Denial.* An applicant shall be notified in writing of the denial of any permit request or part of a request, and the reason for such denial. If authorized in the notice of denial, the applicant may submit further information, or reasons why the permit should not be denied. Such further submissions shall constitute amendments of the application.

(c) *Amendment of applications or permits.* An applicant or permit holder desiring to have any term or condition of his application or permit modified must submit full justification and supporting information in conformance with the provisions of this Part.

Any application for modification of a permit that involves a material change beyond the terms originally requested will be subject to the same procedures as a new application.

(d) *Public notice of issuance or denial.* Within 10 days after the date of the issuance or denial of a permit, the Director shall publish notice of the issuance or denial in the **Federal Register**, including the conditions of issuance or basis for denial, as appropriate.

§ 671.9 Conditions of permit.

(a) *Conditions.* All permits issued pursuant to subpart C of this part shall be conditioned upon compliance with the relevant provisions of the ACA, the Treaty, the Protocol, such specific conditions or restrictions as may be imposed by the Director under § 671.7, and the provisions of subpart D of this part.

(b) *Possession of permits.* Permits issued under this part, or copies of them, must be in the possession of persons to whom they are issued or their agents when conducting the authorized action. Any permit issued shall be shown to the Director or to any other person with enforcement authority upon request.

(c)(1) *Reports.* Permit holders must provide the Director with written reports of:

(i) Any non-permitted release of designated pollutants or waste within fourteen days after the occurrence of such release, including the date, quantity and cause of the release, and plans for remediation;

(ii) The identity and quantity of all designated pollutants removed from Antarctica or otherwise disposed of, and the method of disposal; and

(iii) Any other violations of the terms and conditions of their permits.

(2) The Director may also require permit holders to file reports of activities conducted under their permits. Such reports shall be submitted to the Director not later than June 30 for the preceding 12 month period ending May 31.

§ 671.10 Review, modification, suspension, and revocation.

(a) The Director may modify, suspend or revoke, in whole or in part, any permit issued under this part:

(1) In order to make the permit consistent with any change to any regulation in this Part made after the date of issuance of the permit;

(2) If there is any change in conditions which makes the permit inconsistent with the Act and any regulation in this part; or

(3) In any case in which there has been any violation of any term or condition of the permit, any regulation in this part, or any provision of the Act.

(b) The Director shall review all unexpired permits issued under this part at least biennially to determine whether those permits should be modified, suspended or revoked as set forth in paragraph (a) of this section.

(c) Whenever the Director proposes any modifications, suspensions or revocations of a permit under this § 671.10, the permittee shall be afforded the opportunity, after due notice, for a hearing by the Director with respect to such proposed modification, suspension, or revocation. If a hearing is requested, the action proposed by the Director shall not take effect before a decision is issued by him after the hearing, unless the proposed action is taken by the Director to meet an emergency situation.

(d) Notice of the modification, suspension, or revocation of any permit shall be published in the **Federal Register** within 10 days from the date of the Director's decision.

Subpart D--Waste Management

§ 671.11 Waste storage.

(a) Pending the treatment, disposal or removal of any wastes pursuant to § 671.12, all wastes shall be contained, confined or stored in a manner that will prevent dispersal into the environment;

(b) All Antarctic hazardous wastes generated at or transported to any USAP station may be temporarily stored at such station prior to the treatment, disposal or removal of any wastes pursuant to § 671.12, provided all such Antarctic hazardous waste is stored in either closed containers or tanks labeled to indicate their contents and the beginning date of accumulation of such waste, and further provided the following conditions are satisfied:

(1) If Antarctic hazardous wastes, radioactive wastes, or medical wastes, are generated at or transported to McMurdo Station, they may be temporarily stored at that station for a period not to exceed 15 months;

(2) If Antarctic hazardous wastes, radioactive wastes, or medical wastes, are generated at or transported to South Pole Station, they may be temporarily stored at that station while awaiting transport to McMurdo Station, for a period not to exceed 15 months;

(3) If Antarctic hazardous wastes, radioactive wastes, or medical wastes, are generated at or transported to Palmer Station, they may be temporarily stored at that station while awaiting transport to McMurdo Station or other disposition, for a period not to exceed 28 months;

(4) Containers holding Antarctic hazardous wastes must be:

(i) In good, non-leaking condition with sufficient structural integrity for the storage of Antarctic hazardous waste;

(ii) Made of or lined with materials which will not react with, and are otherwise compatible with, the Antarctic hazardous waste to be stored, so that the ability of the containers to contain such waste is not impaired;

(iii) Stored in a manner that allows access for inspection and response to emergencies; and

(iv) Inspected at least weekly for leakage and deterioration. All inspections must be appropriately documented.

(5) Tank systems used for storing Antarctic hazardous wastes must be in good, non-leaking condition with sufficient structural integrity for the storing of hazardous wastes; and systems must be inspected weekly to detect corrosion or releases of waste and to collect data from monitoring and leak detection equipment, to the extent available, to ensure that they are functioning properly. All inspections must be appropriately documented. Prior to the expiration of the 15 month period referred to in § 671.11(b)(1), all Antarctic hazardous wastes shall be treated or removed from Antarctica in accordance with § 671.12.

(6) Ignitable, reactive or incompatible wastes shall be properly segregated and protected from sources of ignition or reaction, as appropriate.

(c) All Antarctic hazardous wastes generated at a location other than a permanent station may be temporarily stored at such location for a period not to exceed 12 months, in closed, non-leaking containers marked to indicate their contents. Such containers must be in good condition and made of or lined with material which will not react with and is otherwise compatible with the Antarctic hazardous waste stored therein so as not to impair the ability of the container to contain the waste. Prior to the expiration of the 12 month period referred to above, all such hazardous wastes shall be either:

(1) Treated or processed, disposed of or removed from Antarctica pursuant to § 671.12, or

(2) Removed to a permanent station and temporarily stored at that station in accordance with paragraph (b) of this section.

§ 671.12 Waste disposal.

(a)(1) The following wastes shall be removed from Antarctica:

(i) Radioactive materials;

(ii) Electrical batteries;

(iii) Fuel (both liquid and solid);

(iv) Waste containing harmful levels of heavy metals or acutely toxic or harmful persistent compounds;

(v) Poly-vinyl chloride (PVC), polyurethane foam, polystyrene foam, rubber and lubricating oils, treated timbers and other products containing additives which can produce harmful emissions or releases;

(vi) All other plastic wastes except low density polyethylene containers (such as bags for storing wastes) provided such containers are incinerated in accordance with paragraph (e) of this section;

(vii) Solid, non-combustible wastes; and

(viii) Fuel, oil and chemical drums that constitute waste.

(2) Notwithstanding paragraph (a)(1) of this section, the obligations set forth in paragraphs (a)(1) (vii) and (viii) of this section shall not apply if the Director determines that the removal of such wastes by any practicable option would cause greater adverse environmental impacts than would be caused by leaving them in their existing locations.

(b) All liquid wastes other than sewage and domestic liquid wastes and wastes referred in paragraph (a) of this section shall be removed from Antarctica to the maximum extent practicable.

(c) Sewage and domestic liquid wastes may be discharged directly into the sea, taking into account the assimilative capacity of the receiving marine environment, and provided that such discharge occurs, wherever practicable, where conditions exist for initial dilution and rapid dispersal, and further provided that large quantities of such wastes (generated in a station where the average weekly occupancy over the austral summer is approximately 30 individuals or more) shall be treated at least by maceration. If biological treatment processes are used, the by-product of such treatment may be disposed of into the sea provided disposal does not adversely affect the local environment.

(d) Residues of introduced animal carcasses, laboratory culture of micro-organisms and plant pathogens, and introduced avian products must be removed from Antarctica unless incinerated, autoclaved or otherwise sterilized.

(e) Combustible wastes not removed from Antarctica other than wastes referred to in paragraph (a) of this section, shall be burnt in incinerators which reduce harmful emissions or discharges to the maximum extent practicable and the solid residue of such incineration shall be removed from Antarctica; provided, however, that USAP may continue to bury such combustible wastes in snow pits at South Pole Station, but must phase out such practices before March 1, 1995. Any emission or discharge standards and equipment guidelines which may be recommended by the Committee for Environmental Protection constituted or to be constituted pursuant to the Protocol or by the Scientific Committee on Antarctic Research shall be taken into account.

(f) Sewage and domestic liquid wastes and other liquid wastes not removed from Antarctica in accordance with other provisions of this section, shall, to the maximum extent practicable, not be disposed of onto sea ice, ice shelves or grounded ice-sheet unless such wastes were generated by stations located inland on ice shelves or on the grounded ice-sheet. In such event, the wastes may be disposed of in deep ice pits if that is the only practicable option, provided the ice pits are not located on known ice-flow lines which terminate at ice-free land areas or in blue ice areas of high ablation.

(g) No wastes may be disposed of onto ice-free areas or into any fresh water system.

(h) Open burning of wastes is prohibited at all permanent stations, and shall be phased out at all other locations by March 1, 1994. If it is necessary to dispose of waste by open burning prior to March 1, 1994, allowance shall be made for the wind direction and speed and the type of waste to be burnt to limit particulate deposition and to avoid such deposition over areas of special biological, scientific, historic, aesthetic or wilderness significance.

(i) Each unauthorized release of waste in Antarctic shall be, to the maximum extent practicable, promptly cleaned up by the person responsible for such release.

§ 671.13 Waste management for the USAP.

(a) In order to provide a basis for tracking USAP wastes, and to facilitate studies aimed at evaluating the environmental impacts of scientific activity and logistic support, the USAP shall classify its wastes in one of the following categories:

- (1) Sewage and domestic liquid wastes;
- (2) Other liquid wastes and chemicals, including fuels and lubricants;
- (3) Solid wastes to be combusted;
- (4) Other solid wastes; and
- (5) Radioactive material.

(b) USAP shall prepare and annually review and update a waste management plan (including plans for waste reduction, storage and disposal) specifying for each of its permanent stations, field camps and ships (other than small boats that are part of the operations of permanent stations or are otherwise taken into account in existing management plans for ships):

- (1) Current and planned waste management arrangements, including final disposal;

(2) Current and planned arrangement for assessing the environmental effects of waste and waste management;

(3) Other efforts to minimize environmental effects of wastes and waste management; and

(4) Programs for cleaning up existing waste disposal sites and abandoned work sites.

(c) USAP shall designate one or more waste management officials to develop and monitor waste management plans and ensure that members of expeditions receive training so as to limit the impact of their activities on the Antarctic environment, and to inform them of the requirements of the Protocol and of this Part.

(d) USAP shall, to the extent practicable, prepare an inventory of locations of past activities (i.e., traverses, fuel depots, field bases, crashed aircraft) so that such locations can be taken into account in planning future scientific, logistic and waste management programs.

(e) USAP shall clean up its past and present waste disposal sites on land and abandoned work sites, except that it shall not be required to:

(1) Remove any structure designated as a historic site or monument; or

(2) Remove any structure or waste in circumstances where the removal would result in greater adverse environmental impact than leaving the structure or waste in its existing location.

(f) USAP shall circulate waste management plans and inventories described in this section in accordance with the requirements of the Treaty and the Protocol.

Subpart E--Designation of Banned Substances; Reclassification of Pollutants

§ 671.14 Annual review.

The Director shall review the list of banned substances and designated pollutants at least annually, and may propose the designation or redesignation of any substance as a banned substance, designated pollutant or other waste, based on the following criteria:

(a) If the Director determines that a substance, including a designated pollutant, poses a substantial immediate hazard to health or the environment and such hazard cannot be eliminated through waste management practices or other methods, or if the Parties to the Protocol or Treaty agree that a substance should be banned from use in Antarctica, the Director may designate such substance a banned substance.

(b) If the Director determines that a substance is liable to create a hazard to health or the environment if improperly treated or processed, stored, transported, or disposed of, the Director may designate such substance a designated pollutant.

(c) If the Director determines that a substance previously designated a banned substance no longer displays the characteristics described in paragraph (a) of this section, the Director may remove such substance from the list of banned substances (to the extent consistent with the provisions of the Protocol), but if the Director determines that such substance has the characteristics described in paragraph (b) of this section, it shall be redesignated a designated pollutant.

(d) If the Director determines that a substance previously designated a designated pollutant no longer displays the characteristics described in paragraph (b) of this section, the Director may remove such substance from the list of designated pollutants.

(e) In making the determinations referred to in paragraphs (a) through (d) of this section, the Director shall take into account all relevant new information obtained through monitoring activities or otherwise.

§ 671.15 Publication of preliminary determination

Prior to any designation or redesignation of substances pursuant to § 671.14 (including removal of such substances from lists of banned substances or designated pollutants), the Director shall publish notice in the Federal Register of any proposed designation or redesignation, including the basis therefore. The notice shall invite the submission by interested parties, the Environmental Protection Agency and other federal agencies, within 30 days after the date of publication of notice, of written data, comments, or views with respect to such action.

§ 671.16 Designation and redesignation of pollutants

After review of any comments or suggestions received from interested parties, the Environmental Protection Agency and other Federal agencies pursuant to § 671.15, the Director will make a final determination to designate and redesignate various substances as set forth above. Within 10 days after the date of such final determination, the Director shall publish notice of any action taken in the **Federal Register**. Such action shall become effective no earlier than thirty days following publication of notice.

Subpart F--Cases of Emergency

§ 671.17 Cases of emergency.

The provisions of this part shall not apply in cases of emergency relating to the safety of human life or of ships, aircraft or other equipment and facilities of high value, or the protection of the environment. Notice of any acts or omissions resulting from such emergency situations shall be reported promptly to the Director, who shall notify the Treaty parties in accordance with the requirements of the Treaty and the Protocol, and publish notice of such acts or omissions in the **Federal Register**.

PART 672-ENFORCEMENT AND HEARING PROCEDURES

Because of its length and complicated nature, Part 672 has been excluded from this book. The rules set forth in Part 672 govern all adjudicatory proceedings for the assessment of civil penalties or imposition pursuant to the Antarctic Conservation Act of 1978 and other adjudicatory proceedings that the Foundation, in its discretion, determines are appropriate for handling under these rules.

PART 673-ANTARCTIC NON-GOVERNMENTAL EXPEDITIONS

§ 673.1 Purpose of regulations.

The purpose of the regulations in this Part is to implement the Antarctic Conservation Act of 1978, Public Law 95-541, as amended by the Antarctic Science, Tourism and Conservation Act of 1996, Public Law 104-227, and Article 15 of the Protocol on Environmental Protection to the Antarctic Treaty done at Madrid on October 4, 1991. Specifically, this part requires that all non-governmental expeditions, for which advance notice by the United States is required under the Antarctic Treaty, who use non-flagged vessels ensure that the vessel owner or operator has an appropriate emergency response plan. This Part is also designed to ensure that expedition members are informed of their environmental protection obligations under the Antarctic Conservation Act. (Approved by the Office of Management and Budget under control number 3145-0179).

§ 673.2 Scope.

The requirements in this Part apply to non-governmental expeditions to or within Antarctica for which the United States is required to give advance notice under Paragraph (5) of Article VII of the Antarctic Treaty.

§ 673.3 Definitions.

In this part:

Antarctica means the area south of 60 degrees south latitude

Expedition means an activity undertaken by one or more nongovernmental persons organized within or proceeding from the United States to or within Antarctica for which advance notification is required under Paragraph 5 of Article VII of the Antarctic Treaty.

Person has the meaning given that term in section 1 of title 1, United States Code, and includes any person subject to the jurisdiction of the United States except that the term does not include any department, agency, or other instrumentality of the Federal Government.

§ 673.4 Environmental protection information.

(a) Any person who organizes a non-governmental expedition to Antarctica and who does business in the United States shall notify expedition members of the environmental protection obligations of the Antarctic Conservation Act.

(b) The National Science Foundation's Office of Polar Programs may prepare for publication and distribution explanation of the prohibited acts set forth in the Antarctic Conservation Act, as well as other appropriate educational material for tour operators,

their clients, and employees. Such material provided to tour operators for distribution to their passengers and crew shall be disseminated prior to or during travel to the Antarctic.

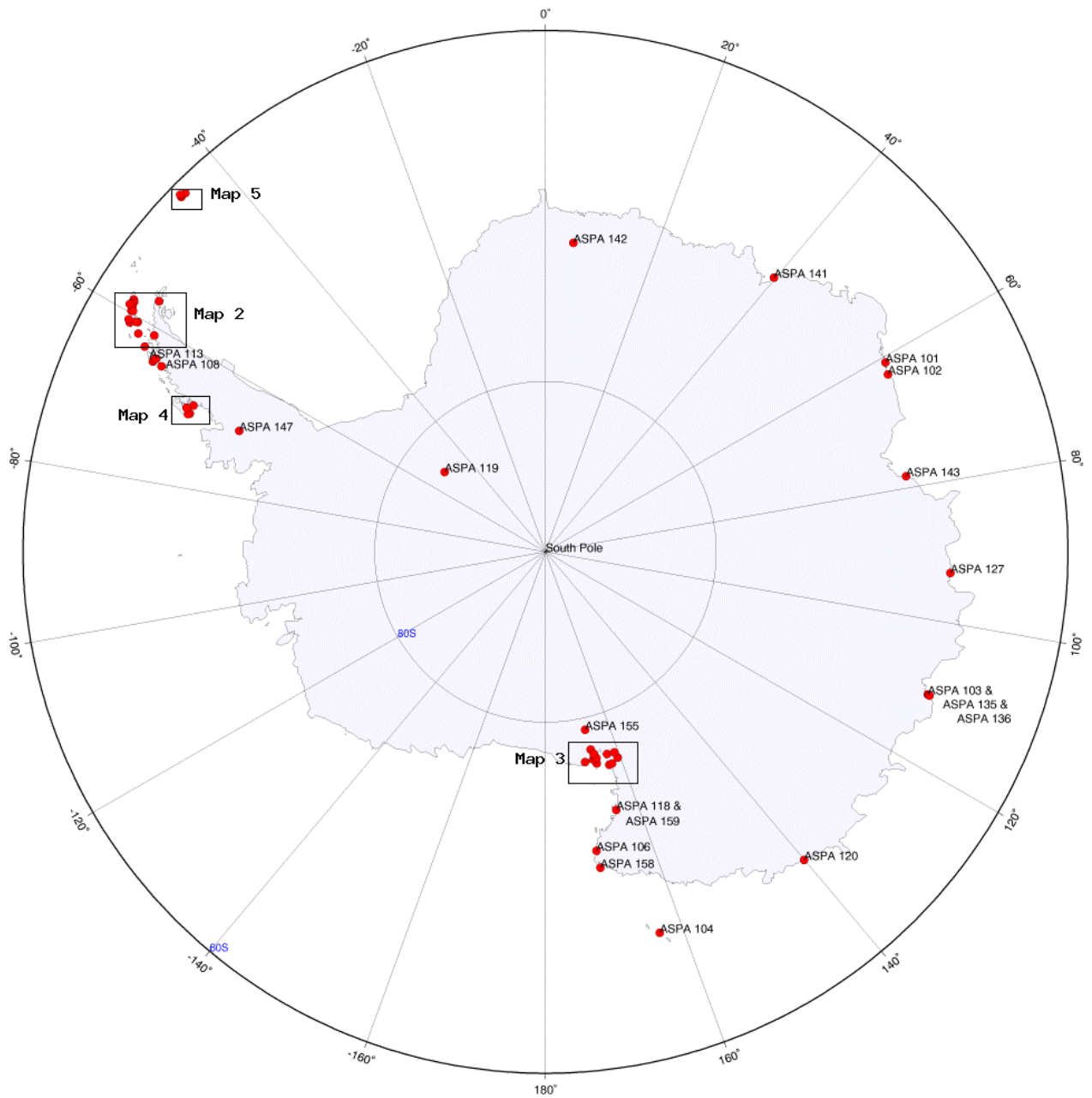
§ 673.5 Emergency response plan.

Any person organizing a non-governmental expedition to or within Antarctica who is transporting passengers aboard a non-U.S. flagged vessel shall ensure that:

- (a) the vessel owner's or operator's shipboard oil pollution emergency plan, prepared and maintained according to Regulation 26 of Annex I of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78), has provisions for prompt and effective response action to such emergencies as might arise in the performance of the vessel's activities in Antarctica. Any emergency response plan which satisfies the requirements contained in 33 CFR Section 151.26 of the U.S. Coast Guard regulations will also satisfy the requirements of this paragraph. If the vessel owner or operator does not have a shipboard oil pollution emergency plan, a separate plan for prompt and effective response action is required.
- (b) the vessel owner or operator agrees to take all reasonable measures to implement the plan for a prompt and effective response action in the event of an emergency, taking into account considerations of risk to human life and safety.

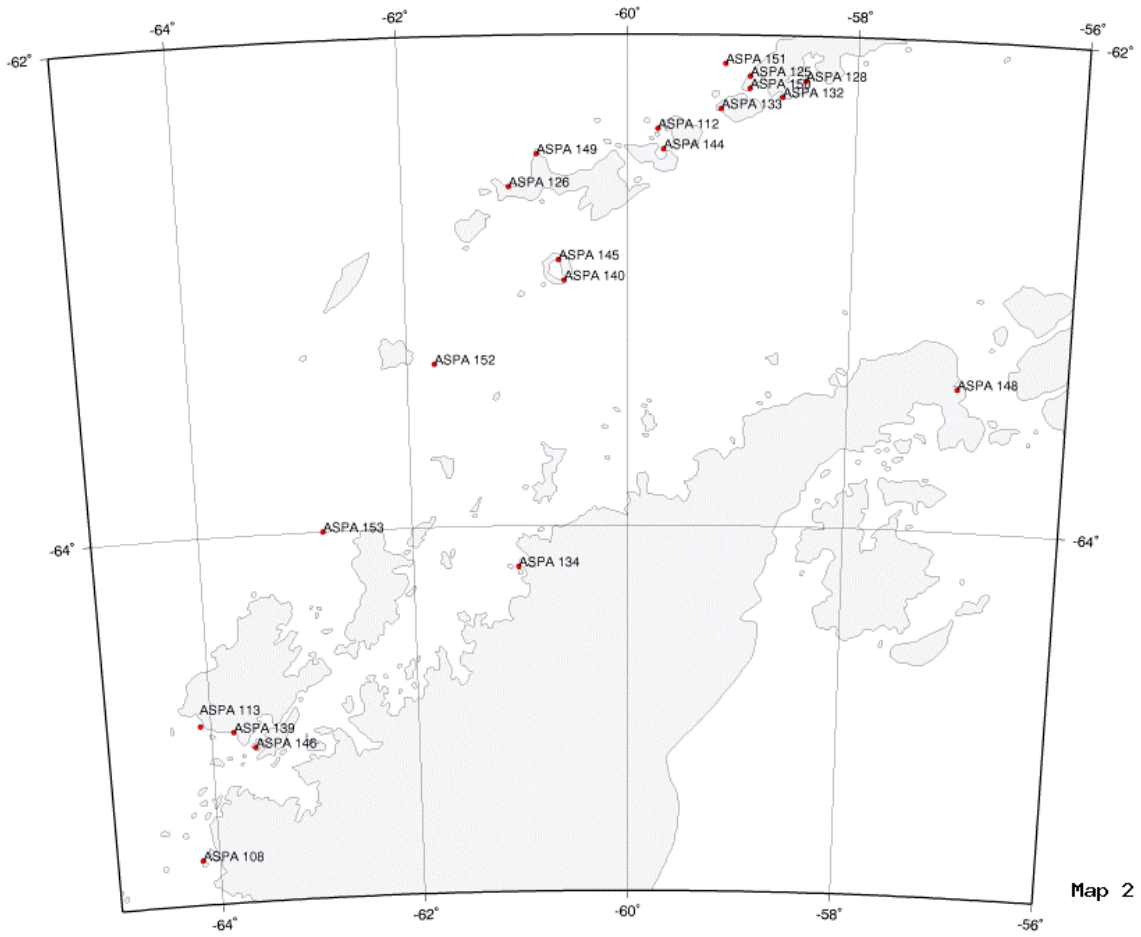
SECTION TWO: Antarctic Specially Protected Areas

With the Antarctic Science, Tourism, and Conservation Act of 1996, the new system for designating Antarctic protected areas, set out in Annex V of the Protocol on Environmental Protection, was implemented into U.S. law. As Annex V had not gone into effect as of July 2001, and as the old classification system (Specially Protected Areas and Sites of Special Scientific Interest) is still familiar to many in the United States Antarctic Program, the Antarctic Specially Protected Areas are listed in this section followed by their old designation in parenthesis. Please note that the management plans are reproduced here exactly as they were adopted under the Treaty System, and vary in format and content relating to the year in which they were adopted.



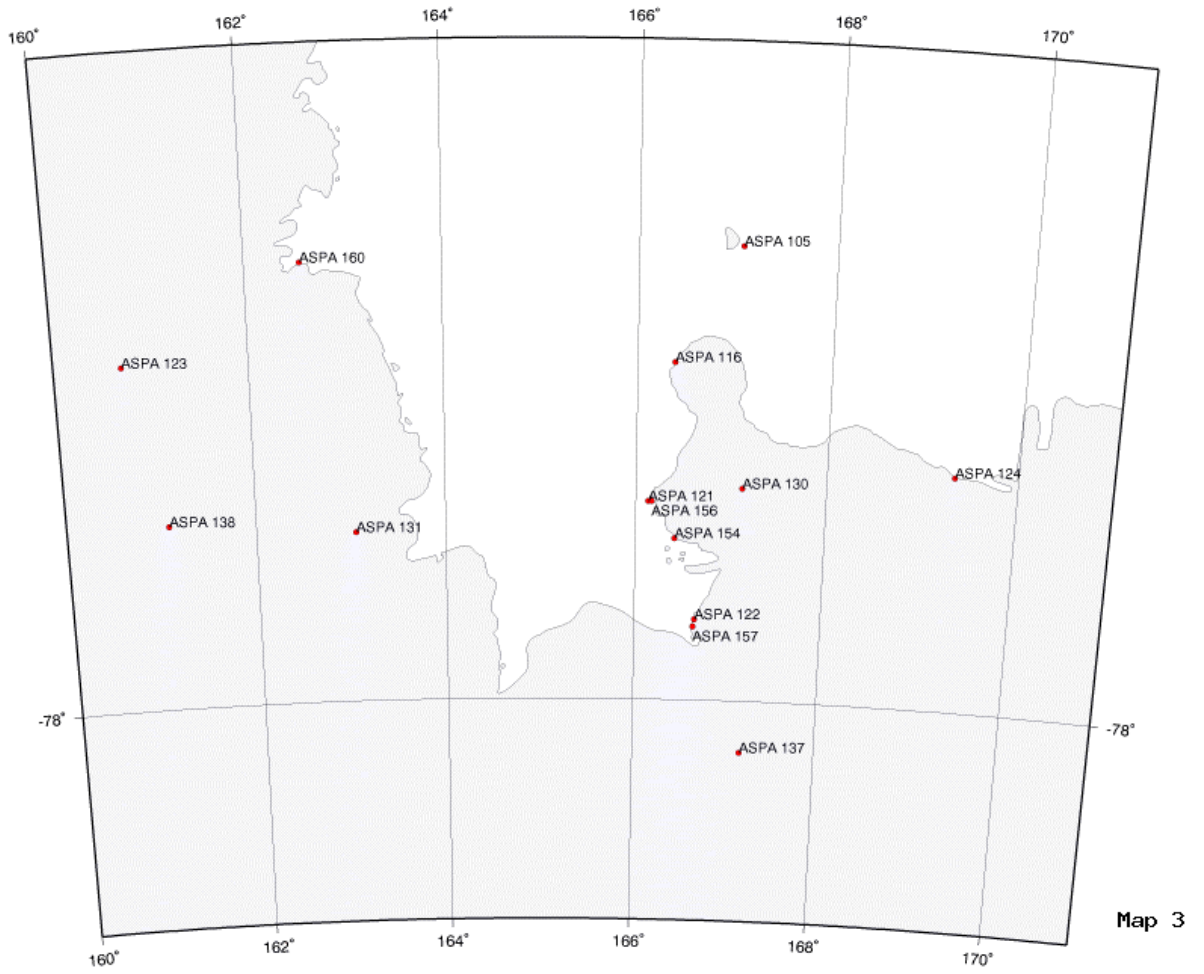
LEGEND

- ASPAs 101 (SPA-1), Taylor Rookery, MacRobertson Land.
ASPAs 102 (SPA-2), Rookery Islands, Holme Bay.
ASPAs 103 (SPA-3), Ardrey Island and Odber Island, Budd Coast.
ASPAs 104 (SPA-4), Sabrina Island, Balleny Islands.
ASPAs 105 (SPA-5), Beaufort Island, Ross Sea.
ASPAs 106 (SPA-7), Cape Hallett, Victoria Land.
ASPAs 107 (SPA-8), Dion Islands, Marguerite Bay, Antarctic Peninsula.
ASPAs 108 (SPA-9), Green Island, Berthelot Islands, Antarctic Peninsula.
ASPAs 109 (SPA-13), Moe Island, South Orkney Islands.
ASPAs 110 (SPA-14), Lynch Island, South Orkney Islands.
ASPAs 111 (SPA-15), Southern Powell Island and adjacent islands, South Orkney Islands.
ASPAs 112 (SPA-16), Coppermine Peninsula, Robert Island.
ASPAs 113 (SPA-17), Litchfield Island, Arthur Harbor, Palmer Archipelago.
ASPAs 114 (SPA-18), North Coronation Island, South Orkney Islands.
ASPAs 115 (SPA-19), Lagotellerie Island, Marguerite Bay.
ASPAs 116 (SPA-20, SSSI-10), 'New College Valley', Caughley Beach, Cape Bird, Ross Island.
ASPAs 117 (SPA-21), Avian Island, Northwest Marguerite Bay.
ASPAs 118 (SPA-22), Cryptogam Ridge, Mount Melbourne, Victoria Land.
ASPAs 119 (SPA-23), Forlidas Pond and Davis Valley Ponds.
ASPAs 120 (SPA 24), Pointe-Geologie Archipelago.
ASPAs 121 (SSSI-1), Cape Royds, Ross Island.
ASPAs 122 (SSSI-2), Arrival Heights, Hut Point Peninsula, Ross Island.
ASPAs 123 (SSSI-3), Barwick Valley, Victoria Land.
ASPAs 124 (SSSI-4), Cape Crozier, Ross Island.
ASPAs 125 (SSSI-5), Fildes Peninsula, King George Island, South Shetland Islands.
ASPAs 126 (SSSI-6), Byers Peninsula, Livingston Island, South Shetland Islands.
ASPAs 127 (SSSI-7), Haswell Island.
ASPAs 128 (SSSI-8), Western Shore of Admiralty Bay, King George Island.
ASPAs 129 (SSSI-9), Rothera Point, Adelaide Island.
ASPAs 130 (SSSI-11), Tramway Ridge, Mt. Erebus, Ross Island.
ASPAs 131 (SSSI-12), Canada Glacier, Lake Fryxell, Taylor Valley, Victoria Land.
ASPAs 132 (SSSI-13), Potter Peninsula, King George Island, South Shetland Islands.
ASPAs 133 (SSSI-14), Harmony Point.
ASPAs 134 (SSSI-15), Cierva Point and nearby islands.
ASPAs 135 (SSSI-16), Bailey Peninsula, Budd Coast, Wilkes Land.
ASPAs 136 (SSSI-17), Clark Peninsula, Budd Coast, Wilkes Land.
ASPAs 137 (SSSI-18), Northwest White Island, McMurdo Sound.
ASPAs 138 (SSSI-19), Linnaeus Terrace, Asgard Range, Victoria Land.
ASPAs 139 (SSSI-20), Biscoe Point, Anvers Island.
ASPAs 140 (SSSI-21), Shores of Port Foster, Deception Island, South Shetland Islands.
ASPAs 141 (SSSI-22), Yukidori Valley, Langhovde, Lutzow-Holm Bay.
ASPAs 142 (SSSI-23), Svarthamaren Mountain, Muhlig-Hofmann Mountains, Queen Maud Land.
ASPAs 143 (SSSI-25), Marine Plain, Mule Peninsula, Vestfold Hills, Princess Elizabeth Land.
ASPAs 144 (SSSI-26), Chile Bay (Discovery Bay).
ASPAs 145 (SSSI-27), Port Foster, Deception Island, South Shetland Islands.
ASPAs 146 (SSSI-28), South Bay, Doumer Island, Palmer Archipelago.
ASPAs 147 (SSSI-29), Ablation Point-Ganymede Heights, Alexander Island.
ASPAs 148 (SSSI-31), Mount Flora, Hope Bay, Antarctic Peninsula.
ASPAs 149 (SSSI-32), Cape Shireff, Livingston Island, South Shetland Islands.
ASPAs 150 (SSSI-33), Ardley Island, Maxwell Bay, King George Island, South Shetland Islands.
ASPAs 151 (SSSI-34), Lions Rump, King George Island, South Shetland Islands.
ASPAs 152 (SSSI-35), Western Bransfield Strait, off Low Island, South Shetland Islands.
ASPAs 153 (SSSI-36), East Dallman Bay, off Brabant Island.
ASPAs 154 (SPA-25), HSM-16, HSM-17), Cape Evans Historic Site.
ASPAs 155 (SPA-26), Lewis Bay Tomb.
ASPAs 156 (SPA-27, HSM-15), Hut and associated artifacts, Backdoor Bay, Cape Royds, Ross Island.
ASPAs 157 (SPA-28, HSM-18), Discovery Hut. Hut Point, Ross Island.
ASPAs 158 (SPA-29, HSM-22), Huts and associated artifacts, Cape Adare.
ASPAs 159 (SSSI-24), Summit of Mt. Melbourne, North Victoria Land.
ASPAs 160 (SSSI-37), Botany Bay, Cape Geology, Victoria Land.



Map 2

Antarctic Peninsula



McMurdo Sound region



Antarctic Peninsula Region



Antarctic Peninsula Region

**Antarctic Specially Protected Area No. 101 (Specially Protected Area No. 1)
Taylor Rookery, Mac.Robertson Land; Lat 67°26'S, long 60°50'E**

1. *Description of values to be protected.* The area was originally designated a Specially Protected Area because it contains a colony of emperor penguins (*Aptenodytes forsteri*) which is one of the few, and probably the largest, of the known colonies of this species located wholly on land. Almost all other emperor penguin rookeries are located on sea ice. The rookery is also important because of long-term monitoring of the population of the penguins (since 1954). The colony is ideal for counting since it is surrounded by small rocky hills which make it possible to observe every bird without entering the breeding area. A photographic census programme has been carried out annually since 1988, and it is believed that this method has resulted in almost complete accuracy of counting.

2. *Aims and objectives.* Management of the Area aims to:

- prevent unnecessary disturbance to the emperor penguin colony at Taylor Rookery; and
- permit research of a compelling scientific nature which cannot be undertaken elsewhere, while ensuring no significant disturbance to the ecosystem of the area including the penguin colony.

3. *Management activities.* The management plan and activities in the area should be kept under review to ensure that the values for which the area was designated are being fully protected. Inspection visits may be made only when considered essential for management purposes.

4. *Period of designation.* Designated under ATCM Recommendation IV-1 in November 1966, for an indefinite period.

5. *Description of the area;*

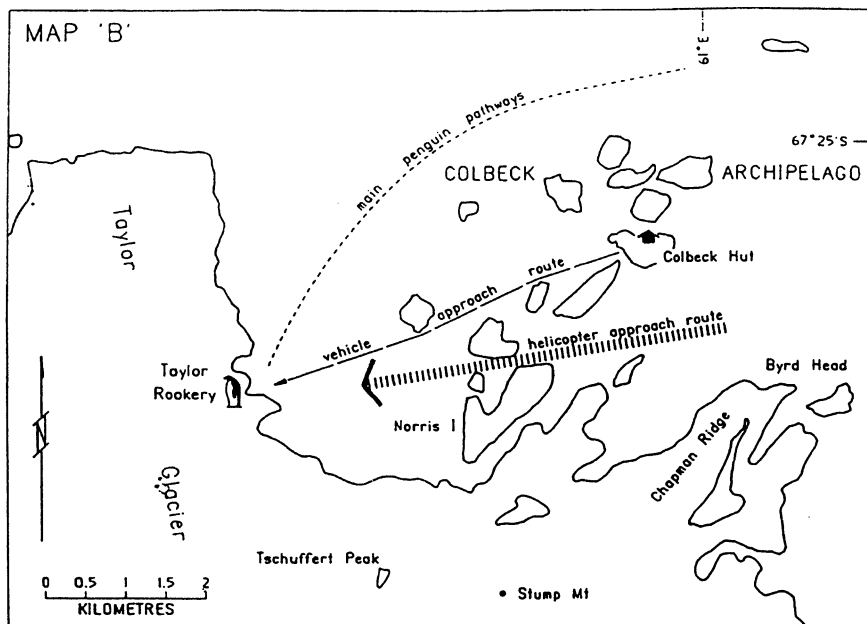
a. *Geographic coordinates and natural features of the Area:*

The Area consists of the whole of the northernmost rock exposure on the east side of Taylor Glacier, Mac Robertson Land (67°26'S; 60°50'E). The rookery is located on a low lying rock outcrop in the south west corner of a bay formed by Taylor Glacier to the west, the polar ice cap to the south and the islands surrounded by sea ice to the north and east. The Area is some 90 kilometres west of Mawson station. There is ice free terrain adjacent to the glacier on the western boundary and to the south the rock rises steeply to meet the ice of the plateau. The rock itself forms a horseshoe around a central flat area of exposed rock and moraine. This Area is covered with snow in winter and is occupied by the emperor penguins. The compressed snow melts in summer to form a shallow lake and stream which exists to the north east. The sides of the horseshoe are rounded ridges of rock which are bare and smoothed by ice.

Otherwise the terrain is rough and dissected with cracks and fissures. The average height of the ridges is about 30 metres. The Area also has a raised beach which is typical of several found along the coast of Mac Robertson Land. The beach is composed of locally derived pebbles, cobbles and boulders between 1 cm and 1 m across. It slopes upwards from the shoreline to a well defined platform several metres broad and 3 to 6 m above sea level.

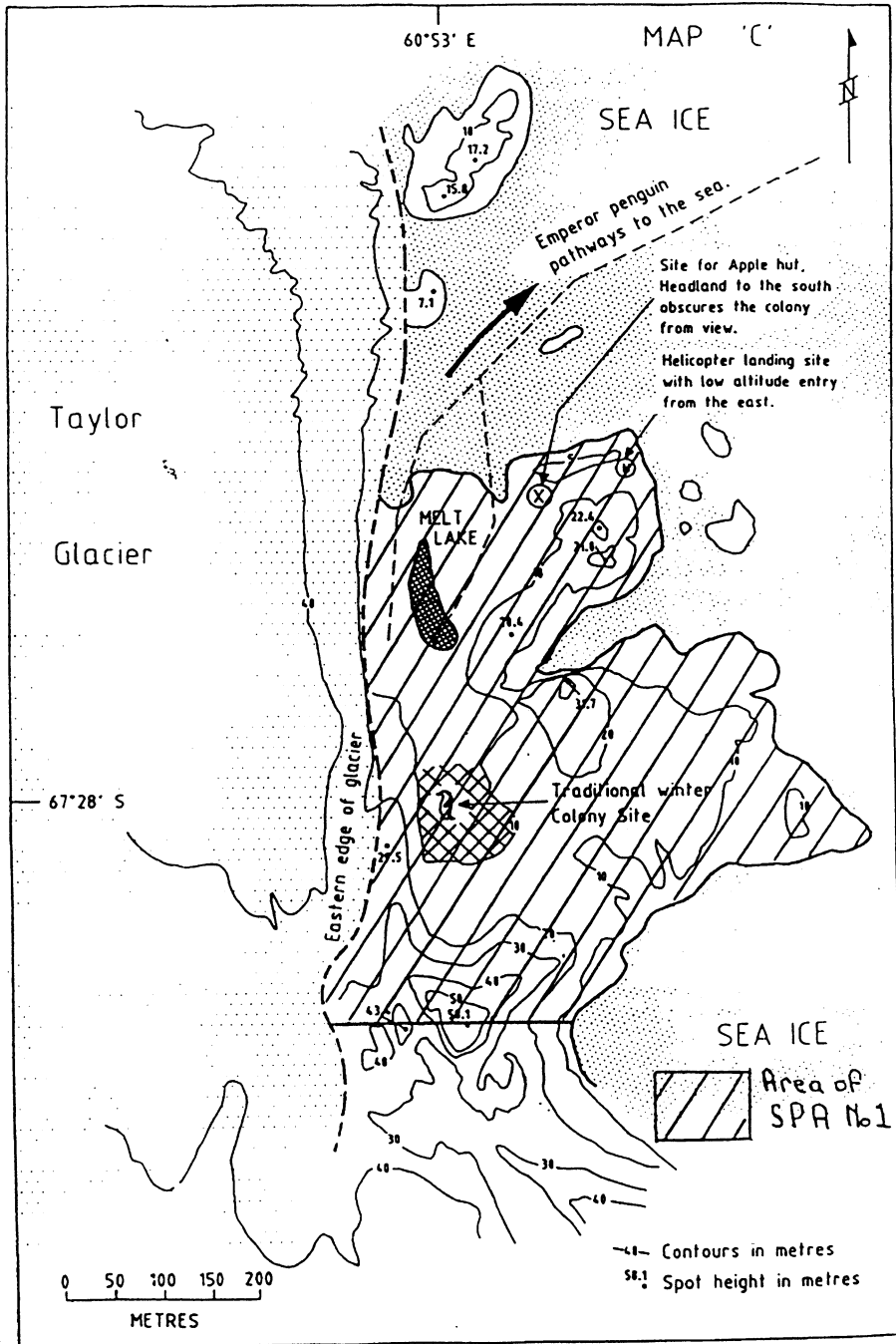
There are no boundary markers since the Area is easily defined by its natural features.

- b. *Access to the Area.* Access to the Area is only in accordance with a permit or authority issued by a Contracting Party or its authorised representative. Restrictions apply to the mode of transport to and within the Area, and access points are prescribed; see Section 8 (a).
- c. *Location of structures including scientific stations, research and refuge facilities both within and near the Area.* There are no structures within the Area and no permanent structures are permitted. A four-berth refuge is located in the Colbeck Archipelago, approximately 5 kilometres to the north-east of the Area (see Map B): Mawson Station (67°36'S, 62°53'E) is approximately 90 kilometres to the east.
- d. *Location of other protected areas in or near the Area.* The Rookery Islands (Specially Protected Area No. 2) are located some 80 kilometres to the east of Taylor Rookery (see Map A).
6. *Identification of restricted zones.* Access to the emperor penguin colony, marked on Map C, is prohibited unless authorised in a permit.
7. *Maps of the area.* Map A shows the location of the field hut on the Colbeck Archipelago, and access routes to the Area; Map B shows the Area in greater detail, including the usual location of the penguin colony, and the area where all activity such as landing helicopters and installing field huts or field camps should take place, where permitted.



ASP A 101
Map A*

*Not for navigational purposes. See management plan.



ASPA 101
Map B*

8. *Conditions under which permits may be issued.* Criteria for issuing a permit to enter the Area are that:

- it is issued for a compelling scientific purpose which can not be undertaken elsewhere;
- the actions permitted will not jeopardise the natural ecological system existing in the Area; and

— the actions permitted are in accordance with the management plan for the Area.

Conditions applying:

a. Access to and movement within the Area:

- i. Whenever possible, access should be from sea ice to the east of Colbeck Archipelago, to avoid disturbance to the birds by crossing their pathways from the rookery to the sea (see Map B). Persons in the vicinity, not approaching the colony, should also be aware of the penguins pathways, and take care to cause as little disturbance to them as possible.
- ii. Travel to the Area may be by oversnow vehicle, which is generally only possible during the period 1 May to 25 December, or by helicopter. Vehicle entry to the Area is prohibited. Oversnow vehicles used for transport to the Area are to be left outside the Area, to the east, and entry must be by foot. The approach route for vehicles is marked on Map B.
- iii. Helicopters are not permitted to land in the Area unless sea ice conditions outside the Area are such that it would be hazardous for aircraft to land on ice or for personnel to walk on it. If sea ice conditions are not suitable, helicopters are authorised to land in the Area, to the north-east at the point marked “H”, where a headland to the south obscures the colony from view (see Map C). Map B shows the helicopter access route.
- iv. The following conditions apply to the use of helicopters:
 - helicopters are to approach the Area from the east over the sea ice and, where sea ice conditions permit, land outside the Area, with access being by foot (see Map B);
 - overflight of the rookery is prohibited;
 - when landing outside the Area, helicopters should not land, take off or fly within 500 metres of the rookery;
 - if landing inside the Area is essential due to sea ice conditions helicopters should land in the north-east of the Area at the point marked “H”, where a headland to the south obscures the colony from view (see Map C);
 - helicopters approaching to land in the Area must fly as low as possible over the sea ice to avoid disturbing the colony; and
 - helicopters are not to be refuelled within the Area.
- v. There are no marked pedestrian routes within the Area; pedestrians should keep well away from the penguins unless disturbance to the penguins is authorised by permit. Movement in and around the Area should be such that, in general, the routes used by the birds are not crossed.
- vi. Dogs are not to be used for transport to the Area.

b. Activities which are, or may be, conducted within the Area, including restrictions on time and place:

- i. The penguins are particularly sensitive to disturbance during the following periods:
 - when they are incubating eggs, from mid-May to mid-July; and
 - from mid-July, when feeding chicks to mid-December, when the chicks fledge. However penguins are known to be present at the rookery

- during every month except February, when no recorded expeditions to the rookery have been made; restrictions therefore apply year-round.
- ii. The emperor penguin colony is ideal for counting. Normally the best vantage point for viewing and photographing the penguins is a rocky headland which runs adjacent to Taylor Glacier, on the western side of the rookery. The ideal time for a census is from 22 June to 5 July, since during this time only incubating males are present, each representing one breeding pair. An ongoing photographic census programme has been carried out since 1988.
 - iii. Other activities which may be conducted in the Area:
 - compelling scientific research which can not be undertaken elsewhere and which will not jeopardise the ecosystem of the Area; and
 - compelling management activities, which if not carried out would jeopardise the values for which the Area was designated.
- c. *The installation, modification, and removal of structures:*
No structures are to be installed in the Area unless essential for scientific purposes; any structure installed should be removed when it is no longer required. Only the minimum number of personnel necessary to install and to remove the structure should be used. Temporary field huts if permitted, should be placed well away from the penguin colony at the point marked 'X', to the north-east of the Area, where a headland to the south obscures the colony from view (see Map C).
- d. *The location of field camps:*
See (c) above.
- e. *Restriction on materials and organisms which may be brought into the Area:*
 - i. No poultry products, including dried food containing egg powder, are to be taken into the Area.
 - ii. No depots of food or other supplies are to be left within the Area beyond the season for which they are required.
 - iii. Fuel is not to be deposited in the Area, unless required by a visitor for personal use, (i.e.) for cooking/heating in a field hut, and is to be removed when no longer required.
- f. *The taking of, or harmful interference with, native flora and fauna:*
Taking of, or harmful interference with, native flora and fauna is prohibited unless specifically authorised by permit issued in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora, or Article 3 of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty, whichever is appropriate.
- g. *The collection or removal of anything not brought into the Area by the permit holder:*
There is to be no collection or removal of anything not brought into the Area by permit holder unless specifically authorised by permit for scientific or management purposes.
- h. *The disposal of waste:*
No wastes, including human wastes, are to be left in the Area.

i. Measures that may be necessary to ensure that the aims and objectives of the management plan can continue to be met:

- permits should specify the maximum number of people allowed entry at any one time.
- visits to the Area should be kept to the minimum necessary to achieve the research and management objectives.
- access should be permitted where necessary to place or remove structures or equipments.

j. Requirements for reports

Each permit holder shall submit a report to the permit issuing authorities detailing the activities undertaken within the Area including a summary of research findings, and comments indicating measures taken to ensure compliance with conditions.

Where appropriate, the report may make recommendations relevant to the management of the Area, in particular, as to whether the values for which the Area was designated are being adequately protected. The report should be submitted as soon as practicable after the visit to the Area has been completed.

**Antarctic Specially Protected Area No. 102 (Specially Protected Area No. 2)
Rookery Islands, Holme Bay; Lat 67°37'S, long 62°33'E**

1. *Description of values to be protected.* The Rookery Islands contain breeding colonies of six bird species resident in the Mawson area; Adélie penguin (*Pygoscelis adeliae*), Cape petrel (*Daption capense*), snow petrel (*Pagodroma nivea*), southern giant petrel (*Macronectes giganteus*), Wilson's storm petrel (*Oceanites oceanicus*) and the Antarctic skua (*Catharacta maccormicki*). The southern giant petrel breeds nowhere else in the region. The designation of the Area aims to safeguard this unusual association of six species and ensure the preservation of a sample offshore island habitat.

2. *Aims and objectives.* Management of the Area aims to:

- maintain a reference area unmodified by human interference;
- permit research of a compelling scientific nature which can not be undertaken elsewhere, while ensuring no significant disturbance to the ecosystem of the Area and maintaining the status of the SPA as a reference area; and
- ensure that the breeding colony of southern giant petrels, which is close to the point of local extinction, is not endangered by human impacts.

3. *Management activities.* The management plan and activities in the Area should be kept under review to ensure that the values for which the Area was designated are being fully protected. Inspection visits may be made only when considered essential for management purposes.

4. *Period of designation.* Designated under ATCM Recommendation IV-1 in November 1966 for an indefinite period.

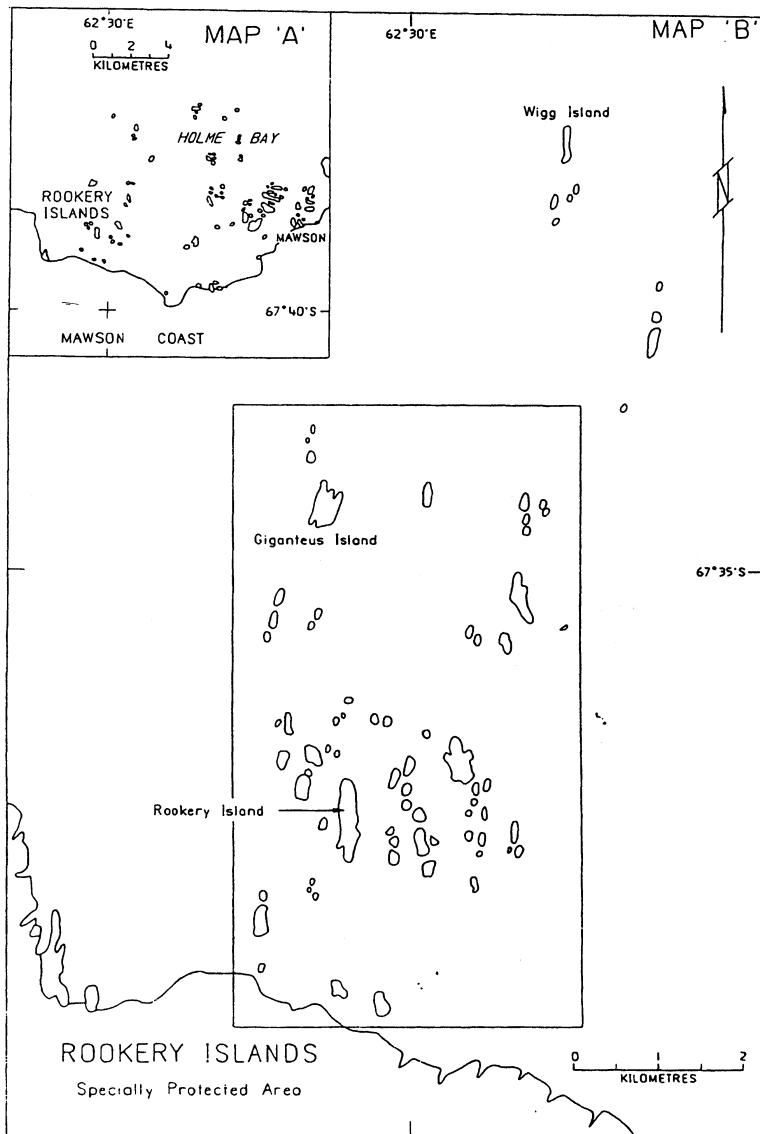
5. *Description of the area*

a. *Geographical coordinates and natural features of the area.* Rookery Islands are a group of small, islands and rocks in the south-western part of Holme Bay, Mac Robertson Land, approximately 10 kilometres to the west of the Australian station, Mawson. The Area comprises the islands and rocks lying within the rectangle marked on the Map B (see Section 7), the general location of which is latitude 67°37'S, longitude 62°33'E. There are no boundary markers delimiting the site. There are approximately 75 small islands. They range in size from small rocks which barely remain above water at high tide to the largest members of the group which are Giganteus Island (approximately 400 m long, 400 m wide and 30 m high) and Rookery Island which is of similar area but slightly more elongated. Rookery Island is the highest of the group reaching an altitude of 62 m. Raised beaches are evident on Giganteus Island. The Rookery Islands are outcrops of the Mawson Charnockite, a rock type which is found over an area of at least 2000 square kilometres along the Mawson Coast of Mac Robertson Land.

There are terrestrial algae, as yet unidentified, but no known mosses or lichens. There are no freshwater bodies on the Rookery Islands.

b. *Access to the Area.* Access to the Area is only in accordance with a current permit issued by a Contracting Party or its authorised representative. No access points are prescribed. Restrictions apply to the mode of transport and to the proximity of access points to breeding colonies; for this refer to Section (8).

- c. *Location of structures including scientific stations, research and refuge facilities both within and near the Area.* There are no structures within the Area. Mawson Station (67°36'S, 62°53'E) is approximately 10 kilometres to the east.
- d. *Location of other protected areas in or near the Area.* Taylor Rookery (Specially Protected Area No. 1) is approximately 80 kilometres west of the islands at latitude 67°26'S, longitude 60°50'E.
6. *Identification of restricted zones.* Access to Giganteus Island is prohibited except where a permit specifies otherwise. See 8 (a) (vi) below.
7. *Maps of the area.* Map A shows the location of the Rookery Islands in the Mawson area, and Map B is a more detailed Map of the Area.



ASPA 102
Maps A&B

8. *Conditions under which permits may be granted.* Criteria for issuing a permit to enter the Area are that:

- it is issued for a compelling scientific purpose which cannot be undertaken elsewhere;
- the actions permitted will not jeopardise the natural ecological system existing in the Area; and
- the actions permitted are in accordance with the management plan for the Area.

Conditions applying:

a. Access to and movement within the Area:

- i. Travel may be by oversnow vehicles (depending on sea ice conditions). Visitors must ensure that vehicles are taken no closer than 200 metres from concentrations of birds and that they are always left at the shoreline.
- ii. As helicopter access may at times be the only viable means of reaching the islands, and as the islands are small in size, aircraft may land within 500 metres of breeding colonies. Permission to land a helicopter may be granted for essential scientific purposes only if it can be demonstrated that disturbance will be minimal.
- iii. No refuelling within the Area.
- iv. Overflight of the islands is prohibited except where essential for scientific purposes. Such overflight is to be at an altitude of no less than 500 metres.
- v. Dogs are not to be used for transport within the Area.
- vi. Access to Giganteus Island is prohibited except for the purpose of monitoring the southern giant petrels (*Macronectes giganteus*) or for activities which may be conducted without threat to their population status. As the breeding colony is close to the point of local extinction and the birds are easily disturbed, the number of persons granted entry for this purpose must be strictly limited and include an experienced ornithologist.

b. Activities which are, or may be conducted within the Area, including restrictions on time and place:

- i. Compelling scientific activities which cannot be conducted elsewhere.
- ii. Compelling management activities, which if not carried out would jeopardise the values for which the Area was designated.

c. The installation, modification, or removal of structures. No structures including field huts, are to be installed in the Area unless essential for scientific purposes; any structure installed should be removed when no longer required. Only the minimum number of personnel necessary to install and remove the structure should be used.

d. The location of field camps. See (c) above.

e. Restrictions on material and organisms which may be brought into the Area:

- i. Fuel is not to be depoted in the Area, unless required by a researcher for personal use, i.e. for cooking/heating in a field hut, and is to be removed when no longer required.
- ii. No poultry products, including dried food containing egg powder, are to be taken into the Area.
- iii. No food or other supplies should be left within the Area beyond the season for which they are required.

f. The taking of, or harmful interference with, native flora and fauna. Taking of, or harmful interference with, native flora and fauna is prohibited unless specifically authorised by permit in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora, or Article 3 of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty, whichever is appropriate.

g. The collection or removal of anything not brought into the Area by the permit holder. There is to be no collection or removal of anything not brought into the Area by the permit holder unless specifically authorised by permit for scientific or management purposes.

h. The disposal of waste. No wastes, including human wastes, are to be left in the Area.

i. Measures that may be necessary to ensure that the aims and objectives of the management plan can continue to be met:

- permits should specify the maximum numbers of personnel who may enter the Area;
- visits to the Area should be kept to the minimum necessary to achieve research and management objectives;
- access should be permitted where necessary to place or remove structures or equipments.

j. Requirements for reports. Each permit holder shall submit a report to the permit-issuing authority detailing the activities undertaken within the Area including a summary of research findings, and comments indicating measures taken to ensure compliance with conditions. Where appropriate, the report may make recommendations relevant to the management of the Area, in particular, as to whether the values for which the Area was designated are being adequately protected. The report should be submitted as soon as practicable after the visit to the Area has been completed.

**Antarctic Specially Protected Area No. 103 (Specially Protected Area No. 3)
Ardery Island and Odbert Island, Budd Coast; Lat 66°22'S, long
110°28'E and Lat 66°22'S, long 110°33'E**

1. *Description of values to be protected.* Ardery and Odbert islands support several breeding species of petrel and provide a sample of their habitat. There is no other readily accessible place in eastern Antarctica where the four genera of fulmarine petrels (*Thalassoica antarctica*, *Fulmarus glacialisoides*, *Daption capense* and *Pagodroma nivea*) breed in the same place in sufficient numbers to allow comparative study. Study of these four genera at one location is of high ecological importance both from the point of view of understanding and of monitoring the Southern Ocean ecosystem. It is believed that Ardery Island is unique insofar as it is the only area in the Antarctic which harbours two different subspecies of snow petrels. Studies on morphological or ecological differences between these two subspecies are not possible anywhere else. In addition both islands have breeding populations of Wilson's storm petrels (*Oceanites oceanicus*) and Antarctic skuas (*Catharacta maccormicki*) and Odbert Island supports breeding populations of Adélie penguins (*Pygoscelis adeliae*).

2. *Aims and objectives.* Management of the Area aims to:

- prevent unnecessary disturbance to the colonies of petrels on Ardery and Odbert islands; and
- permit research of a compelling scientific nature which cannot be undertaken elsewhere, while ensuring that this has no significant impact on the ecosystem in the area.

3. *Management activities.* The management plan and activities in the Area should be kept under review to ensure that the values for which the Area was designated are being fully protected. Inspection visits may be made only when considered essential for management purposes.

4. *Period of designation.* Designated under Recommendation IV-3 in November 1966 for an indefinite period.

5. *Description of the area.*

- a. *Geographical coordinates and natural features of the Area.* Ardery Island (66°22'S, 110°28'E) and Odbert Island (66°22'S, 110°33'E) form part of the Windmill Islands group lying in the east of Vincennes Bay, off the Budd Coast (see Map A). They are located 5 km and 0.6 km respectively to the west of Robinson Ridge, south of Casey Station. Odbert Island is approximately 2.5 km long and 0.5 km wide. It has a rocky coast which rises steeply from the sea to a plateau. The highest point is 100 m above sea level. The plateau is dissected by a series of valleys which runs to the south from the high flat rim on the northern side. These valleys are snow-covered in winter. The hill tops remain essentially ice and snow free. In some years the island remains joined to Robinson Ridge on the mainland by sea ice. Ardery Island is a steep ice-free island approximately 1 km long and 0.5 km wide, with an east-west orientation. The highest point is 113 m above mean sea level.

The terrain on both islands is rugged and dissected by fissures. The cliffs are fractured and have many narrow exposed ledges which in summer are occupied by nesting sea birds. On the hillsides and plateau region, the exposed rock is ice-smoothed and the valley floors are covered with moraine. Both islands have

several small tarns which are frozen in winter and filled with melt water in summer. Many of these are ephemeral and dry out towards the end of summer. Others, which are located below snow banks, are fed continuously by melt water.

- b. *Access to the Area.* Access to the Area may only be in accordance with a permit or authority issued by a Contracting Party or its authorised representative.

Defined landing sites for access by sea and helicopters to Ardery and Odbert Islands are shown on Maps B and C respectively. On Ardery Island the preferred boat landing site is at Robertson Landing where there are three rock anchors present to tie down a boat or other equipment. It should be noted that all three boat landing sites marked on Map B are within 200 metres of colonies of birds, however they represent the only safe landing sites on the island and if landings are undertaken carefully there is no disturbance to the birds.

There are no defined pedestrian routes within the Area, however pedestrians should avoid disturbance of the birds at all times.

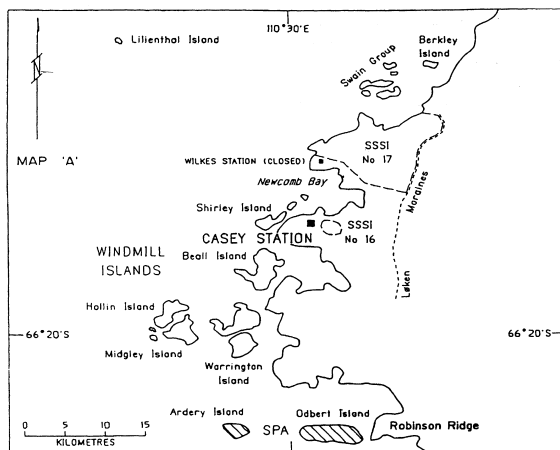
- c. *Location of structures including scientific stations, research and refuge facilities both within and near the Area.* There are no structures within the Area and no permanent structures are permitted.

The islands lie approximately 12 km south of Casey Station. A four-berth refuge hut is located on Robinson's Ridge, 0.5 km from the shore.

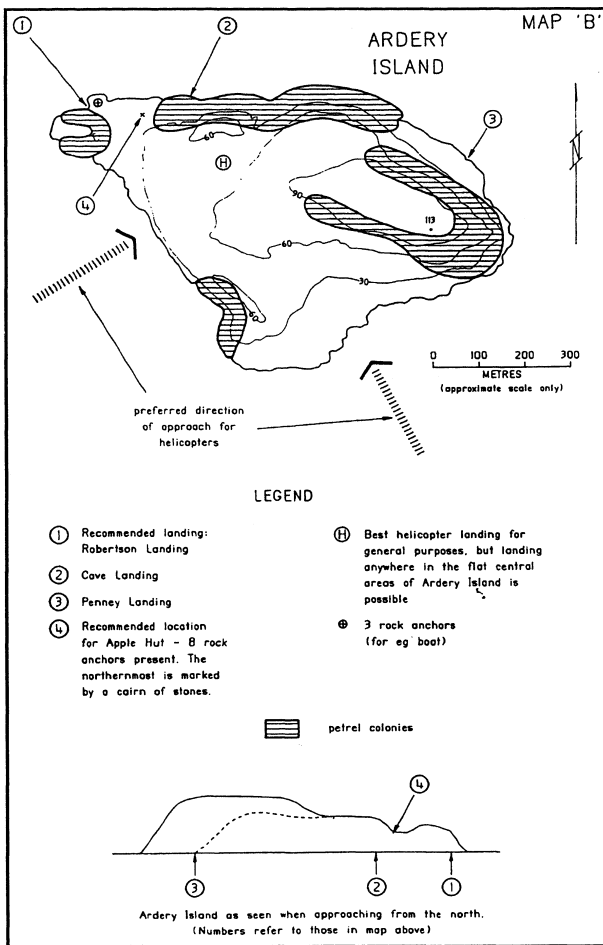
- d. *Location of other protected areas in or near the Area.* North-east Bailey Peninsula (66°17'S, 110°32'E) (Site of Special Scientific Interest No 16) and Clark Peninsula (66°15'S, 110°36'E) (Site of Special Scientific Interest No 17) lie opposite the Windmill Islands (see Map A).

6. *Identification of restricted zones.* Access to the petrel and Adélie penguin colonies marked on Maps B and C is prohibited unless authorised in a permit.

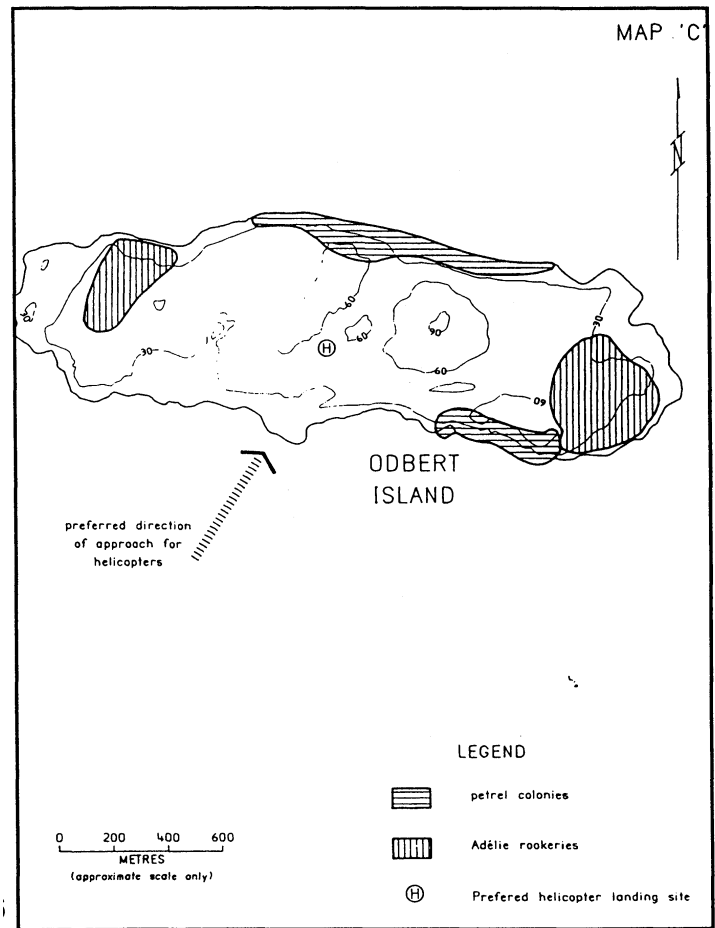
7. *Maps of the area.* Three maps of the Area are attached. Map A shows the Area and its location. Map B (Ardery Island), and Map C (Odbert Island) show preferred helicopter approaches and landing sites, landing sites for access by water and the location of the petrel and Adélie breeding colonies.



ASPA 103
Map A*



ASP A 103
Map B*



ASP A 103
Map C*

8. *Conditions under which permits may be granted.* Criteria for issuing a permit to enter the Area are that:

- it is issued for a compelling scientific purpose which cannot be pursued elsewhere;
- the actions permitted will not jeopardise the natural ecological system existing in the Area; and
- the actions permitted are in accordance with the management plan for the Area.

Conditions applying:

a. *Access to and movement within the Area:*

- i) Travel to the island should be by foot, oversnow vehicle or boat where possible; oversnow vehicles used to visit the islands must be left at the shoreline and movement within the area should be by foot.
- ii) If access to the islands is not possibly by sea or over sea-ice, then helicopters may be used subject to the following conditions:
 - overflight of the islands should be avoided at all times, except where it is considered essential for scientific purposes. In these instances, overflight must be at an altitude or horizontal distance of no less than 500 metres;
 - during the breeding season of penguins and petrels, defined here as the period from 1 November to 1 April, helicopter movement to the islands should be kept to the minimum;

- refuelling is not to take place within the Area;
- only personnel who are required to carry out work in the Area should leave the helicopter;
- the approach to Ardery Island should be at a high altitude and from a southern direction as the lowest densities of birds are on the southern cliffs (see Map B);
- the approach to Odbert Island should preferably be from the south, avoiding cliff areas because of the nesting petrels (see Map C).

b. Activities which are, or may be, conducted within the Area, including restrictions on time and place:

- i. Compelling scientific activities which cannot be conducted elsewhere.
- ii. Compelling management activities, which if not carried out would jeopardise the values for which the Area was designated.
- iii. Where activities necessitate interference with the birds care should be taken to cause the least possible disturbance, particularly during the period 1 November to 1 April.

c. The installation, modification, or removal of structures:

No structures may be erected in the Area unless essential for research purposes. Any structures installed on the islands must be removed when no longer required. Installation of a field hut on Ardery Island should take place wherever possible before 1 November when the breeding season commences and removal should be after 1 April when the fledglings have departed. Installation and removal should be by oversnow transport unless sea-ice conditions prevent this. For use of helicopters see (a) ii above.

d. The location of field camps:

If required for field work, a hut may be erected on Ardery Island at the point specified on Map B. There are 8 solid rock anchors available at this spot.

e. Restrictions on materials and organisms which may be brought into the Area:

- i. Fuel is not to be depoted on the islands, unless required by a researcher for personal use, i.e. for cooking/heating etc., in a field hut on Ardery Island, and is to be removed at the same time as the hut.
- ii. No poultry products, including dried food containing egg powder, are to be taken into the Area.

f. The taking of or harmful interference with native flora and fauna:

Taking of, or harmful interference with, native flora and fauna is prohibited unless specifically authorised by permit issued in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora, or Article 3 of Annex II to the Protocol on g. The collection or removal of anything not brought into the Area by the permit holder:

There is to be no collection or removal of anything not brought into the Area by the permit holder unless specifically authorised by permit for scientific or management purposes.

h. The disposal of waste:

No wastes, including human wastes, are to be left in the Area.

i. Measures that may be necessary to ensure that the aims and objectives of the management plan can continue to be met:

- permits should specify the maximum number of people allowed entry at any one time;
- visits to the Area should be kept to the minimum necessary to achieve the research and management objectives;
- access should be permitted where necessary to place or remove structures or equipments.

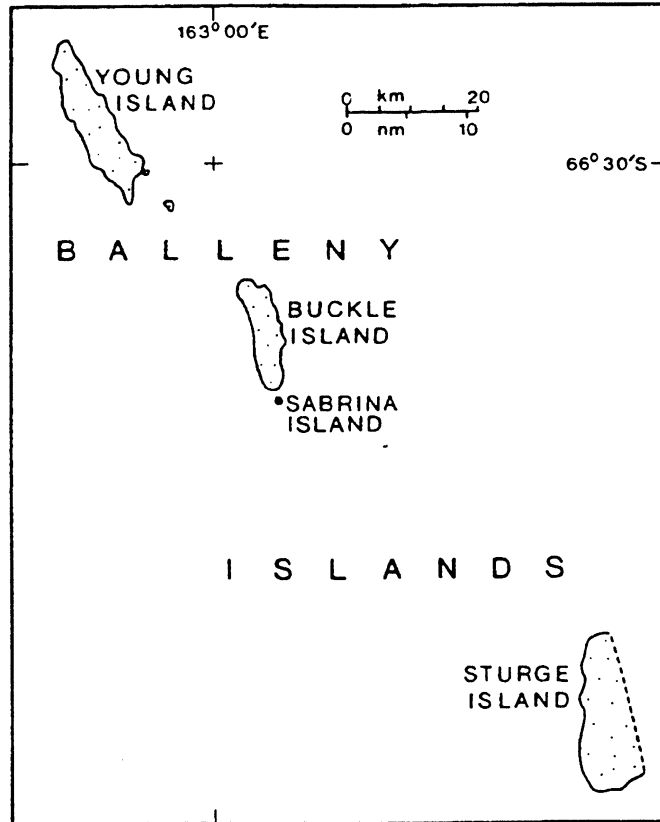
j. Requirements for reports:

Each permit holder shall submit a report to the permit-issuing authority detailing the activities undertaken within the Area including a summary of research findings, and comments indicating measures taken to ensure compliance with conditions. Where appropriate, the report may make recommendations relevant to the management of the Area, in particular, as to whether the values for which the Area was designated are being adequately protected. The report should be submitted as soon as practicable after the visit to the Area has been completed.

**Antarctica Specially Protected Area No. 104 (Specially Protected Area No. 4)
Sabrina Island, Balleny Islands; Lat 66°54'S, long 163°20'E**

Description: A small island some 2 kilometres south of Buckle Island in the Balleny Islands. The area is shown on the attached map.

Designated in Recommendation IV-4 on the grounds that the Balleny Islands, as the most northerly Antarctic land in the Ross Sea region, support fauna and flora which reflect many circumpolar distributions at this latitude and that Sabrina Island in particular provides a representative sample of such fauna and flora.



ASPA 104
Map A*

**Antarctic Specially Protected Area No. 105 (Specially Protected Area No. 5)
Beaufort Island, Ross Sea; Lat 76°58'S, long 167°03'E**

1. Description of Values to be Protected

Beaufort Island was originally designated in Recommendation IV-5 (1966, SPA No. 5) after a proposal by New Zealand on the grounds that it “contains substantial and varied avifauna, that it is one of the most important breeding grounds in the region, and that it should be protected to preserve the natural ecological system as a reference area”. The Area has been set aside primarily to protect the site's ecological values and these reasons for long-term special protection still apply.

The island comprises a variety of terrain and habitats: gently sloping ice-free ground with summer ponds and small meltwater streams draining to the coast; moderately sloping ice fields covering much of the west side of the island; and steep, rugged cliffs on the eastern slopes. Recent investigations indicate the avifauna is not as varied as first thought, but there exists a large Adelie penguin (*Pygoscelis adeliae*) colony, a small breeding colony of Emperor penguins (*Aptenodytes forsteri*), and several breeding colonies of South polar skua (*Catharacta maccormicki*). The boundaries of the Area, which previously excluded the Emperor colony, have been extended to include fast-ice occupied by breeding birds.

Site visits in January 1995 and 1997 discovered and described a significant area of vegetation previously unrecorded on an ice-cored moraine bench of up to 50 m wide and 5-7 metres above the beach on the north of the island. The vegetation is exceptional both in its quantity and quality, and is the most extensive, continuous area of mosses yet known for the McMurdo Sound region. Although the area is extensive (approximately 2.5 ha), the moss community is dominated by a single species, *Bryum argenteum*: the essentially monospecific character of the site is also unique. The site enjoys warm summer temperatures because of its northerly aspect and shelter from southerly winds by high ice cliffs. The local microclimate, stability of the substrate and supply of water from the nearby ice-cliffs and snow banks are favourable for vegetation growth. As a result there is also a diverse community of algae, and while a detailed algal survey has not yet been undertaken, *Prasiola crispis* is particularly abundant throughout the site, together with a number of unicellular chlorophytes and xanthophytes (including *Botrydiopsis* and *Pseudococcomyxa*), and cyanobacteria (particularly scillatorians) mixed with the *Prasiola*. Green snow algae, a mixture of *Chloromonas* and *Klebsorazidium*, are present as well as the red snow algae *Chlamydomonas* sp., *Chloromonas* sp., and *Chlamydomonas nivalis*. This represents one of the most southerly locations where red snow algae have been observed. The exceptional plant communities at this site are fragile and vulnerable to disturbance and destruction by trampling, sampling and/or through foreign introductions. Conservation of the ecological and scientific values of this community are important reasons for special protection at Beaufort Island. As an isolated island difficult of access, the site is known to have been visited only infrequently. Beaufort Island has not been comprehensively studied or documented but is largely undisturbed by direct human activity. In particular, Beaufort Island has been exposed to fewer opportunities for direct exotic biological introductions than many other sites in the Ross Sea. The ecological, scientific and aesthetic values derived from the isolation and relatively low level of human impact are important reasons for special protection at Beaufort Island.

2. Aims and Objectives

Management at Beaufort Island aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- preserve the natural ecosystem as a reference area largely undisturbed by direct human activities;
- allow scientific research on the natural ecosystems, plant communities, avifauna and soils in the Area provided it is for compelling reasons which cannot be served elsewhere;
- minimise human disturbance to plant communities by preventing unnecessary sampling;
- 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

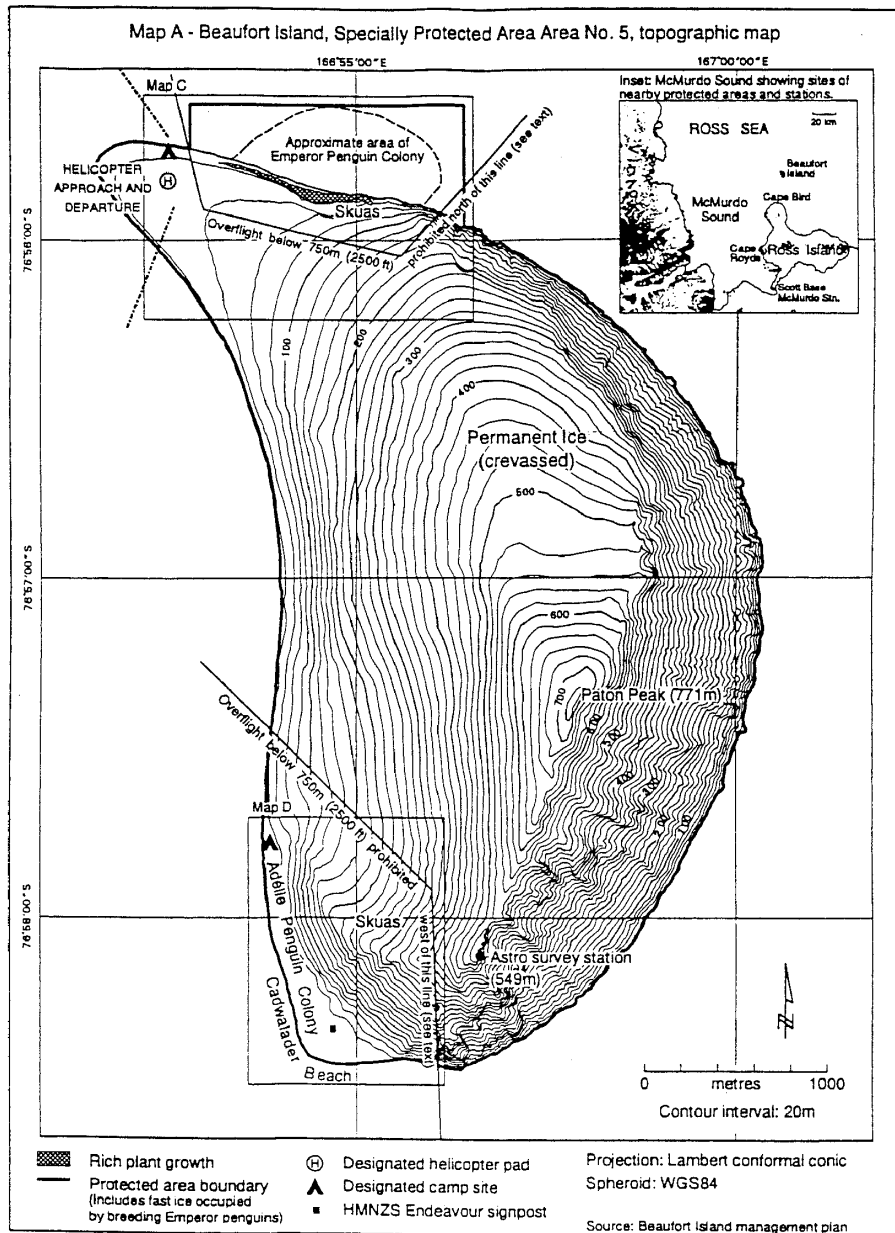
The following management activities are to be undertaken to protect the values of the Area:

- Markers, signs or structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition, and removed when no longer necessary.
- Visits shall be made as necessary to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.
- 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



ASPA 105
Map A*

Map A: Beaufort Island regional topographic map. Inset: McMurdo Sound, showing Ross Island and the location of McMurdo Station (US) and Scott Base (NZ). The nearest protected areas are SSSI-10 (Caughley Beach) and SPA-20 (New College

Valley) at Cape Bird, and SSSI-1 (Cape Royds).

6. Description of the Area

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

The designated Area encompasses the whole of Beaufort Island (76°58'S, 167°00'E Map A) above the mean high water mark, and includes adjacent fast-ice occupied by breeding Emperor penguins. The 7 km by 3.2 km island rises to 771 m at Paton Peak. The west side of the island is predominantly an ice field with ice cliffs of about 20 m on the coast, while the east and south sides of the island are largely ice-free, with steep and inaccessible cliffs rising straight from the sea. In view of the isolation of Beaufort Island and the current low levels of shipping activity in the region, boundary markers and signs have not been installed to mark the Area: the need for marking should be re-evaluated at each management plan review.

Beaufort Island is one of a series of late Tertiary volcanic vents that developed along a line of weakness in the Ross Sea floor. The geology is typical of an eroded, sub-aerially produced basaltic complex, with lava flows and explosion breccias and tuffs evident. Many of the volcanic rocks have been intruded by a series of late stage basaltic dikes, and there is evidence of layered ash-fall tufts and welded spatter flows from local subsidiary cinder and spatter cones. Cadwalader Beach comprises a beach foreland and cusped spit, backed by steep basaltic cliffs and several talus cones. A series of beach ridges, which are generally occupied by the breeding penguins, have trapped meltwater ponds and mark the growth of the beach face away from the cliffs with time. A series of raised beaches is evident at the northeastern end of the island, some with evidence (quills and guano) of former and apparently substantial penguin colonies. Sub-tidal (abrasion) platforms and massive boulders are found below the highly weathered eastern and southern cliffs. An Adelie colony of 46,000 pair (1987 count) occupies the flat area at Cadwalader Beach (Map D). Above the steep cliffs that rise behind the colony, a population of skuas (numbers unknown) nest on more gentle ice-free slopes at the edge of the permanent ice field on the west flank of the island. This ice field is punctuated mid-way by a 2 km line of rocky outcrops at an elevation of approximately 200 m. In the north the ice field broadens into an extensive flat area of less than 50 m elevation, NE of which extends an ice-free beach about 1000 m in length and 50 m wide (Map C). In January 1995 a newly-established, possibly transitory, colony of Adelie penguins (comprising 2 pairs with 3 chicks and a approximately 10-15 non-breeders) occupied the west end of this beach. Above the beach, a raised ice-cored moraine terrace (5-20 m elevation, ranging from 2-3 metres wide over most of its length but broadening to 20-50 metres at its eastern end) extends for 550 m before rising more steeply toward the unstable basaltic cliffs which persist around the entire eastern side of the island. At least three sub-fossil penguin colony deposits have been identified within the moraine terrace, each layer vertically separated by around 50-100 cm of gravels and sand, suggesting this part of the island had been occupied by a sizable breeding penguin colony in the recent past. The deposits may be useful for determining the age of former penguin colonies in the region.

A population of approximately 100 skuas (1995 count) breeds on the terrace and ice-free slopes leading toward the cliffs. The proportion of breeders to non-breeders in this population is not known, but approximately 25 and 50 chicks were counted in January 1995 and 1997 respectively.

On the fast-ice adjacent to the northern coastal reaches, a small colony of breeding Emperor penguins (1787 pairs at 1976 count; 179 pairs at 1983 count, 1355 adults at October 1994 count) is present annually between the months of approximately April to January. The size of the colony is limited by the areal extent and condition of the fast-ice, which affects the availability of breeding sites in the lee of the northern slopes of Beaufort Island. The precise location of the colony varies from year to year and the colony moves within a breeding season, but the general area of occupation is indicated on Map C. The ice-free moraine terrace on the north end of the island (Map C) also supports the richest growth of vegetation recorded on Beaufort Island. This vegetation is exceptional both in quantity and quality, and is the most extensive, continuous area of mosses yet known for the McMurdo Sound region. The site enjoys warm summer temperatures (an air temperature +13°C was recorded on 18 January 1997) because of its northerly aspect and shelter from southerly winds by a 20 m high semi-circular ice cliff. The local microclimate, stability of the ground surface and supply of water from the nearby ice-cliffs and snow banks are favourable for vegetation growth. Initially the water forms a diffuse flush but becomes progressively entrained into rivulets that have eroded narrow valleys in the edge of the terrace. The moss community is extensive (approximately 2.5 ha), with much of the site showing 100% ground cover, dominated by a single species, *Bryum argenteum*. One specimen of another species, *Pottia heimii*, was found after an extensive search: the essentially monospecific character of the site is also unique. The *Bryum* occurs in scattered patches at the upper (southern) margin of the bench, adjacent to the annual drift snow at the base of the ice cliff, and more continuous mats (hummocks) occur in the middle of the bench and in areas where spreading water drainage occurs, especially at the eastern end. In the upper (southern) part of the area the *Bryum* is intermixed with *Nostoc* colonies (cyanobacterium). At lower and more northerly sites in areas of high water flow the moss may be overgrown with a brown coloured mixed cyanobacterial community, particularly in areas prone to flooding, cryoturbic disturbance and, possibly, skua activity. *Bryum argenteum*, produces dehiscent shoot tips which disperse the plants down stream. Evidence of this dispersal was commonly seen with *B. argenteum* sometimes occurring as small, and probably ephemeral, communities on the beach below the terrace. The moss community is known to support significant populations of mites, but a detailed survey of invertebrates on Beaufort Island has yet to be undertaken. The vegetation at Beaufort Island is comparable to the upper, wetter parts of the flush at Canada Glacier (SSSI-12), Taylor Valley, Victoria Land. The Canada Glacier flush has a common, second species, *Pottia heimii*, that grows in drier areas but this was almost completely absent at Beaufort Island. The reason for this is unknown, but could be due to substrate differences, the presence of numerous skuas occupying the drier areas at Beaufort Island, high nutrient levels in the melt water at Beaufort Island, or limited dispersal and colonization opportunities. At Botany Bay (ASPA-XYZ [ed. Note: likely to be designated ASPA 154]), Granite Harbour, Victoria Land - a warmer site than at Canada Glacier but at a similar latitude to Beaufort Island - the wetter areas are occupied by the moss *Ceratodon purpureus* or *Bryum argenteum*, so that there may be a sequence from wet to dry of *C. purpureus* - *B. argenteum* - *P. heimii*. While there is no understanding as to why *C. purpureus* is absent at Beaufort Island it is likely that limited dispersal and colonization opportunities, as well as water nutrient status, may be important.

There is also a diverse community of algae, and while a detailed algal survey has not yet been undertaken, *Prasiola crispa* is particularly abundant throughout the site, reflecting the high nutrient status and abundance of melt water. A number of unicellular chlorophytes and xanthophytes (including *Botrydiopsis* and *Pseudococcomyxa*) and cyanobacteria (particularly scillatorians) were found mixed with the *Prasiola*. Green snow algae, noticeable as a green band at the lower levels of snow banks above the beach and below the ice cliffs, contained a mixture of *Chloromonas* and *Klebsormidium*. The snow and ice cliffs forming the upper edge of the beach also contain a pinkish-brown deposit, consisting largely of fine silty material as well as the red snow algae *Chlamydomonas sp.*, *Chloromonas sp.*, and *Chlamydomonas nivalis*. This represents one of the most southerly locations where red snow algae have been observed.

During a NZ/US visit in January 1995 abandoned equipment was removed from among the Adelie colony at Cadwalader Beach. No other human impact was visually evident in 1995.

6(ii) Restricted zones within the Area

None.

6(iii) Structures within and near the Area

The only structure known to exist on the island is a signpost on a prominent rock in the Adelie colony at Cadwalader Beach (Map L)). The sign, erected in 1959-60, bears the names and home-towns of seamen and the Captain of the HMNZS Endeavour: the sign is set in concrete and was in good condition in January 1995. The sign is of potential historic value and should remain in situ unless there are compelling reasons for its removal, which should be kept under review.

An astronomical survey station is recorded on a map of the island compiled in 1960, but it is unknown whether any associated permanent marker exists. The station is recorded as located at the south end of the main island ridge-line divide at an altitude of 549 m (Map A).

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

The nearest protected areas to Beaufort Island are Caughley Beach (SSSI-10) and New College Valley (SPA-20) located 35 km to the south at Cape Bird, Ross Island. Cape Royds (SSSI-1) is a further 35 km to the south (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 scientific reasons that cannot be served elsewhere, or for essential management purposes consistent with plan objectives such as inspection 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 of the Management Plan;
- the actions permitted are in accordance with the Management Plan;
- the Permit, or an authorized 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 small boat or by aircraft. Aircraft should land on the island only at the designated site (166°58'20" E, 76°55'50" S: Map A) on the large flat toe of ice on the north end of the island. Should snow conditions at the designated landing site at the time of visit militate against a safe aircraft landing, a suitable mid- to late-season alternative to the designated landing site may be found at the nominated northern camp site at the western end of northern beach on Beaufort Island. It is preferred that aircraft approach and depart from the designated landing site from the south or west (Map A, Figure 1). When it is found necessary to use the alternative site at the northern beach campsite, practical considerations may dictate a northern approach: when this is the case aircraft shall avoid overflight of the area east of this site indicated on Maps A-C and Figure 1. Use of smoke grenades when landing within the Area is prohibited unless absolutely necessary for safety, and all grenades should be retrieved. There are no special restrictions on where access can be gained to the island by small boat. Pilots, air or boat crew, or other people on aircraft or boats, are prohibited from moving on foot beyond the immediate vicinity of the landing site unless specifically authorised by a Permit.

Overflight of bird breeding areas lower than 750 m (or 2500 ft) is normally prohibited: the areas where these special restrictions apply are shown on Maps A-D and Figure 1. When required for essential scientific or management purposes, transient overflight down to a minimum altitude of 300 m (1000 ft) may be allowed over these areas: conduct of such overflights must be specifically authorised by Permit.

Visitors should avoid unnecessary disturbance to birds, or walking on visible vegetation. 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 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 of the Area and which cannot be served elsewhere;

Essential management activities, including monitoring.

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 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

Camping is permitted only at two designated sites (Maps A-D). The north camping site is located on the flat area north of the designated landing site, on a more sheltered location at the NW end of the beach, 200 m from where several pair of Adelie penguins and skuas nest (if present). The second site is located on the snow 100 m from the northern edge of the large Adelie colony at Cadwalder Beach.

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 against accidental introductions. 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 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

1. 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, or for protective measures.
2. Any specific sites of long-term monitoring shall be appropriately marked.
3. To help maintain the ecological and scientific values of the isolation and historically low level of human impact at Beaufort Island 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. Visitors shall take the following measures to minimise the risk of introductions:
4. Any sampling equipment or markers brought into the Area shall be sterilised and, to the maximum extent practicable, maintained in a sterile condition before being used within the Area. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including backpacks or carry-bags) shall be thoroughly cleaned or sterilised and maintained in this condition before entering the Area;
5. Sterilisation should be by an acceptable method, such as by UV light, autoclave or by washing exposed surfaces in 70% ethanol solution in water.

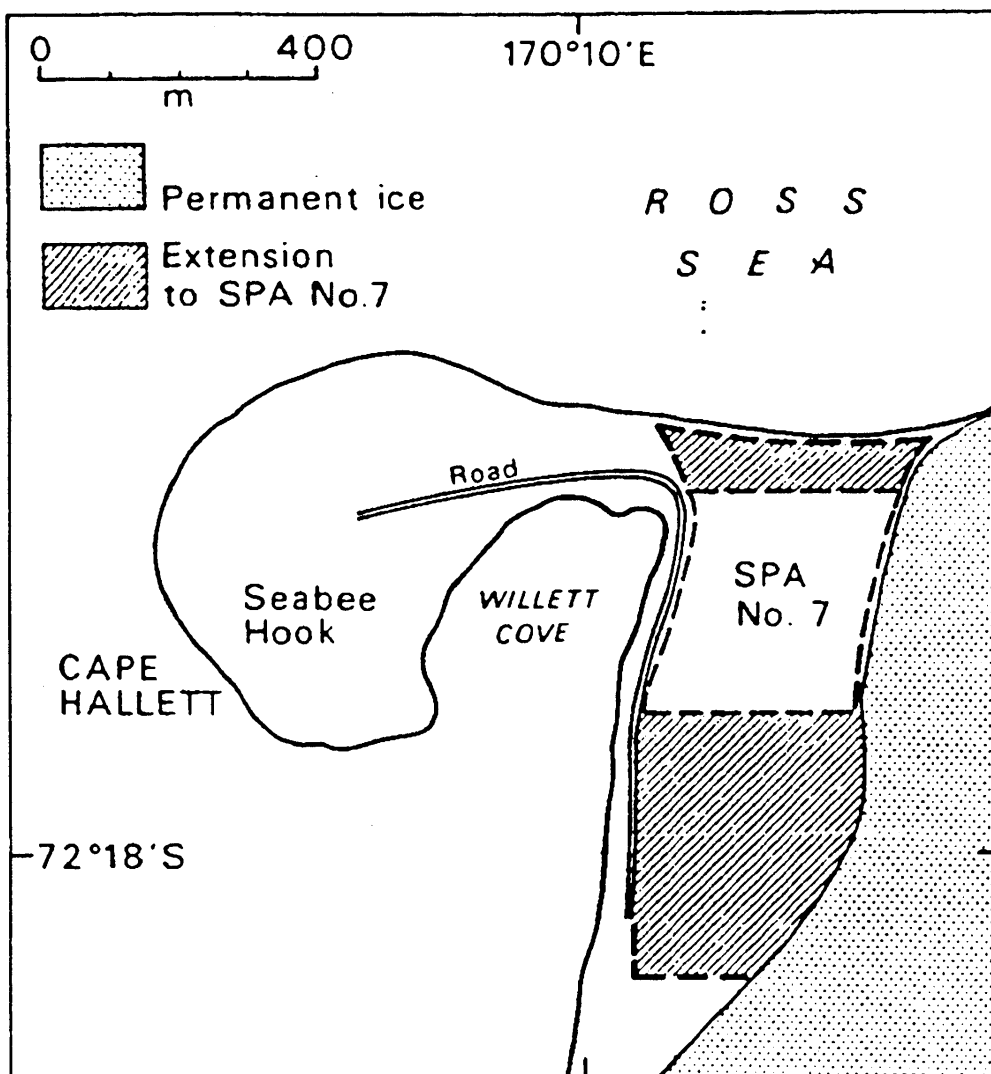
7(x) Requirements for reports

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 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.

**Antarctic Specially Protected Area No. 106 (Specially Protected Area No. 7)
Cape Hallett, Victoria Land: Lat 72°18'S, long 179°19'E**

Description: The area between the eastern side of the road, which runs along the eastern side of Willett Cove, and the western margin of the permanent ice sheet, to the south of a line from the road to the margin of the permanent ice sheet at the latitude of the head of Willett Cove, and to the north of a line from the road to the margin of the permanent ice sheet drawn 350 metres to the south of that latitude and parallel to it. The area is shown on the attached map.

Designated in Recommendation IV-7 on the grounds that Cape Hallett includes a small patch of particularly rich and diverse vegetation which supports a variety of terrestrial fauna and that the ecosystem, which includes a rich avifauna, is of outstanding scientific interest.



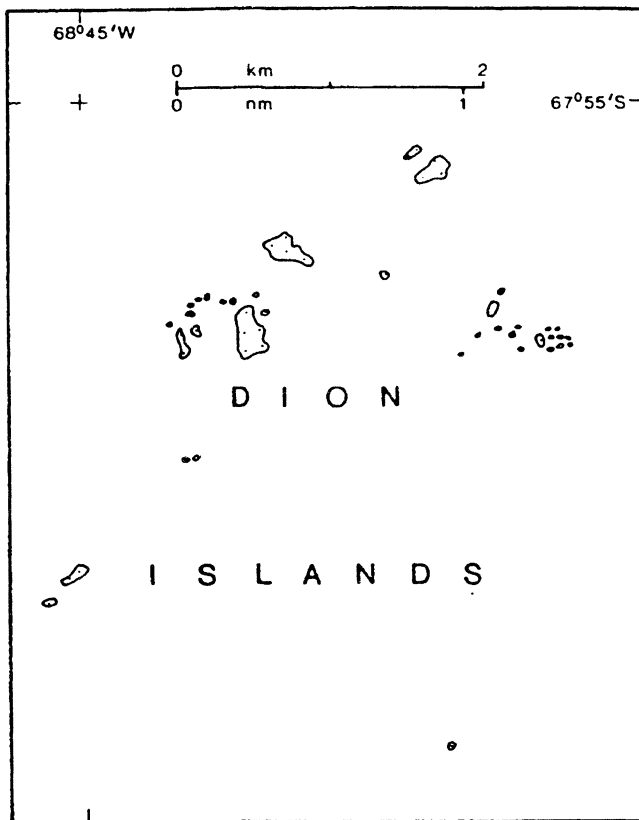
ASPA 106
Map A*

**Antarctic Specially Protected Area No. 107 (Specially Protected Area No. 8)
Dion Islands, Marguerite Bay, Antarctic Peninsula; Lat 67°52'S, long
68°43'W**

1. *Geographical location.* The Dion Islands (67°52'S, 68°43'W) are a small group of low-lying rocky islands lying about 13 km south of the southern end of Adelaide Island, in the north-western part of Marguerite Bay.

2. *Management Plan*

i. *Description of Area.* The Area comprises all of the Dion Islands archipelago, which lie within an area of about 12 km², together with the intervening sea. The islands and islets are small, rocky and often precipitous, notably Emperor Island which is also the highest (46 m altitude). The main islands are the largest of the Courtier Islands group (c. 8 ha), Emperor Island (c. 5 ha) and the largest of the Consort Islands group (c. 3 ha). Low lying areas occur on the two largest islands. There are a few small permanent ice patches, but there are no streams or permanent pools.



ASPA 107
Map A*

ii. *Reason for designation.* The Area possesses the only known breeding population of Emperor penguins (*Aptenodytes forsteri*) on the west side of the Antarctic Peninsula. It is situated on a low-lying raised beach and rocky headland in the south-eastern part of Emperor Island. It is also the most northerly and probably the smallest colony (annual numbers fluctuate between about 50 and 500 pairs), and is one of only two in which breeding occurs on land (see also SPA No. 1). It is also the most isolated Emperor colony, being about 2,500 km (by sea) from the nearest other known rookery. Other breeding birds within the Area include a small colony of Adélie penguins (*Pygoscelis*

adeliae) near the Emperor penguin colony, and about 200 pairs of Blue-eyed shags (*Phalacrocorax atriceps*) on the precipitous north side of the same island.

iii. *Date of designation and originator.* November 1966, Recommendation IV-8, by UK.

iv. *Access points.* None specified, but access should be from the sea; landing on Emperor Island should be at least 100 m from the Emperor penguin colony or any non-breeding aggregations of these birds.

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. and a helicopter within the Area;
- b. overfly the Area by any aircraft below 250 m above the highest point;
- c. use any of the Area's coves, bays or intervening water 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;
- 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, particularly Emperor penguins which pedestrians should not approach closer than 50 m, unless required as specified in the permit.

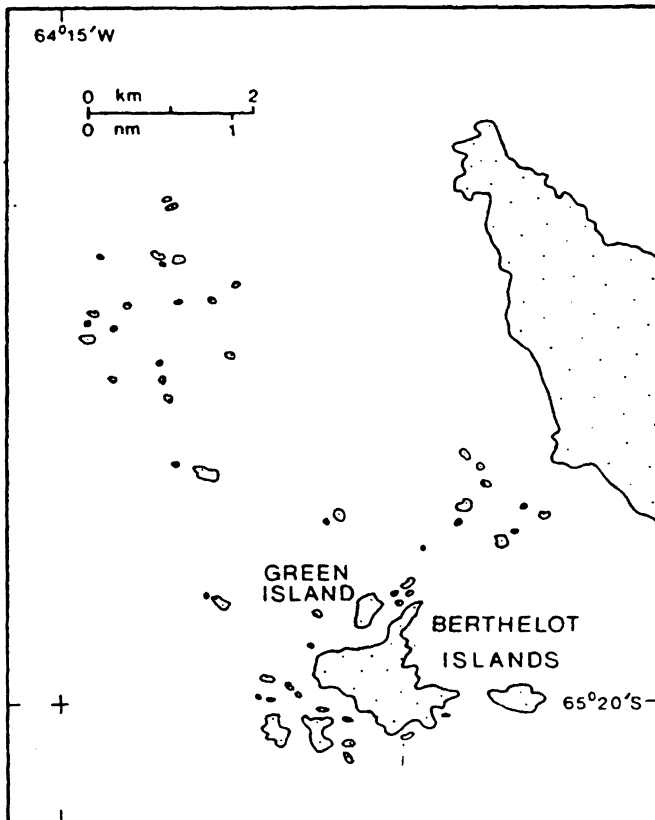
viii. *Scientific research and sampling.* All activities must conform strictly with those specified in the permit to enter the Area. Inspection visits to the Area should be made at least once every five years to assess the state of the site and to monitor any significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.

**Antarctic Specially Protected Area No. 108 (Specially Protected Area No. 9)
Green Island, Berthelot Islands, Antarctic Peninsula; Lat 65°19'S, Long
64°10'W**

1. *Geographical location..* Green Island (65°19'S, 64°10'W) is a small island on the north side of the Berthelot Islands group, lying between the north-west side of Collins Bay and Grandidier Chananel, about 3 km off the Graham Coast of the mid-west Antarctic Peninsula.

2. *Management Plan*

i. *Description of Area.* The Area comprises all of Green Island, a small rocky island lying about 0.25 km to the north of the largest of the Berthelot Islands. It is about 500m from north to south and 300 m from east to west, rising to a dome-shaped peak at about 80 m altitude. The island rises steeply on all sides, with high precipitous cliffs on the south and east sides. Along the north side is a gently sloping rock platform. There are several permanent snow patches with the largest occurring to the south and east of the summit. There are no streams or pools.



ASPA 108
Map A*

ii. *Reason for designation.* Green Island is extensively vegetated on the north facing slopes and has especially well-developed continuous banks of moss turf formed by *Chorisodontium aciphyllum* and *Polytrichum alpestre* which, over much of their extent, overlie peat of more than 1 m in depth. Antarctic hair grass (*Deschampsia antarctica*) is frequent in small patches near the shag colony. The island has two important bird colonies. A large Blue-eyed shag (*Phalacrocorax atriceps*) colony with about 250 nests occurs on the steep, rocky north-west corner; this is one of the largest shag colonies on

the Antarctic Peninsula. There are also large numbers of Brown skuas (*Catharacta lonnbergii*) and a few South Polar skuas (*C. maccormicki*) and hybrids, but only a few of the former are known to breed.

iii. Date of designation and originaton. November 1966, Recommendation IV-9, by UK.

iv. Access points. None specified, but landings by boat or helicopter are easiest on the north side of the island.

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. land a helicopter within the Area, except on the rock platform near sea level on the north side of the island;
- 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 same 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 cause minimal damage to the luxuriant moss banks and avoid disturbance of any breeding bird 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 to the Area should be 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.

**Antarctic Specially Protected Area No. 109 (Specially Protected Area No. 13)
Moe Island, South Orkney Islands: Lat 60°45'S, long 45°41'W**

1. Description of Values to be Protected

The Area was originally designated in Recommendation IV-13 (1966, SPA No. 13) after a proposal by the United Kingdom on the grounds that Moe Island provided a representative sample of the maritime Antarctic ecosystem, that intensive experimental research on the neighbouring Signy Island might alter its ecosystem and that Moe Island should be specially protected as a control area for future comparison.

These grounds are still relevant. Whilst there is no evidence that research activities at Signy Island have significantly altered the ecosystems there, a major change has occurred in the low altitude terrestrial system as a result of the rapidly expanding Antarctic fur seal (*Arctocephalus gazelle*) population. Plant communities on nearby Signy Island have been physically disrupted by trampling by fur seals and nitrogen enrichment from the seals' excrete has resulted in replacement of bryophytes and lichens by the macro-alga *Prasiola crispa*. Low-lying lakes have been significantly affected by enriched run-off from the surrounding land. So far Moe Island has not been invaded by fur seals to any great extent and its topography makes it less likely that seals will penetrate to the more sensitive areas.

The values to be protected are those associated with the biological composition and diversity of a near-pristine example of the maritime Antarctic terrestrial and littoral marine ecosystems. In particular, Moe Island contains the greatest continuous expanses of *Chorisodontium-Polytrichum* moss turf found in the Antarctic. Moe Island has been visited on few occasions and has never been the site of occupation for periods of more than a few hours.

2. Aims and Objectives

Management of Moe Island aims to:

- avoid major changes to the structure and composition of the terrestrial vegetation, in particular the moss turf banks;
- prevent unnecessary human disturbance to the Area;
- permit research of a compelling scientific nature which cannot be served elsewhere, particularly research related to determining the differences between the ecology of an undisturbed island and that of an adjacent occupied and fur seal perturbed island.

3. Management Activities

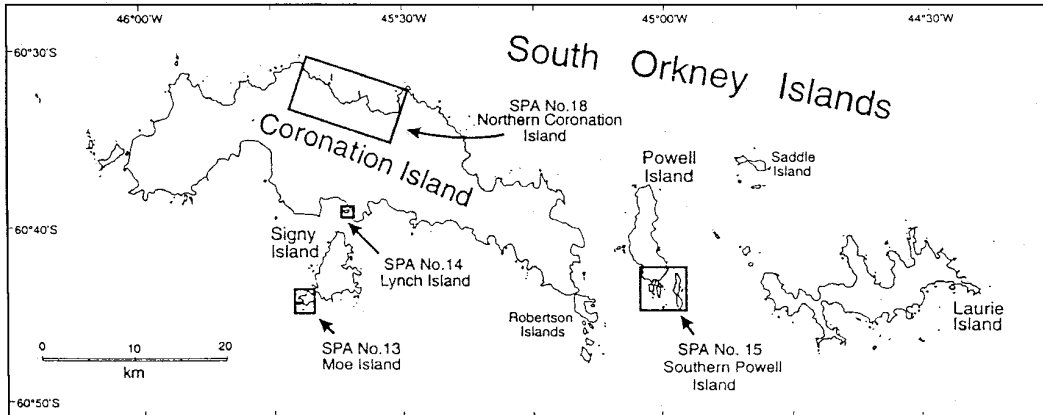
Ensure that the biological condition of Moe Island is adequately monitored, preferably by non invasive methods, and that the sign-boards are serviced.

If fur seals were to gain access to the interior of Moe Island it would be necessary to take action to prevent damage to the vulnerable moss banks. This action would most likely consist of the erection of a seal-proof fence at the head of fine gully at the northeast of Landing Cove. Any direct management activities in the Area would be subject to an environmental impact assessment before any decision to proceed is taken.

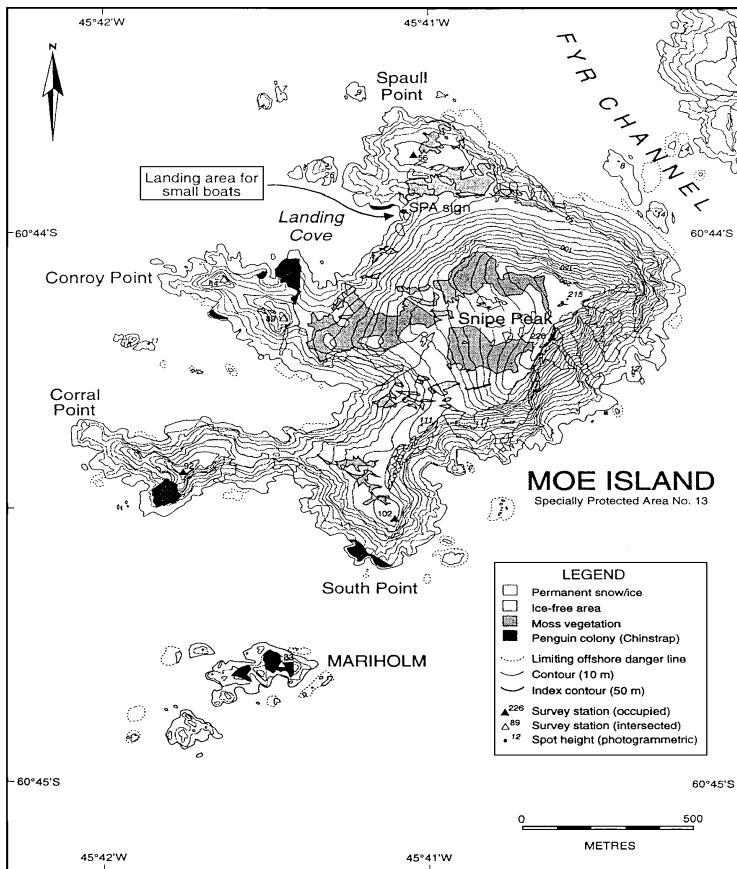
4. Period of Designation

Designated for an indefinite period.

5. Maps



ASPA 109
Map A*



ASPA 109
Map B*

Map A shows the location of Moe Island in relation to the South Orkney Islands. Map B shows Moe Island in greater detail.

6. Description of the Area

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

Moe Island, South Orkney Islands, is a small irregularly-shaped island lying 300 m off the southwestern extremity of Signy Island, from which it is separated by Fyr Channel. It is about 1.3 km from the northeast to southwest and 1 km from northwest to southeast. Its position on Admiralty Chart No. 1775, latitude 60°44'S, longitude 45°45'W, does not agree closely with that in Map 2 (lat. 60°44'S, long. 45°41'W).

The island rises precipitously on the northeastern and southeastern sides to Snipe Peak (226 m altitude). There is a subsidiary summit above South Point (102 m altitude) and lower hills on each of three promontories on the western side above Corral Point (92 m), Conroy Point (39 m) and Spaul Point (56 m). Small areas of permanent ice remain on the east- and south-facing slopes with late snow lying on the steeply dipping western slopes. There are no permanent streams or pools.

The rocks are metamorphic quartz mica schists, with occasional biotite and quartz-rich beds. There is a thin bed of undifferentiated amphibolite on the northeastern coast. Much of the island is overlain with glacial drift and scree. Soils are predominantly immature deposits of fine to coarse clays and sands intermixed with gravels, stones and boulders. They are frequently sorted by freeze-thaw action in high or exposed locations into small-scale circles, polygons, stripes and lobes. There are deep accumulations of peat (up to 2m thick on western slopes), considerable expanses of the surface of which are bare and eroded.

The dominant plant communities are *Andreaea-Usnea* fellfield and banks of *Chorisodontium-Polytrichum* moss turf (the largest known example of this community type in the Antarctic). These moss banks constitute a major biological value and the reason for the designation of the Area. The cryptogamic flora is diverse.

The mites *Gamasellus racovitzai* and *Stereotydeus villosus* and the springtail *Cryptopygus antarcticus* are common under stones.

There were five colonies of chinstrap penguins (*Pygoscelis Antarctica*) totaling about 11,000 pairs in 1978-79. A more recent visit (February 1994) noted fewer than 100 pairs on the northern side of Landing Cove and more than a thousand on the southern side. Numerous other birds breed on the island, notably about 2000 pairs of cape petrels (*Daption capensis*) in 14 colonies (1966) and large numbers of Antarctic prions (*Pachyptila desolate*).

Weddell seals (*Leptonychotes weddelli*) and leopard seals (*Hydrurga leptonyx*) are found in the bays on the west side of the island. Increasing numbers of fur seals (*Arctocephalus gazella*), mostly juvenile males, come ashore on the north side of Landing Cove and have caused some damage to vegetation in that area. However, it is possible that the nature of the terrain will restrict these animals to this small headland where damage may intensify.

6(ii) Restricted zones within the Area

None.

6(iii) Location of structures within the Area

A marker board is located at the back of the small shingle beach in the northeast corner of Landing Cove, beyond the splash zone on top of a flat rock, to which it is bolted. The board was erected on 2 February 1994.

There is a cairn and the remains of a survey mast, erected in 1965-66, on Spaul Point. This mast is of interest for lichenometric studies and should not be removed. There are no other structures on Moe Island.

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

SPA No. 13, Moe Island, and SPA No. 14, Lynch Island, lies about 10 km north-north-east of Moe Island. SPA No. 18, North Coronation Island, lies about 19 km away on the northern side of Coronation Island. SPA No. 15, Southern Powell Island, is about 41 km to the east.

7. Permit Conditions

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

Conditions for issuing a permit to enter the Area are that:

- it is issued only for a compelling scientific purpose which cannot be served elsewhere
- the actions permitted will not jeopardize the natural ecological system in the Area
- any management activities are in support of the objectives of the Management Plan
- the Permit, or an authorised copy, must be carried within the Specially Protected Area
- a report or reports are supplied to the authority or authorities named in the Permit.

7(i) Access to and movement within the Area

There are no restrictions on landing from the sea, which is the preferred method. No special access points are specified, but landings are usually most safely made at the northeast corner of Landing Cove.

Helicopter landings should be avoided where practicable. Helicopters may land only on the col between hill 89 m and the western slope of Snipe Peak. To avoid overflying bird colonies approach should preferably be from the south, though an approach from the north is permissible.

It is forbidden to overfly the Area below 250 m altitude above the highest point except for access to the landing point specified above.

No pedestrian routes are designated but persons on foot should at all times avoid disturbances to birds or damage to vegetation and periglacial features. Vehicles are prohibited on Moe Island.

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

- Compelling scientific research which cannot be undertaken elsewhere and which will not jeopardize the ecosystem of the Area
- Essential management activities, including monitoring

7(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.

7(iv) Location of field camps

Parties should not normally camp in the Area. If this is essential for reasons of safety, tents should be erected having regard to causing the least damage to vegetation or disturbance to fauna.

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

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

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

No herbicides or pesticides shall be brought into the Area. Any other chemicals, which may be introduced for a compelling scientific purpose 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, 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. All such materials introduced are to be removed when no longer required. Permanent depots are not permitted.

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

This 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 Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

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

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

7(viii) Disposal of waste

All non-human wastes shall be removed from the Area. Human waste may be deposited in the sea.

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

Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, which may involve the collection of small amounts of plant material or small numbers of animals for analysis or audit, to erect or maintain notice boards, or protective measures.

7(x) Requirements for reports

The Principal Permit Holder for each issued Permit shall submit a report of activities conducted in the Area using the accepted Visit Report form suggested by SCAR. This report shall be submitted to the authority named in the Permit as soon as practicable, but not later than 6 months after the visit has taken place. Such reports should be stored indefinitely and made accessible to interested Parties, SCAR, CCAMLR and COMNAP if requested, to provide the documentation of human activities within the Area necessary for good management.

**Antarctic Specially Protected Area No. 110 (Specially Protected Area No. 14)
Lynch Island, South Orkney Islands: Lat 60°40'S, long 45°38'W**

1. *Description of values to be protected*

Lynch Island (latitude 60°39'10" S, longitude 45°36'25" W; 0.1 km²), Marshall Bay, South Orkney Islands, was originally designated as a Specially Protected Area through Recommendation IV-14 (1966, SPA No. 14) after a proposal by the United Kingdom. It was designated on the grounds that the island “supports one of the most extensive and dense areas of grass (*Deschampsia antarctica*) known in the Treaty Area and that it provides an outstanding example of a rare natural ecological system”. These values were amplified and extended by Recommendation XVI-6 (1991) when a management plan for the site was adopted. This pointed out that in addition to the luxuriant growth of Antarctic hair grass *Deschampsia antarctica*, “the only other Antarctic flowering plant, Antarctic pearlwort (*Colobanthus quitensis*), is also abundant”. It was further noted that while the cryptogamic vegetation is typical of the region, several species of moss found on the island (*Polytrichastrum alpinum* (= *Polytrichum alpinum*) and *Muelleriella crassifolia*) are unusually fertile for their southerly location. The shallow loam-like soil associated with the grass swards was noted to contain a rich invertebrate fauna. A rare enchytraeid worm (species as yet unidentified) was also found in moist moss in rock crevices on the northern side of the island. These values noted in the original designation and contained in the original management plan are reaffirmed in this revised management plan.

Further values not referred to originally, but mentioned in scientific descriptions of Lynch Island, are also considered important as reasons for special protection of the Area. These values are:

It is possibly the only known location in Antarctica where *Polytrichastrum alpinum* develops sporophytes in profusion annually;

Polytrichum strictum (= *Polytrichum alpestre*) occasionally produces male inflorescences in local abundance – a rare occurrence in this species in Antarctica;

It is one of few sites where the grass *Deschampsia* is known to grow directly on *Polytrichum-Chorisodontium* moss banks;

The rare moss *Plagiothecium ovalifolium* occurs in moist shaded rock crevices near the shore, although most of these sites have been affected by recent Antarctic fur seal (*Arctocephalus gazella*) activity;

The population density of the arthropod community associated with *Deschampsia* on Lynch Island appears unusually high, with some measurements suggesting it is one of the highest in the world. The site also shows unusual diversity for an Antarctic site;

One arthropod species (*Globoppia loxolineata*) is near the northernmost limit of its known distribution, and specimens collected from Lynch Island exhibited unusual morphological characteristics compared to specimens collected elsewhere in the South Orkney – Antarctic Peninsula region;

Chromobacterium bacteria, yeasts and fungi are found in higher densities than on Signy Island, thought to be a result of the lower acidity of the soils associated with *Deschampsia* and the more favourable microclimate at Lynch Island;

The shallow gravelly loam-like soil beneath the dense swards of *Deschampsia* may represent one of the most advanced soil types in the Antarctic.

Lynch Island is 2.4 km from Signy Island, the location of Signy Research Station (UK), and about 200 m from Coronation Island, the largest of the South Orkney Islands. The Area has been afforded special protection for most of the modern era of scientific activity in the region, with entry permits having been issued only for compelling scientific reasons. Thus, the island has not been subjected to frequent visits, scientific research or sampling.

Since 1983, the numbers of Antarctic fur seals in the South Orkney Islands has increased significantly, with consequent destruction of accessible areas of vegetation where the seals come ashore. Some vegetated areas on Lynch Island have been damaged, although at the time of the most recent inspection (17 February 1999) it was observed that the most luxuriant areas of grass on the northern and north-western slopes had not yet been affected. However, accessible *Polytrichum* and *Chorisodontium* moss banks and *Deschampsia* on the north-eastern and eastern sides of the island have been extensively damaged. Notwithstanding this localised destruction, to date the primary values of the island as noted above have not been significantly compromised by either human or seal access to the island. The Area therefore has potential value as a reference site against which to measure changes in comparable ecosystems which are experiencing substantial changes as a result of Antarctic fur seal activities.

The coastline boundaries of the Area have not changed in this management plan, but the Area is better defined to include the whole island above the low tide water level, excluding offshore islets and rocks.

2. *Aims and objectives*

Management at Lynch Island aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- protect the plant communities, especially those associated with the *Deschampsia* / *Colobanthus*, against direct disturbance by Antarctic fur seals;
- allow scientific research on the ecosystem in the Area provided it is for compelling reasons which cannot be served elsewhere;
- maintain the Area as a potential reference site against which to measure and compare changes occurring as a result of disturbance by Antarctic fur seals at nearby sites where their access is unrestricted;
- ensure that the flora and fauna are not adversely affected by excessive sampling within the Area;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- allow visits for management purposes only in support of the aims of the management plan.

3. *Management activities*

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

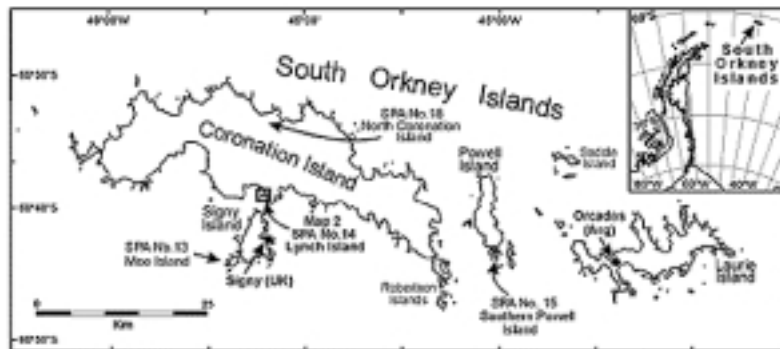
- A map showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently at Signy (UK) and Orcadas (Arg.) research stations, where copies of this management plan shall also be made available;
- A sign showing the location and boundaries of the Area with clear statements of entry restrictions should be placed on a prominent rock near the access beach on the eastern end of the northern side of the island (Map 2) to help avoid inadvertent entry;
- The values for which the Area is protected are at risk of destruction by Antarctic fur seals, which have shown a significant increase in numbers in the South Orkney Islands. At Lynch Island active management may be required in order to exclude Antarctic fur seal access to vegetated areas. This may involve the construction of fences or walls at appropriate locations;
- Markers, signs, or other 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 three 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*

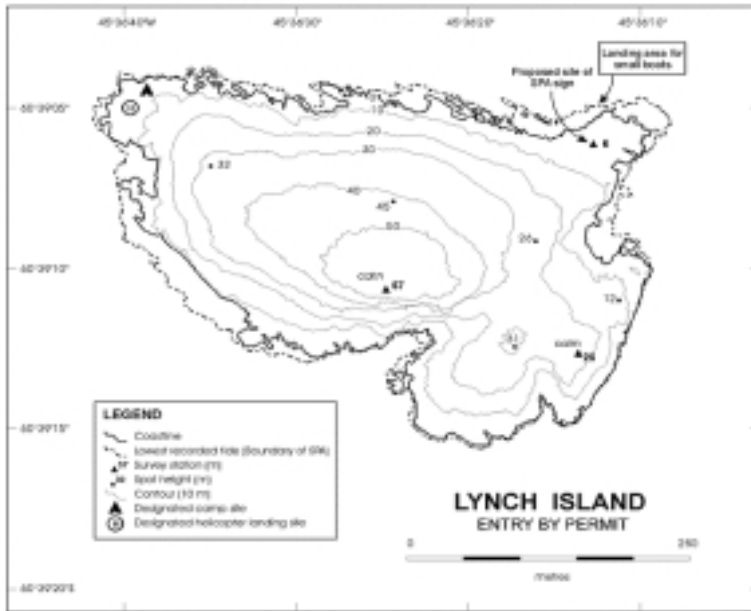
Map 1: Lynch Island Specially Protected Area No. 14 in relation to the South Orkney Islands, showing the location of Signy Research Station (UK), and the location of the other protected areas in the region (Moe Island SPA No. 13, Southern Powell Island SPA No. 15, and North Coronation Island SPA No. 18). Inset: the location of the South Orkney Islands in Antarctica.



ASPA 110
Map 1*

Map 2: Lynch Island SPA No. 14 topographic map. Map specifications
 Projection: Lambert Conformal Conic; Standard parallels: 1st 60° 40' 00" S; 2nd
 63° 20' 00"S;
 Central Meridian: 45° 26' 20" W; Latitude of Origin: 63° 20' 00" S; Spheroid:
 WGS84; Datum: Mean Sea Level. Horizontal accuracy of control points: ±1 m.
 Vertical contour interval 10 m, horizontal and vertical accuracy expected to
 approximately ±1 m.

Map 2. Lynch Island (SPA No. 14) topographic map.

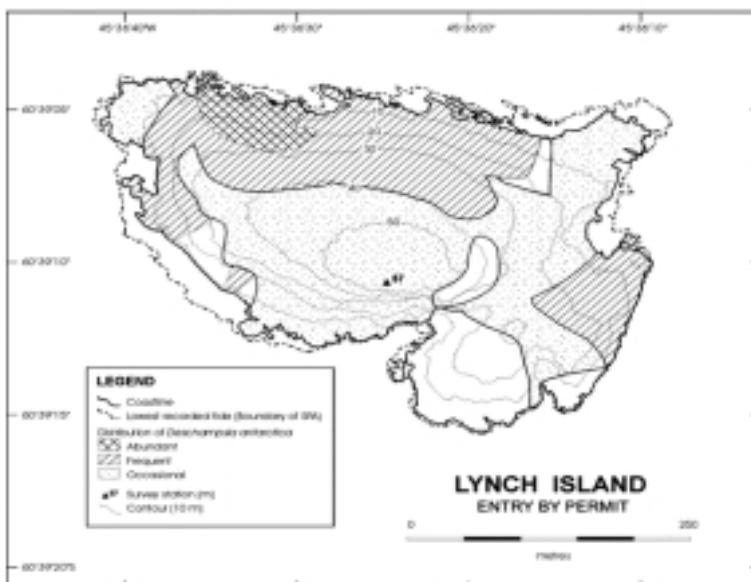


ASP A 110
 Map 2*

ASP A 110 map 2*

Map 3: Lynch Island SPA No. 14 vegetation map. Map specifications as for Map 2.

Map 3. Lynch Island (SPA No. 14) vegetation map.



ASP A 110
 Map 3*

6. Description of the Area

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

Lynch Island (latitude 60°39'10" S, longitude 45°36'25" W; area: 0.1 km²) is a small island situated at the eastern end of Marshall Bay in the South Orkney Islands, about 200 m south of Coronation Island and 2.4 km north of Signy Island (Map 1). The 500 m x 300 m island has low cliffs of up to 20 m in height on the south, east and west sides, dissected by boulder-filled gullies. The northern side has a low cliff below a rock terrace at about 5-8 m altitude, above which moderate slopes rise to a broad plateau at about 40-50 m, with a maximum altitude of 57 m. A beach at the eastern end of the northern coast affords easy access to relatively gentle slopes leading to the central plateau area. The coastal cliffs generally make access to the upper island by other routes difficult, although access is feasible via one or two of the gullies on the eastern and northern sides.

The designated Area comprises the entire island above the low tide level, at which the coastline 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 feature.

No meteorological data are available for Lynch Island, but conditions are broadly expected to be similar to those experienced at Signy Research Station. However, anecdotal observations suggest that significant microclimatic differences exist on Lynch Island, as the more profuse growth of plant communities would seem to attest. The island is exposed to the south-west and to katabatic and föhn winds descending from Coronation Island to the north. However, in other respects the island is relatively sheltered from regional northerly, easterly and southerly winds by Coronation Island, Cape Hansen and Signy Island respectively. The föhn effect can briefly raise local air temperatures by as much as 10°C at Signy Island. Lynch Island has often been observed to receive sunshine when the surrounding region is shrouded in low cloud. The angle of solar incidence is also relatively high on the northern side of the island because of its general slope and aspect. The above factors may be important reasons for the abundance of the two flowering plants found on the island. The bedrock of Lynch Island consists of quartzo-feldspathic and micaceous schists of the Scotia metamorphic complex, but is poorly exposed and equivalent rocks are much better displayed in the Cape Hansen area, to the east on Coronation Island. Three main soil types have been identified on Lynch Island:

(i) an acidic (pH 3.8 – 4.5) moss peat, formed by the tall turf-forming mosses *Chorisodontium aciphyllum* and *Polytrichum strictum* (= *Polytrichum alpestre*), occurs mainly at the north-eastern end of the island. This peat reaches a depth of about 50 cm and is similar to peat on Signy Island where it reaches a depth of 2 m. Where the peat depth exceeds about 30 cm there is permafrost. In a few places where the substratum is moist, shallow peat of 10-15 cm depth (pH 4.8 ~ 5.5) has accumulated beneath the carpet-forming mosses *Warnstorfia laculosa* (= *Calliergidium austro-stramineum*) and *Sanionia uncinata* (= *Drepanocladus uncinatus*).

(ii) a shallow, gravelly loam-like soil resembling tundra brown soil occurs beneath dense swards of the grass *Deschampsia antarctica*. It is seldom more than about 30

cm in depth (pH 5.0 – 5.8) and probably represents one of the most advanced soil types in the Antarctic.

(iii) A glacial till with material ranging from fine clay (pH 5.2 – 6.0) and sand to gravel and larger stones. This covers the summit plateau and occurs in rock depressions throughout the island, as well as on parts of the rock terrace. On the plateau cryoturbation has in several places sorted the material into patterned features with small stone circles and polygons on level ground and stone stripes on sloping ground. At the north-eastern end of the island, the deposition of limpet shells (*Nacella concinna*) by gulls (*Larus dominicanus*) has resulted in a more calcareous mineral soil in rock depressions with a pH of 6.5 - 6.8.

Small temporary melt-streams occur on the slopes in summer, but there are no permanent streams or pools, and only a few small late-lying snow patches occur on the southern side of the island.

Cryptogamic and phanerogamic vegetation typical of the maritime Antarctic is found over much of the island (Map 3). The most significant aspect of the vegetation is the abundance and reproductive success of the two native Antarctic flowering plants, the Antarctic hair grass (*Deschampsia antarctica*) and Antarctic pearlwort (*Colobanthus quitensis*), found especially on the northern slopes (Map 3). Both species flower in profusion and seed viability appears to be much greater than on Signy Island. Lynch Island possesses the largest stands of *Deschampsia* and the greatest abundance of *Colobanthus* known in the South Orkney Islands and one of the most extensive anywhere in the Antarctica Treaty Area.

On the rock terrace and moist slope rising above the northern coast, the grass forms extensive swards of up to 15 m x 50 m. These swards range from continuous stands of relatively luxuriant plants on the moister sites and ledges to small, yellowish, more isolated plants on the drier, stonier and more exposed terrain. *Colobanthus* is generally associated, but here the plants do not coalesce to form closed patches. This is one of very few sites where *Deschampsia* is known to grow directly on *Polytrichum-Chorisodontium* moss banks. Elsewhere on the island, the grass and, to a lesser extent, the pearlwort are frequent associates in other communities, especially stands of denser fellfield vegetation where there is quite high cover afforded by various mosses and lichens (particularly towards the western end of the northern terrace).

Shallow but occasionally extensive (about 50 m²) banks of *Chorisodontium aciphyllum* and *Polytrichum strictum* are frequent at the north-eastern end of the island and, to a lesser extent, on the southern side. These are typical of the moss banks which occur on Signy Island and elsewhere in the northern maritime Antarctic, with several fruticose and crustose lichens growing epiphytically on the moss surface. In small moist depressions, there are carpets of *Warnstorfia laculosa* and *Sanionia uncinata*, with some *Warnstorfia sarmentosa* (= *Calliargon sarmentosum*) and *Cephaloziella varians* (= *C. exiliflora*). On wet soil and rock ledges, *Brachythecium austro-salebrosum* is common.

On the drier, more windswept, stonier soils and rock surfaces – notably in the plateau area – a typical open fellfield community of many bryophyte and lichen taxa form a complex mosaic. The dominant species in this locality are the lichens *Usnea antarctica* and *U. aurantiaco-atra* (= *U. fasciata*) and the moss *Andreaea*

depressinervis; *Sphaerophorus globosus* and other species of *Alectoria*, *Andreaea*, *Cladonia*, and *Stereocaulon* are also common, while *Himantormia lugubris* and *Umbilicaria antarctica* are infrequent. Crustose lichens are abundant on all rock surfaces. The mosses and macrolichens in this area are loosely attached on thin soils and are easily damaged. Large thalli of *Usnea* spp. and *Umbilicaria antarctica* are found on moist sheltered boulders and rock faces, especially on the southern side of the island.

Communities of crustose lichens occur on the cliffs above the high water mark, especially where the rock is influenced by breeding or roosting birds. The distribution of several species forms distinctive zones in relation to inundation by sea spray and exposure to wind. The best developed communities of brightly coloured ornithocoprophilous taxa occur at the western end of the island where *Caloplaca* spp., *Haematomma erythromma*, *Mastodia tessellata*, *Physcia caesia*, *Xanthoria candelaria*, *X. elegans*, and species of *Buellia* and *Verrucaria* are frequent. The uncommon halophilous moss *Muelleriella crassifolia* also occurs within the spray zone around the island.

The only rare moss recorded on Lynch Island is *Plagiothecium ovalifolium*, found in moist, shaded rock crevices near the shore. However, the island is possibly the only site known in the Maritime Antarctic where the moss *Polytrichastrum alpinum* develops sporophytes in profusion each year; this occurs among *Deschampsia*, *Colobanthus* and cryptogams on the northern side of the island; elsewhere in the Antarctic sporophytes are in some years very rare. Also, *Polytrichum strictum* produces male inflorescences in local abundance, a rare phenomenon in this species in the Antarctic. While the thalloid liverwort *Marchantia berteroana* is locally common on Signy Island, Lynch Island is one of very few other localities where it is known in the South Orkney Islands. Several cryptogamic species of very restricted distribution in the Antarctic, but which are locally common on Signy Island and the mainland of Coronation Island only a few hundred metres away, have not been observed at Lynch Island.

The microinvertebrate fauna associated with the rich *Deschampsia* swards described thus far comprises 13 taxa: three springtails (*Cryptopygus antarcticus*, *Friesea woyciechowskii* and *Isotoma (Folsomotoma) octooculata* (= *Parisotoma octooculata*), one mesostigmatid mite (*Gamasellus racovitzai*), two cryptostigmatid mites (*Alaskozetes antarcticus* and *Globoppia loxolineata*), and seven prostigmatid mites (*Apotriophydeus* sp., *Ereynetes macquariensis*, *Nanorchestes berryi*, *Stereotydeus villosus*, and three species of *Eupodes*). The number of taxa identified is likely to increase with greater sampling. The community is dominated by the Collembolla, especially *Cryptopygus antarcticus* (84% of all arthropods extracted), with relatively large numbers of *I. octooculata*; the principal mite was an undetermined species of *Eupodes*. *Globoppia loxolineata* is near the northernmost limit of its known distribution. In general, the population density of the arthropod community of grass stands on Lynch Island appears unusually high, with some measurements suggesting it is one of the highest in the world. It also shows considerable diversity for an Antarctic site, although this observation was based on a small number of sample replicates and further sampling would be required to

establish densities with greater reliability: this is difficult to achieve on Lynch Island given the very limited extent of communities available for sampling.

Lynch Island was the first site in the Antarctic where a terrestrial enchytraeid was found (in soil beneath a moss *Hennediella antarctica* on a rock ledge above the northern shore); only in a few other sites in the South Orkney Islands have these worms been found – although few samples have been gathered and the species has yet to be identified. Of the tardigrade fauna, most of the 16 individuals isolated from a sample of *Brachythecium* were *Hypsibius alpinus* and *H. pinguis* with some *H. dujardini*, while of 27 isolated from a *Prasiola crispa* sample, almost all were the latter species with a few that were other species of *Hypsibius*.

The mineral and organic soils of Lynch Island have a slightly higher pH than corresponding soils on nearby Signy Island. This higher base and nutrient status, together with the more favourable microclimate, is reflected in larger numbers of bacteria (including *Chromobacterium*), yeasts and fungi than occur in comparable soils on Signy Island. Bacterial numbers in the *Polytrichum* peat on Lynch Island are about eight times, and in the *Warnstorfia* peat about six times, greater than in corresponding Signy Island peats; yeasts and fungi are similarly much more abundant. Soil associated with the two flowering plants yielded several nematophagous fungi: in *Deschampsia* soil *Acrostalagmus goniodes*, *Cephalosporium balanoides* and *Dactylaria gracilis*; in *Colobanthus* soil, *Cephalosporium balanoides*, *Dactylaria gracilis*, *Dactylella stenobrocha* and *Harposporium anguillulae* were found. The basidiomycete fungi *Galerina antarctica* and *G. longinqua* occur on moist moss.

The island has no penguin colonies or substantial breeding colonies of other birds. Groups of chinstrap (*Pygoscelis antarctica*), Adélie (*P. adeliae*) and gentoo (*P. papua*) penguins and, sometimes, blue-eyed cormorants (*Phalacrocorax atriceps*) often congregate at the north-eastern and the western ends of the island. Several pairs of brown skuas (*Catharacta lonnbergii*) and at least two pairs of kelp gulls (*Larus dominicanus*) were observed in the early 1980s to nest at the north-eastern corner. A small colony of Antarctic terns (*Sterna vittata*) may also occur in this vicinity, although in February 1994 breeding was not observed. Cape petrels (*Daption capense*) and snow petrels (*Pagodroma nivea*) breed on the higher cliffs at the eastern end and along the north-western coast of the island. A few pairs of snow petrels and Wilson's storm petrels (*Oceanites oceanicus*) nest on ledges and beneath boulders on the south side of the island.

Weddell seals (*Leptonychotes weddellii*), crabeater seals (*Lobodon carcinophagus*), occasional leopard seals (*Hydrurga leptonyx*), and small groups of southern elephant seals (*Mirounga leonina*) are regularly seen on the coast and on ice floes in the vicinity; none have been known to breed on Lynch Island. Since the early 1980s increasing numbers of Antarctic fur seals (*Arctocephalus gazella*), virtually all being immature non-breeding males, have been observed on Lynch Island, some gaining access up the more gentle north-eastern slopes to vegetated areas, where they have caused local, but severe, damage to *Polytrichum-Chorisodontium* moss banks and other communities.

Seal access to the island is principally from a beach on the NE coast. Once seals have gained access, there are no further substantial geographical impediments to

their more extensive travel over the island. Groups of seals have been observed near the summit. Destruction of swards of *Deschampsia*, the feature for which the Area is primarily protected, was first reported in 1988. At the time of the most recent inspection (February 1999) it was observed that the most luxuriant areas of *Deschampsia* and *Colobanthus* on the northern and north-western slopes had not yet been affected. Accessible areas of vegetation in the eastern and north-eastern sides of the island, particularly *Polytrichum* and *Chorisodontium* moss banks, had been severely damaged by Antarctic fur seals, while *Deschampsia* had either been damaged or had died (Map 3).

6(ii) Restricted and managed zones within the Area

None.

6(iii) Structures within and near the Area

There are no structures present in the Area apart from several cairns marking sites used for topographical survey. A sign notifying the specially protected status of Lynch Island was erected on a prominent rock outcrop above the recommended landing beach in February 1994, but this was destroyed by strong winds. The same site should be used for a stronger replacement sign.

A small refuge is present at Shingle Cove, 2 km east, around Cape Hansen on Coronation Island. Signy Research Station (UK) is 6.4 km south at Factory Cove, Borge Bay, on Signy Island.

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

The nearest protected areas to Lynch Island are North Coronation Island (SPA No.18) which lies about 5 km to the north, Moe Island (SPA No. 13) which is about 10 km SSW, and Southern Powell Island (SPA No. 15) which is about 35 km to the east (Map 1).

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. Landings from the sea should be at the beach on the eastern end of the

northern coast of the island (Map 2), unless specifically authorised by Permit to land elsewhere, or when landing at this location is impractical because of adverse conditions. Landing of helicopters within the Area shall be at the designated location on the rock platform (8 m) on the north-western end of the island (Map 2). Use of helicopter smoke grenades is prohibited unless absolutely necessary for safety, and all grenades should be retrieved. No special restrictions apply to the sea or air routes used to move to and from the Area.

Movement within the Area shall be on foot. Pilots, air or boat crew, or other people on aircraft 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, but taking care not to damage or dislodge lichens. 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

Camping should be avoided within the Area. However, when absolutely necessary for purposes specified in the Permit, camping is allowed at the designated site at the north-western end of the island (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. 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 if there is a reasonable concern that the sampling proposed would take, remove or damage such quantities of soil, native flora or fauna that their distribution or abundance on Lynch 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 biological monitoring and site inspection activities, which may involve the collection of limited samples for analysis or review, or for protective measures.
- Any specific sites of long-term monitoring shall be appropriately marked.
- To help maintain the ecological and scientific values of Lynch 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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**Antarctic Specially Protected Area No. 111 (Specially Protected Area No. 15)
Southern Powell Island and adjacent islands, South Orkney Islands; Lat
60°45'S, Long 45°02'W**

1. Description of Values to be Protected

The Area was originally designated in Recommendation IV-15 (1966, SPA No. 15) after a proposal by the United Kingdom on the grounds that Southern Powell Island and the adjacent islands support substantial vegetation and a considerable bird and mammal fauna. The Area was representative of the natural ecology of the South Orkney Islands, and was rendered more important by the nucleus of an expanding colony of Antarctic fur seals (*Arctocephalus gazelle*).

These grounds are still relevant, though the expansion of the fur seal colony is progressing only slowly.

The values to be protected are primarily those associated with the large concentrations of breeding birds and seals, and to a lesser extent, the terrestrial vegetation.

2. Aims and Objectives

Management of southern Powell Island and adjacent islands aims to:

- avoid major changes in the structure and composition of the terrestrial vegetation;
- prevent unnecessary human disturbance to the Area;
- permit research of a compelling scientific nature which cannot be served elsewhere.

3. Management Activities

Because of its use as an anchorage in the past, it is important that the signs, which identify the Area as a Specially Protected Area and point out that landing without a Permit is forbidden, are maintained.

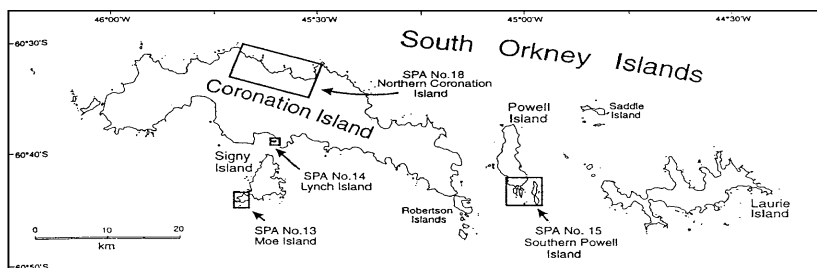
Visits should be made as necessary to assess the biological composition of the Area, in particular the state of the fur seal colony, and to maintain sign boards.

4. Period of Designation

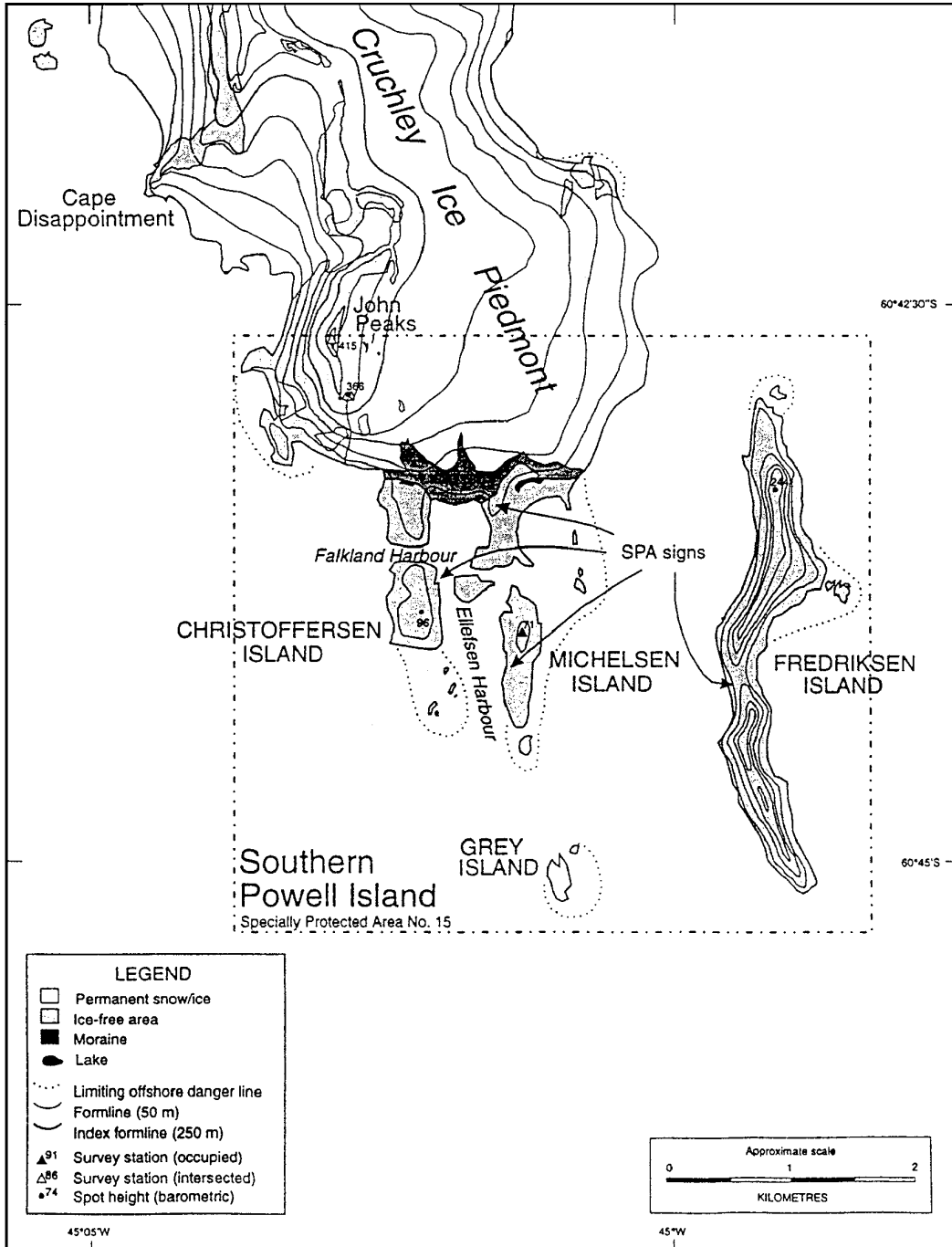
Designated under ATCM Recommendation IV-15 for an indefinite period.

5. Maps

Map A shows the location of southern Powell Island in relation to the South Orkney Islands. Map B shows the Area in greater detail.



ASP A 111
Map A*



ASPA 111
Map B*

6. Description of the Area

6(i) Geographical coordinates and natural features

The Area, which is centered on latitude 60°42'S and longitude 45°01'W includes all of Powell Island, South Orkney Islands, south of the latitude of the southern summit of John Peaks (375 m altitude), together with the whole of Fredriksen Island, Michelsen

Island (a tidal peninsula at the southern tip of Powell Island), Christoffersen Island, Grey Island and unnamed adjacent islands. All but the Crutchley Ice Piedmont of southern Powell Island are ice-free in summer, though there are patches of semi-permanent or late-lying snow in places.

The rocks of southern Powell Island, Michelsen Island and Christoffersen stand are conglomerates of Cretaceous-Jurassic age. The two promontories to the west of John Peaks are Carboniferous greywacke-shales. There are boulders containing plant fossils in the glacial deposits around Falkland Harbour. Much of central and southern Fredriksen Island is composed of sandstone and dark phyllitic shales. The north-east, and probably most of the north, of this island is highly sheared conglomerate with laminated mudstone. The Area has a thick mantle of glacial till, strongly influenced by seabird guano.

Michelsen Island is almost devoid of land vegetation, although on the rocks here are extensive communities of lichens dominated by nitrophilous crustose species. These are also widespread on Fredriksen Island and elsewhere on bird-influenced cliffs and rocks near the shore. The most diverse vegetation on Powell Island occurs on the two promontories and associated scree west of Falkland Harbour. Here, and on Christoffersen Island and the northern part of Fredriksen Island, moss banks with underlying peat occur. Wet areas support stands of moss carpet. There are extensive areas of the nitrophilous macroalga *Prasiola crispa* associated with the penguin colonies in the area. Snow alga are prominent on the ice piedmont and snow patches in late summer.

No information is available on the arthropod fauna, but this is probably very similar to that at Signy Island. The springtails *Cryptopygus antarcticus* and *Parisotoma octoculata* and the mites *Alaskozetes antarcticus*, *Stereotydeus villosus* and *Gamasellus racovitzai* occur in great numbers beneath stones.

There are few observations on marine biota in the Area, but this is likely to be very similar to the well-researched Signy Island area. The relatively enclosed Falkland-Ellefsen Harbour area and the bay on the east side of the peninsula are highly influenced by glacial run-off from the ice Piedmont.

Large numbers of penguins and petrels breed throughout the Area. There are many thousand pairs of chinstrap penguins (*Pygoscelis Antarctica*), mostly on Fredriksen Island. Similarly large numbers of Adelie penguins (*P. adeliae*) occur principally on the southern Powell-Michelsen Island area. Here there are also several thousand pairs of gentoo penguins (*P. Papua*) and a very few scattered pairs of macaroni penguins (*Eudyptes chrysolophus*) breeding among the gentoos.

Other breeding birds include southern giant petrels (*Macronectes giganteus*), cape petrels (*Daption capensis*), snow petrels (*Pagodroma nivea*), Wilson's storm petrels (*Oceanites oceanicus*), blue-eyed shags (*Phalacrocorax Triceps*) Dominican gulls (*Laws dominicanus*), brown skuas (*Catharacta lonnbergi*), sheathbills (*Chionis alba*),

and possibly Antarctic prions (*Pachyptila desolata*) and black-bellied storm petrels (*Fregatta tropica*).

Michelsen Island is the longest known breeding site in the Antarctic of fur seals since their near extermination in the nineteenth century. The number of pups born annually has increased slowly but fairly steadily from 11 in 1956 to about 60 in 1989. Thirty-four live pups were recorded in January 1994. Many non-breeding males visit the Area during the summer. Other seals are frequent on the beaches, mainly elephant seals (*Mirounga leonina*) and Weddell seals (*Leptonychotes weddelli.*). Leopard seals (*Hydmrga leptonyx*) and crabeater seals (*Lobodon carcinophagus*) are occasionally seen on ice floes.

6(ii) Restricted zones within the Area

None

6(iii) Location of structures within the Area

A marker board (erected January 1994) is positioned on southern Powell Island on top of a small rock outcrop at the back of the shingle beach on the east side of the southern promontory of the island.

On Michelsen Island the marker board (erected January 1994) is situated on a low-lying rock about 50 m from the shoreline at the back of a high shingle beach at the southern tip of the island.

On Christoffersen Island the marker board (erected January 1994) is located on a small promontory on the northeastern shore of the island at the entrance to Falkland Harbour. The board is located at the back of the beach just below a small Adelie penguin rookery.

On Fredriksen Island a marker board (erected January 1994) is located at the northern end of the pebble boulder beach on the western side of the island, below a small chinstrap penguin rookery. The board is at the back of the beach on top of a small rock outcrop.

There are no other structures within the Area, but various mooring chains and rings associated with the use of Ellefsen and Falkland Harbours by floating whale factories in the 1920's are to be found on the shore.

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

SPA No 13 Moe Island, and SPA No. 14, Lynch Island, are about 35 km west by south and about 35 km west of the Area respectively SPA No. 18, North Coronation Island is about the same distance away on the northern side of Coronation Island

7. Permit Conditions

Entry into the Area is prohibited except in accordance with a Permit issued by an appropriate national authority as designated under Article 7 of Annex V of the Protocol on Environmental Protection to the Antarctic Treaty.

Conditions for issuing a Permit to enter the Area are that:

- it is bowed only for a compelling scientific purpose which cannot be served elsewhere;
- the actions permitted will not jeopardise the natural ecological system in the Area;
- any management activities are in support of the objectives of this Management Plan;
- the actions permitted are in accordance with this Management Plan;
- the Permit must be carried within the Specially Protected Area;
- a report or reports are supplied to the authority or authorities named in the Permit.

7(i) Access to and movement within the Area

Anchoring within Falkland Harbour and Ellefsen Harbour is prohibited except in emergency.

No pedestrian routes are designated within the Area, but persons on foot should avoid walking on vegetated areas or disturbing wildlife wherever possible. Vehicles are not allowed in the Area.

It is forbidden to overfly the Area below 250m altitude above the highest point except for purposes of landing (when essential) on the beach on the east side of the southern most tip of Powell Island.

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

Compelling scientific research which cannot be undertaken elsewhere essential management activities, including monitoring.

7(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.

7(iv) Location of field camps

Parties shall not camp in the Area, except in an emergency for reasons of safety. In this case, tents should be erected having regard to causing the least damage to the vegetation or disturbance to fauna.

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

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

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

No herbicides or pesticides shall be brought into the Area. Any other chemicals, which may be introduced for a compelling scientific purpose 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, food or 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. All such materials are to be removed when no longer required.

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

This 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 Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

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

Material may be collected or removed from the Area only in accordance with a Permit, except that debris of man-made origin may be removed from the beaches of the Area and dead or pathological specimens of fauna or flora may be removed for laboratory examinations.

7(viii) Disposal of waste

All non-human wastes shall be removed from the Area. Human waste may be deposited in the sea.

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

Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities which may involve the collection of small amounts of plant material or small numbers of animals for analysis or audit, or to erect or maintain notice boards, or to carry out protective measures.

7(x) Requirements for reports

The principal Permit holder for each issued Permit shall submit a report of activities conducted in the Area using the accepted Visit Report form. This report all be submitted to the appropriate authority or authorities named in the Permit as on as practicable, but not later than six months after the visit has taken place.

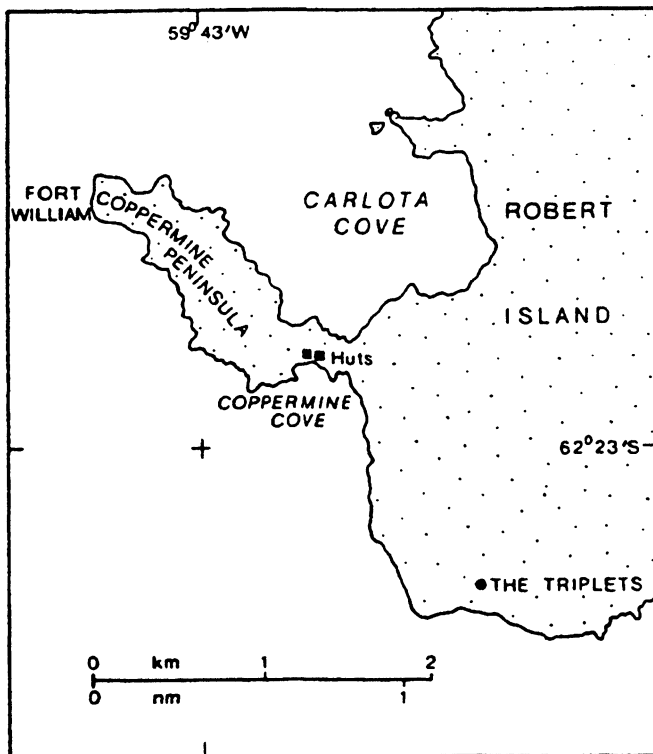
Such reports should be stored indefinitely by the appropriate authority and made accessible to interested Parties, SCAR, CCAMLR and COMNAP if requested, to provide the documentation of human activities within the Area necessary for good management.

**Antarctic Specially Protected Area No. 112 (Specially Protected Area No. 16)
Coppermine Peninsula, Robert Island: Lat 62°23'S, Long 59°42'W**

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.



ASP A 112
Map A*

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 increasingly 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.

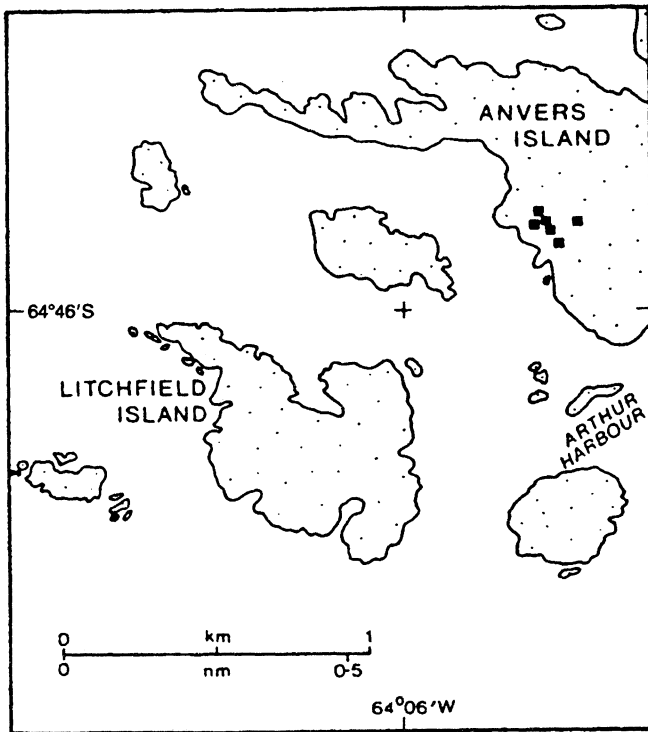
viii. *Scientific research and sampling.* All activities must conform strictly with those specified in the permit to enter the Area.

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.

**Antarctic Specially Protected Area No. 113 (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.



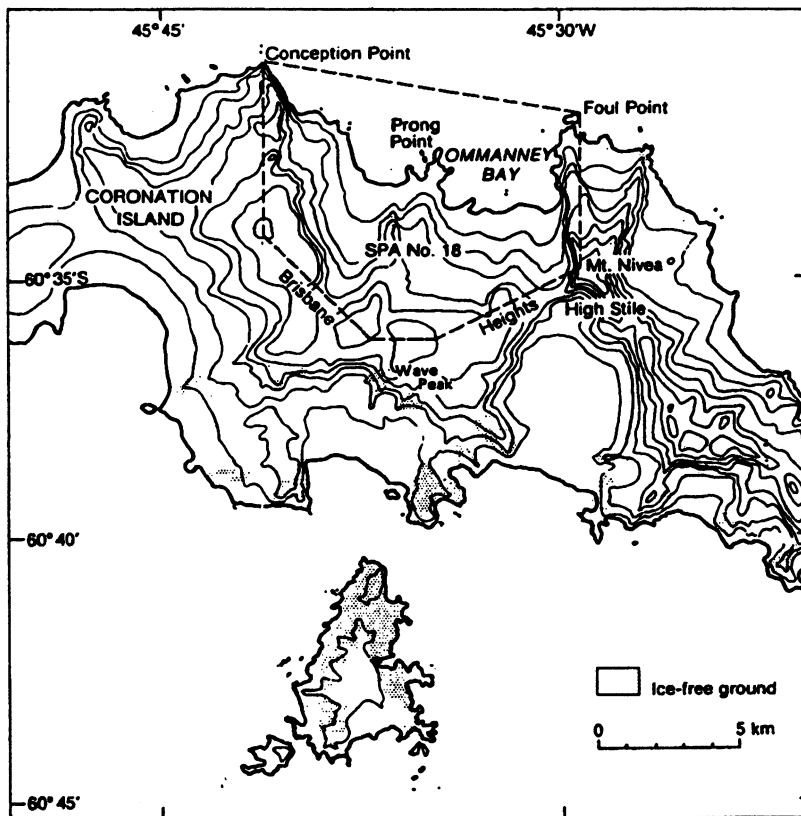
ASPA 113
Map A*

**Antarctic Specially Protected Area No. 114 (Specially Protected Area No. 18)
North Coronation Island, South Orkney Islands; Between Lat 60°31'S,
Long 45°41'W and Lat 60°37'S, Long 45°36'W and Lat 60°32'S, Long
45°29'W.**

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).



ASPA 114
Map A*

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.

**Antarctic Specially Protected Area No. 115 (Specially Protected Area No. 19)
Lagotellerie Island, Marguerite Bay; Graham Land Lat 67°53'S, long
67°24'W.**

1. Description of values to be protected

Lagotellerie Island (Latitude 67°53'20" S, Longitude 67°25'30" W, 1.58 km²), 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 m²; 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 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.”. (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:

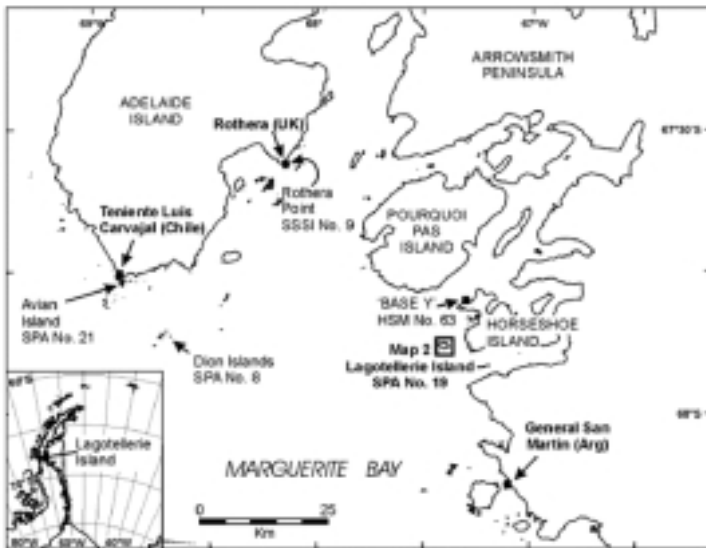
- Maps showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently at any operational research station located within 50 km of the Area, where copies of this Management Plan shall also be made available.
- Signs showing the location and boundaries of 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*

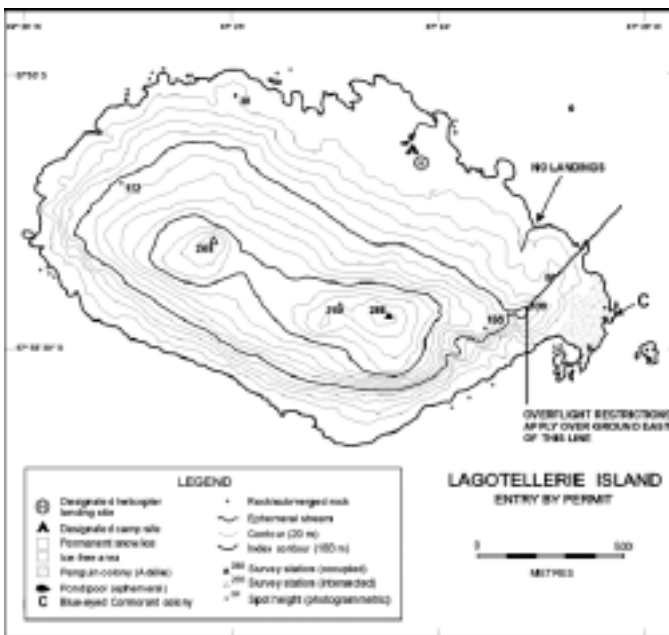
Designated for an indefinite period.

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.



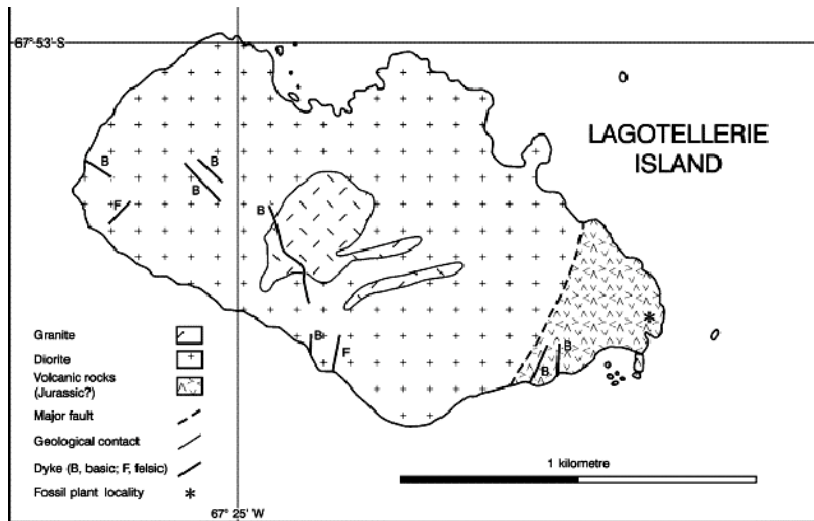
ASP A 115
Map 1*



ASP A 115
Map 2*

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.



ASPA 115
 Map 3*

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 km²), 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 m² 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* spp., *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 reflexidens*) 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 m², 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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**Antarctic Specially Protected Area No. 116 (Specially Protected Area No 20)
'New College Valley', Caughley Beach, Cape Bird, Ross Island; Lat
77°14'S, Long 166°23'E.**

1. Description of values to be protected

An area of 0.33 km² 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 20m², 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:

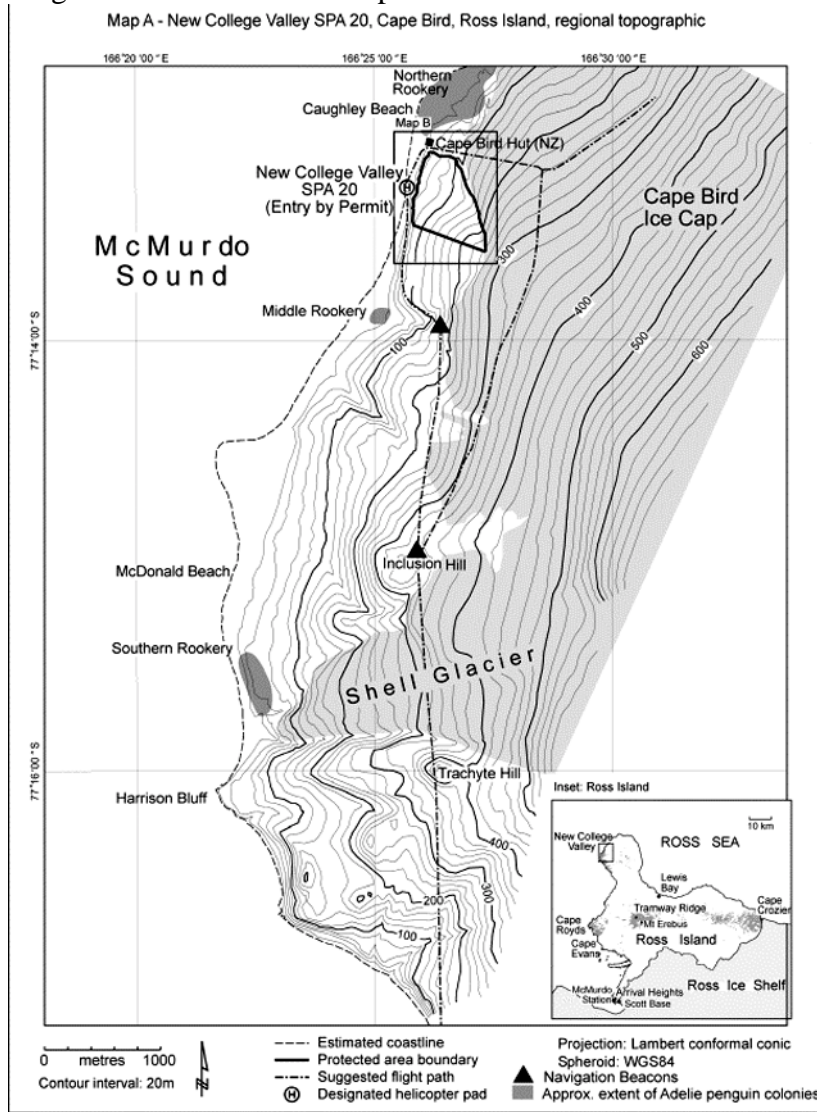
- Signs showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently, and a copy of this Management Plan shall be kept available, in all of the research hut facilities located within 10 km of the Area.
- Signs showing the location, boundaries and clearly 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.

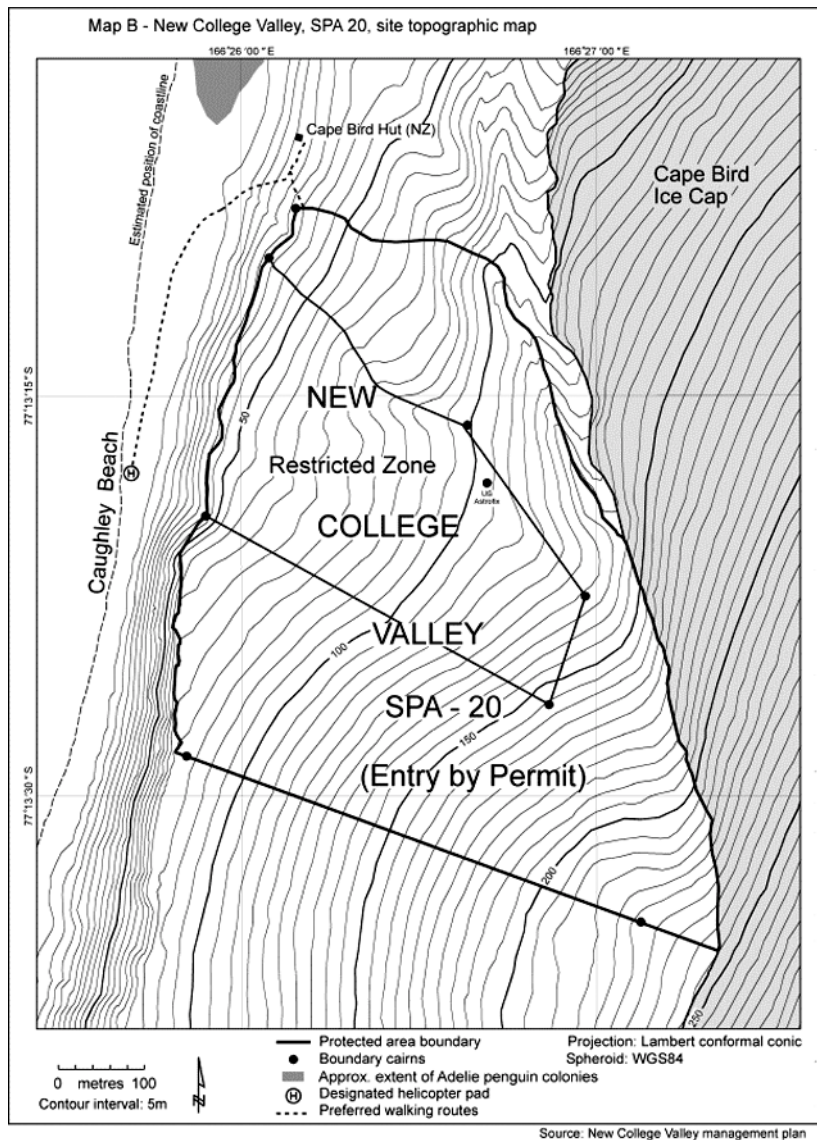
5. *Maps and photographs*

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.



ASPA 116
Map A*

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).



ASP A 116
Map B*

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.

**Antarctic Specially Protected Area No. 117 (Specially Protected Area No. 21)
Avian Island, North-west Marguerite Bay**

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.

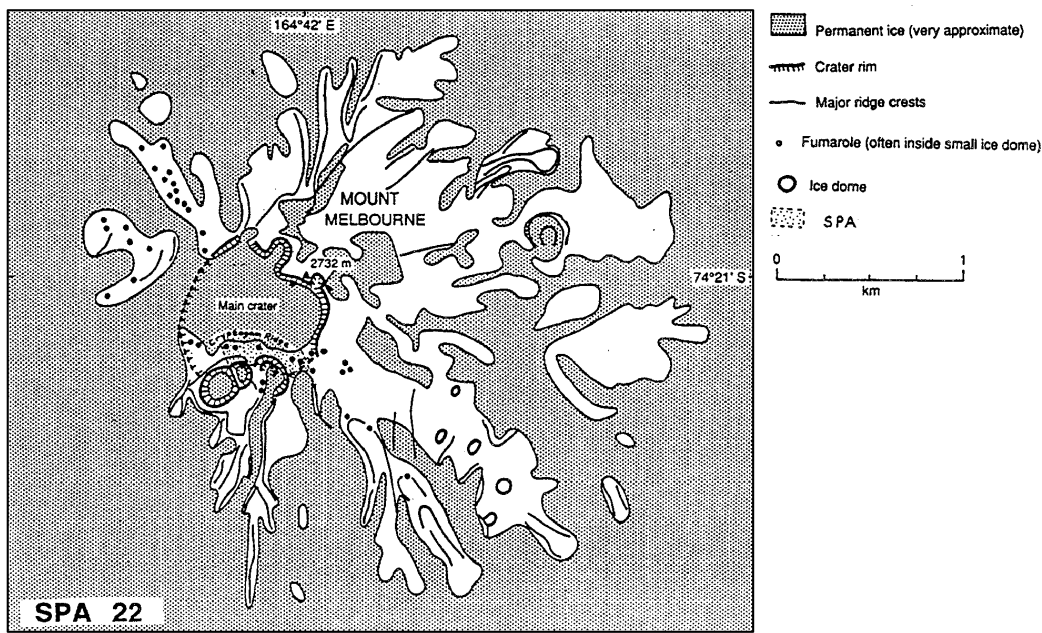
ix. Inspection and maintenance. Inspection visits should be made to the Area at least once every five years to assess the state of the site and to monitor any significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.

**Antarctic Specially Protected Area No. 118 (Specially Protected Area No. 22)
Cryptogam 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 Cryptogam 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.



ASPA 118
Map A*

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 Cryptogam 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 it is 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 Cryptogam 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.

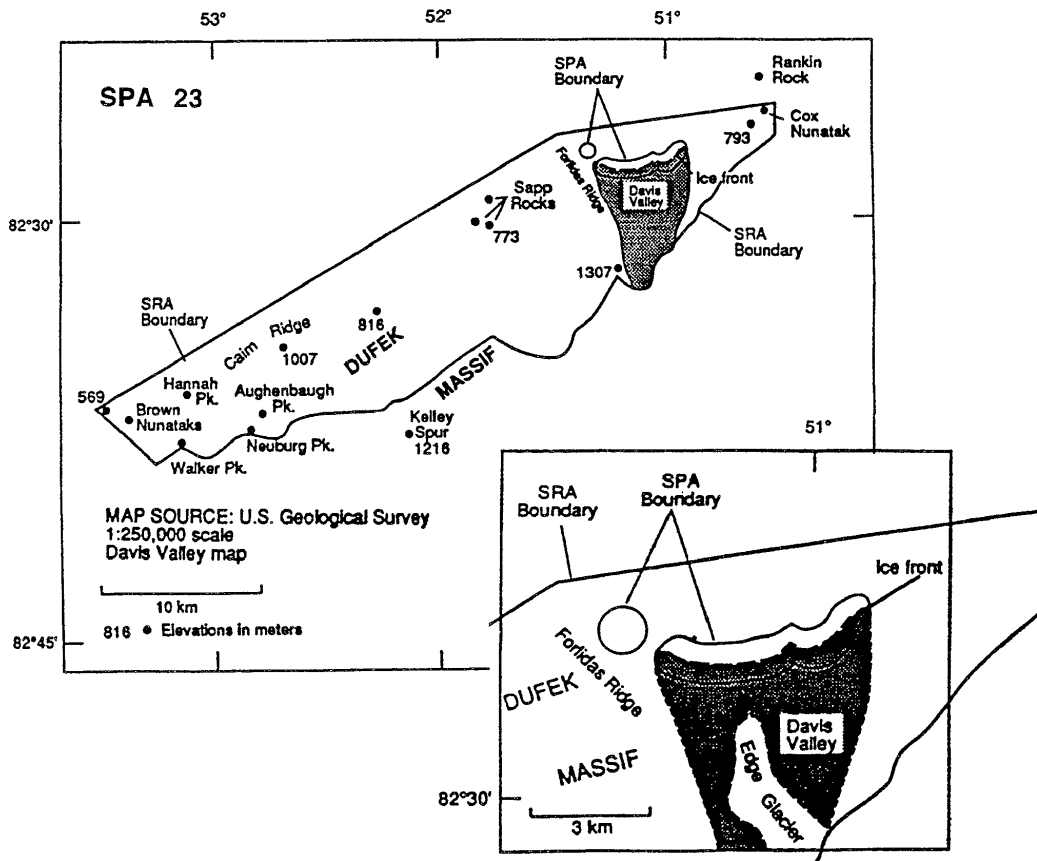
**Antarctic Specially Protected Area No. 119 (Specially Protected Area No. 23)
Forlidas Pond and Davis Valley Ponds**

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.



ASPA 119
Map A*

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.

Antarctic Specially Protected Area No. 120 (Specially Protected Area No. 24) Pointe-Geologie Archipelago

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*); Capy petrel (*Daption capensis*).

Well-marked hills display asymmetrical 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 programming 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.

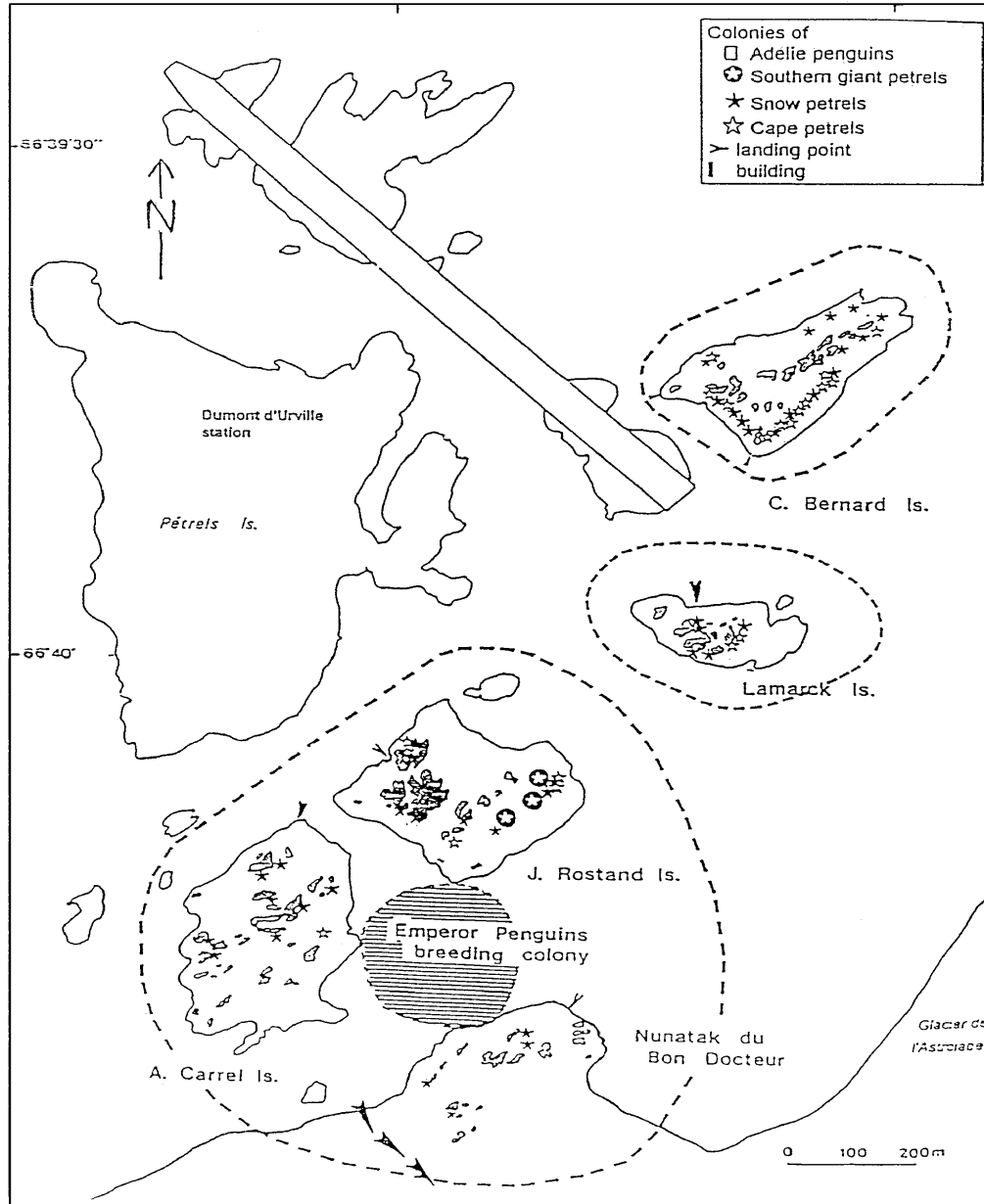
Inspection visit are restricted to essential management purposes.

4. Period Of Designation

The Area is designated for an indefinite period.

5. Maps

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



ASP A 120
Map A*

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, markers 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 be 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 programmes 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.

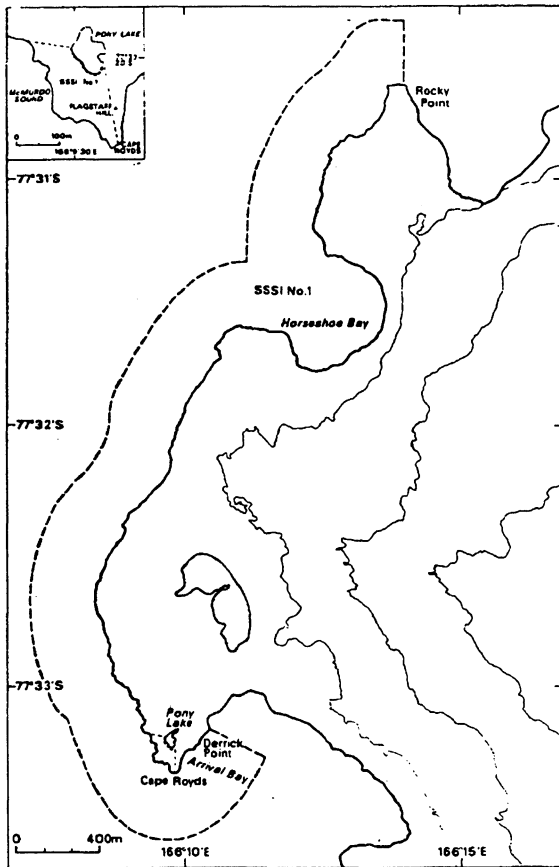
x) Requirements for reports of visits to the Area

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.

Antarctic Specially Protected Area No. 121 (Site of Special Scientific Interest No. 1)

Cape Royds, Ross Island

i. *Description of Site.* Cape Royds is situated at the western extremity of Ross Island, McMurdo Sound (lat 77°33'S, long 166°08'E), about 37 km north-northwest of McMurdo Station. The Site consists of all that area of Cape Royds west of a line drawn from the south coast of the Cape through Flagstaff Hill to the south-eastern tip of Pony Lake, and the west shoreline of this lake; and south of a line drawn from the western extremity of Pony Lake 280° True to the coast; including the littoral and sublittoral zones from Derrick Point on the east side of Arrival Bay about 4 km northwards to Rocky Point to the north of Horseshoe Bay, extending 500m offshore from highwater mark. The boundaries of the Site are shown on the attached map.



ASPA 121
Map A*

ii. *Reason for designation.* The structure and dynamics of the Cape Royds ecosystem, and the relationship with the penguin rookery are the subjects of scientific research. The research area and the main seaward access by Adelie penguins to the rookery should be protected by the creation of a reserve. The coastline of Cape Royds is an important feeding ground for Adelie penguins. The coast between Flagstaff Point and Proposed future research on the Cape Royds coastline incorporates further research on the dynamic of the Cape Royds inshore marine ecosystem. The Cape Royds penguin rookery and historic site provide an

attraction for sightseers from the nearby station complexes at Scott Base and McMurdo. Regular visits are made to the area by tourists from vessels which sail into McMurdo Sound. The Site will help control any possible impact from these activities in the future.

iii. *Outline of research.* The coastal area of Cape Royds is the site of continuing New Zealand research studies on Nototheniid fish population structure and dynamics. These studies, which began in 1981, involve the capture, measurement, tagging and release of *Trematomus bernacchii*. The Adelie penguin rookery population at Cape Royds has been continuously monitored since 1965, and these studies will also continue.

iv. *Date of expiry of designation.* 31 December 1995.

v. *Access points.* The Site should not be entered during the period of penguin occupation (approximately mid-October to mid-March) except by the marked tracks. Only scientists engaged in the scientific studies should approach the penguin colonies at this period. Photographs of the colonies, except for scientific purposes, should be taken from the boundaries of the Site. Access points to the seaward portions of the Site are unrestricted. Boat access from tourist ships or casual visitors should be via the northernmost cove in Backdoor Bay.

vi. *Pedestrian and vehicular routes.* No, vessels, vehicles or helicopters of any description should enter the Site except in event of emergency. Pedestrians should keep to the marked tracks and not move through areas populated by penguins, except as necessary in the course of scientific investigations.

vii. *Other kinds of scientific investigations which would not cause harmful interference.* None specified.

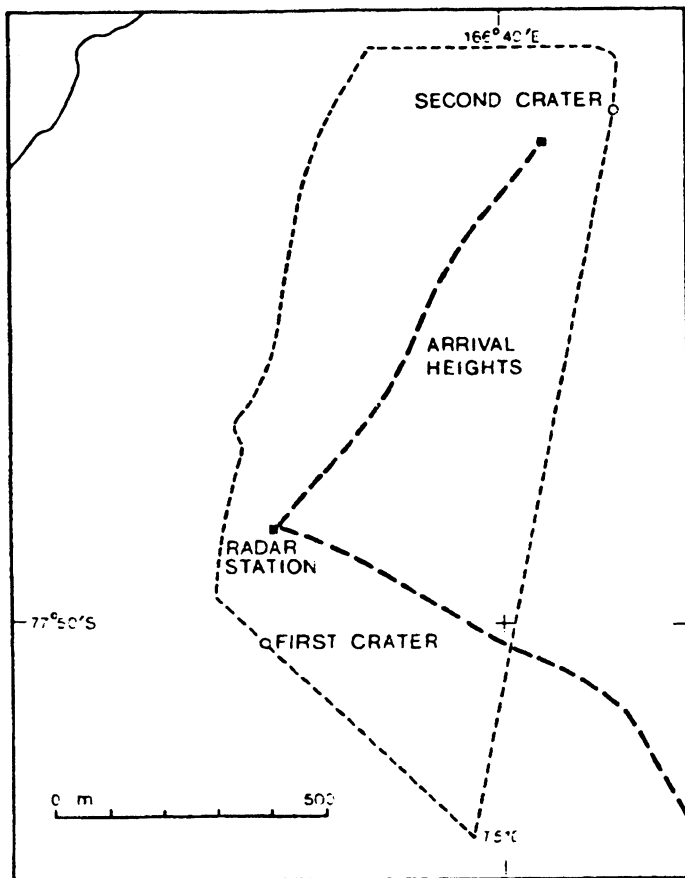
viii. *Scientific sampling.* This should be restricted to the minimum required in connection with the research programme.

ix. *Other restraints.* Any activity which would detract from the scientific research for which the area has been designated should be avoided. In particular, the following activities should be avoided: 1. Landscaping and removing surface material; 2. Construction of huts and buildings; and 3. Depositing of any pieces of equipment or material that would in any way hinder re-occupation of nests by penguins.

Antarctic Specially Protected Area No. 122 (Site of Special Scientific Interest No. 2)

Arrival Heights, Hut Peninsula, Ross Island

i. *Description of Site.* All that area of Arrival Heights enclosed with a line drawn from Trig T510 north-west over First crater to the 500 foot contour, then north along this contour to a point immediately west of Second Crater, then around the lip of this crater and south to Trig T510. The boundary, which is demarcated, is shown on the attached map.



ASPA 122
Map A*

ii. *Reason for designation.* This area is an electromagnetically and natural 'quiet site' offering ideal conditions for the installation of sensitive instruments for recording minute signals associated with upper atmosphere programmes.

iii. *Outline of research.* Upper atmosphere investigations associated with auroral and geomagnetic studies.

iv. *Date of expiry of designation.* 30 June 1981.

v. *Access points.* None are defined but movement within the area by vehicles or personnel other than those directly concerned with the investigations should be kept to the minimum necessary for implementing the programme.

vi. *Pedestrian and vehicular routes.* Vehicles and pedestrians should keep to the tracks shown on the attached map.

vii. *Other kinds of scientific investigations which would not cause harmful interference.* Scientific investigations other than those associated with the upper atmosphere programme should be kept to a minimum.

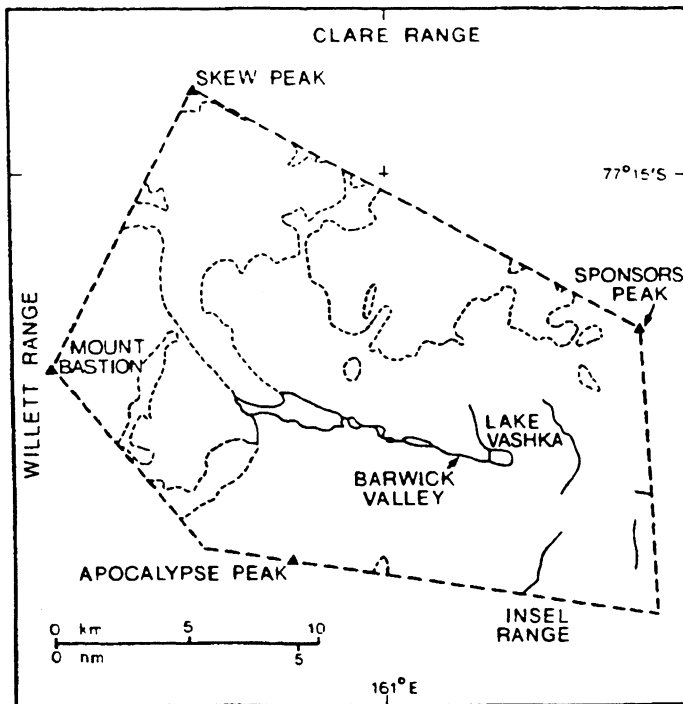
viii. *Scientific sampling.* Not applicable.

ix. *Other restraints.* No RF transmitting equipment other than low power transceivers for local essential communication may be installed within this Site. Every precaution should be taken to ensure that electrical equipment is adequately suppressed and correctly installed to keep man-made electrical noise to an absolute minimum.

Antarctic Specially Protected Area No. 123 (Site of Special Scientific Interest No. 3)

Barwick Valley, Victoria Land

i. *Description of Site.* The Site includes the greater part of Barwick Valley, Victoria Land, and contains parts of several glaciers, exposed soils, a lake about 3km wide and 16km long and a connecting stream about 5km long leading to Lake Vashka. It is bordered on the south, west and north by Olympus, Willett, and Clare Ranges respectively. The boundary of the Site approximates to an irregular pentagon enclosing about 325 km². The Site is defined by lines joining Skew Peak (77°24'S, 160°43'E), Sponsors Peak (77°18'S, 161°24'E), a point on the Insel Range (77°24'S, 161°26'E), a point in the Apocalypse Peaks (77°24'S, 160°46'E), Mount Bastion (77°19'S, 60°34'E) and Skew Peak. The boundaries are shown on the attached map.



ASP A 123
Map A*

ii. *Reason for Designation.* Barwick Valley is one of the least disturbed and contaminated of the Dry Valleys of Victoria Land, which are environmentally unique and possess extreme polar desert ecosystems. The Site is important as a reference base against which to measure changes in comparable ecosystems of the other Dry Valleys where a considerable variety of scientific investigations have been conducted regularly over the past decade. It is also expected to be of use in connection with global environmental monitoring.

iii. *Outline of research.* Investigations are proposed of the microbiology, bacteriology, mycology (especially of yeast and moulds), and of the terrestrial and aquatic ecosystems, with special programmes to establish baseline measurements for biological and environmental monitoring.

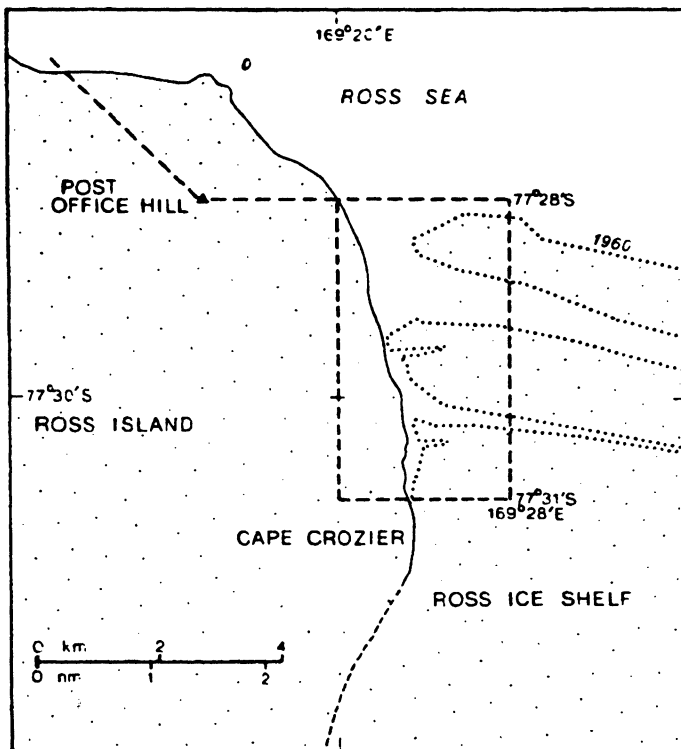
iv. *Date of expiry of designation.* 30 June 1981.

- v. *Access points.* Access should be by helicopter to Wright Valley, thence into the Barwick Valley Site on foot past Lake Vashka.
- vi. *Pedestrian and vehicular routes.* Vehicles should not be used. Pedestrian routes should keep to well-drained ground avoiding streams and the lake margins as much as possible.
- vii. *Other kinds of scientific investigations which would not cause harmful interference.* Geological pedagogical, and glaciological studies except those which would introduce exotic species and those which would disrupt or damage the existing ecosystems.
- viii. *Scientific sampling.* Scientific sampling in the Site should be restricted to that which can be accomplished without introducing new organisms, including micro-organisms, and without disturbing the environment.
- ix. *Other restraints.* Overflight of the Site should be avoided. Aircraft landing and vehicle parking should be kept well outside the boundaries of the Site. Field activities should be kept to a minimum. Permanent field camps, landfill disposal, and other activities which would introduce new materials or organisms, including micro-organisms, into the Site should be avoided. All material carried into the Site should be removed.

Antarctic Specially Protected Area No. 124 (Site of Special Scientific Interest No. 4)

Cape Crozier, Ross Island

i. *Description of Site.* The Site comprises 40 km² and includes the land areas where the Adelie Penguins (*Pygoscelis adeliae*) nest and the adjacent fast ice where the Emperor Penguins (*Aptenodytes forsteri*) annually breed. It is bounded by lines joining 77°28'S, 169°20'E, 77°28'S, 169°28'E, 77°31'S, 169°28'E, 77°31'S, 169°20'E, to the summit of Post Office Hill and north-east of a line which bears 315° True from the summit of Post Office Hill to the coast. The boundaries of the Site, the access track and road, the helicopter landing place and refuge hut are indicated on the attached map.



ASPA 124
Map A*

ii. *Reason for designation.* The penguin colonies are the subject of long-term studies of population dynamics and social behavior, and are relatively accessible by air from McMurdo Station and Scott Base. Access to the Site should be restricted to scientists engaged in investigations within the Site.

iii. *Outline of research.* Studies of the Emperor and Adelie Penguin populations and their ethology, life cycles, physiological adaptation and natural population fluctuations. Detection of possible changes in their biological characteristics which may be due to man-induced changes in the environment.

iv. *Date of expiry of designation.* 30 June 1981.

v. *Access points.* Access should be at points on the boundary closest to the refuge hut and the helicopter landing place.

vi. *Pedestrian and vehicular routes.* Helicopters and low-flying aircraft should avoid the Site. Vehicles should not enter the Site and should approach the Site boundary, when serving authorised activities, on courses at right angles to the boundary orientation. Pedestrian movement within the Site should be limited to the shortest routes consistent with the scientific activity.

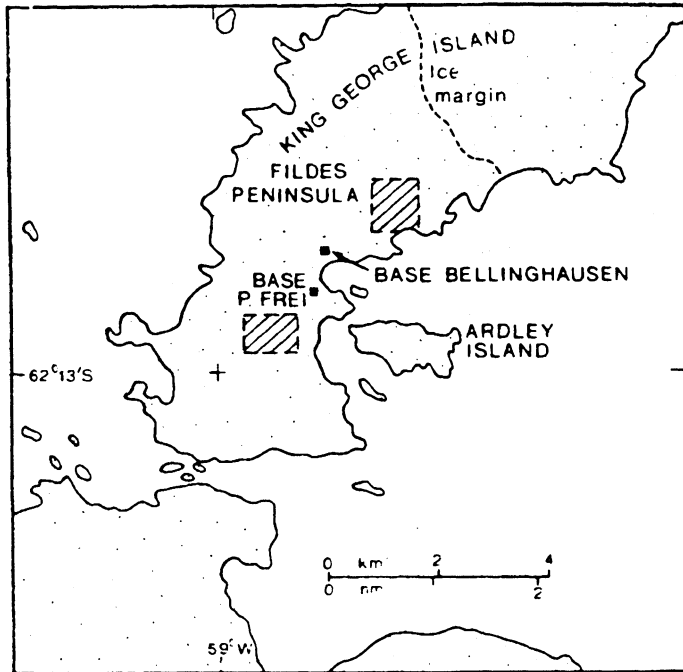
vii. *Other kinds of scientific investigations which would not cause harmful interference.* Biological, pedological, and geological observations except those which would cause harm to the birds or interfere with the breeding success of the penguin colonies. As far as possible such studies should be made at time when the Adelie Penguin colony is absent or when the Emperor Penguin colony is at least 1 km from the locality under scientific consideration.

viii. *Scientific sampling.* Taking samples of the bird populations by killing, capture, or taking of eggs should be done only for a compelling scientific purpose and in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora. Close inspection of birds, including photography, or taking blood or other biological samples, should be kept to a minimum.

Antarctic Specially Protected Area No. 125 (Site of Special Scientific Interest No. 5)

Fildes Peninsula, King George Island, South Shetland Islands

i. *Description of Site.* The two areas on Fildes Peninsula shown on the attached map will be demarcated.



ASPA 125
Map A*

ii. *Reason for designation.* The unique fossil ichnolites found in these areas are located close to two permanent scientific stations which have been visited frequently by tourist groups. The areas also contain representative sequences of Tertiary strata.

iii. *Outline of research.* The main object of the research programme is to describe the Tertiary stratigraphic sequences and to understand the geological evolution of this part of the Antarctic Peninsula

iv. *Date of expiry of designation.* 30 June 1981.

v. *Access points.* None are defined.

vi. *Pedestrian and vehicular routes.* Vehicles and helicopters should not enter the Site except in an emergency.

vii. *Other kinds of scientific investigations which would not cause harmful interference.* Scientific research other than geological should be kept to a minimum.

viii. *Scientific sampling.* Samples of rocks should only be taken for compelling scientific purposes.

ix. *Other restraints.* Buildings and other facilities should not be erected in the Site.

Antarctic Specially Protected Area No. 126 (Site of Special Scientific Interest No. 6)

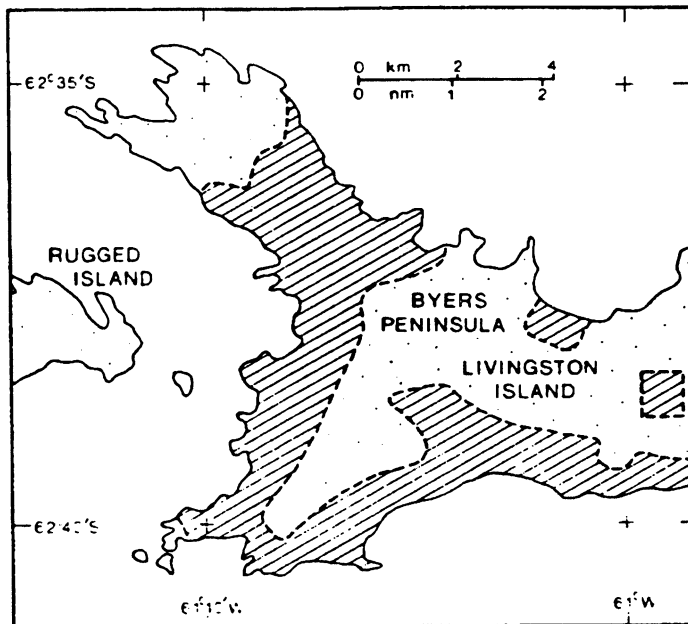
Byers Peninsula, Livingston Island, South Shetland Islands

This Site currently comprises three areas of varying shape and size on Byers Peninsula designated solely for their sedimentary and palaeontological interest. However, the peninsula is also of considerable biological and archaeological importance.

1. *Geographical location.* Byers Peninsula is an extensive, largely ice-free area at the western end of Livingston Island, South Shetland Islands, centred on lat 62°38'S, long 61°05'W.

2. *Management Plan*

i. *Description of site.* The site comprises the entire area of Byers Peninsula extending from the ice margin on the west side of Rotch Dome (to a point directly north of Stackpole Rocks) westwards to the west end of Ray Promontory. The littoral zone of the Peninsula is included within the Site. The nearby offshore islets and islands are not included in the Site. Most of the Site is low and undulating, below 100m altitude, except for Ray Promontory which has a more rugged topography, rising to over 200m at Penca Hill and Start Hill. Numerous volcanic plugs, lakes, pools and streams occur between Ray Promontory and the Rotch Dome ice field. Coastal areas often have broad beaches several hundred metres wide, with raised beaches behind.



ASP 126
Map A*

ii. *Reason for designation.* The fossils found in this area provide evidence of the former link between Antarctica and the other southern continents. A long-term palaeontological research programme has been in progress since the mid-1960s. It is important to protect these Jurassic and Cretaceous rocks from being used as building materials or taken as souvenirs.

The site is of special biological importance. It has a sparse but diverse flora of both calcicolous and calcifuge plants and cyanobacteria associated with the lavas and basalts, respectively. Basaltic plugs are particularly well-vegetated. Several rare cryptogams and the two native vascular plants (*Colobanthus quitensis* and *Deschampsia antarctica*) occur at several sites. There are several coastal and inland lakes, the latter having a particularly important biota, including aquatic mosses, and serve as breeding sites for the midge *Parochlus steineni*, the only native winged insect in the Antarctic and with exceptionally restricted distribution. The only other Antarctic dipteran, the apterous *Belgica antarctica*, occurs in stands of wet moss.

The site is also unique in possessing the greatest concentration of historical sites in Antarctica, namely the remains of refuges, together with contemporary artefacts, and shipwrecks of early nineteenth century sealing expeditions.

It is important that both the biological and archaeological features are also afforded protection.

iii. *Outline of research.* A long-term geological and palaeontological research programme was established in 1964. The main objectives are the description of sediments and fossils found in this area. Botanical, zoological, limnological, ornithological and archaeological investigations have also been undertaken throughout the Site at various times since the late 1950s.

iv. *Date of expiry of designation.* 31 December 2001.

v. *Access points.* None defined.

vi. *Pedestrian and vehicular routes.* Vehicles should not enter the Site, except in an emergency. Helicopters should land only on unvegetated ground at least 500m from any bird or seal concentrations, or freshwater bodies.

vii. *Other kinds of scientific investigations which would not cause harmful interference.* Scientific research other than archaeological, biological and geological should be kept to a minimum.

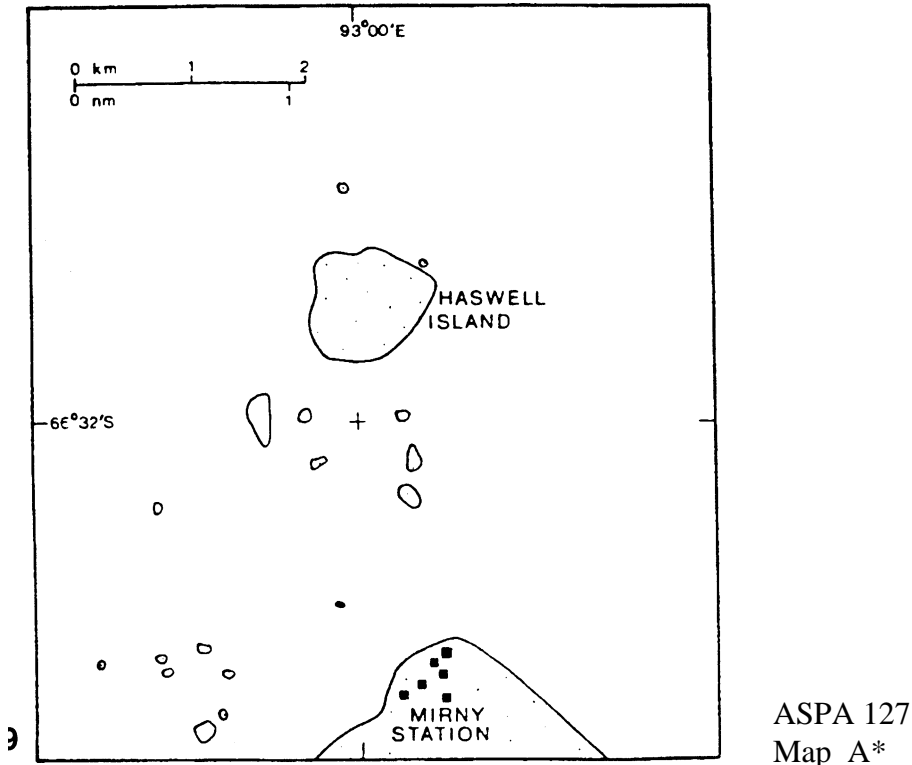
viii. *Scientific sampling.* Samples of rocks or biological specimens should only be taken for compelling scientific purposes.

ix. *Other restraints.* Buildings and other facilities should not be erected in the Site. All non-human waste should be removed from the Site. No combustible waste should be incinerated within the Site. There should be no interference of any sealers' refuges (huts, caves, etc) nor removal of any associated artefacts (including implements, timbers, fabrics, etc) from these features or from the beaches. No skeletal remains of any animal should be moved within or removed from the Site.

Antarctic Specially Managed Area No. 127 (Site of Special Scientific Interest No. 7)

Haswell Island

i. *Description of Site.* The Site consists of Haswell Island (66°31'S, 93°00'E), about 1 km² in area, the largest of a group of islands lying close to Mirny station, together with its littoral zone and the area of fast ice, when present, lying within the delimitation shown on the attached map. [not reproduced here]



ii. *Reason for designation.* The Site is an exceptionally prolific and representative breeding locality for all the species of birds which occur in this part of the Antarctic (five species of petrel (*Procellariiformes*), one species of skua (*Catharacta skua*), and one species of penguin (*Pygoscelis adeliae*). The Site provides exceptional opportunities for research and needs protection in view of its close proximity to a large Antarctic station.

iii. *Outline of research.* A long-term biological programme associated with the bird colonies and studies of the inshore marine biology are expected to continue in the Site.

iv. *Date of expiry of designation.* 30 June 1981.

v. *Access points.* The Site may be entered from any direction but access should cause minimum disturbance to the bird colonies.

vi. *Pedestrian and vehicular routes.* Vehicles should not enter the Site. Pedestrians should not move through the populated areas except as necessary in the course of scientific investigations. Helicopters and low-flying aircraft should avoid the bird

colonies in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora.

vii. *Other kinds of scientific investigations which would not cause harmful interference.* Any scientific investigation which will not cause significant disturbance to the biological programme for which the Site has been designated.

viii. *Scientific sampling.* Taking samples of the bird population by killing, capture, or taking of eggs should be done only for a compelling scientific purpose and in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora.

Antarctic Specially Managed Area No. 128 (Site of Special Scientific Interest No. 8)

Western Shore of Admiralty Bay, King George Island, South Shetland Islands

1. Description of Values to be Protected

The area was originally designated as a Site of Special Scientific Interest in Recommendation X-5 (1979, SSSI No. 8) after a proposal by Poland, because of its diverse avian and mammalian fauna and locally rich vegetation, providing a representative sample of maritime Antarctic ecosystem.

These grounds are still relevant. Research has now shown that the colonies of Adélie Penguin (*Pygoscelis adeliae*) and Gentoo Penguin (*Pygoscelis papua*) are the largest on the island. There are also breeding areas of other birds - Giant Petrel (*Macronectes giganteus*), Cape Pigeon (*Daption capense*), Wilson's Storm Petrel (*Oceanites oceanicus*), Black-bellied Storm Petrel (*Fregetta tropica*), Sheathbill (*Chionis alba*), McCormick's Skua (*Catharacta maccormicki*), Antarctic Skua (*Catharacta antarctica*), Dominican Gull (*Larus dominicanus*), and Antarctic Tern (*Sterna vittata*). Furthermore, there are numerous sites at which Elephant Seals (*Mirounga leonina*), Fur Seals (*Arctocephalus gazella*) and Weddell Seals (*Leptonychotes weddelli*) haul out or breed.

The values to be protected are those associated with the exceptional assemblage of animals and the long-term scientific studies on them that have been undertaken since 1976.

2. Aims and Objectives

Management of the Area aims to:

- protect all bird colonies and seal breeding areas against unnecessary and potentially damaging human activities, and
- undertake any essential management activities necessary to protect the scientific value of the site.
- protect long-term research

3. Management Activities

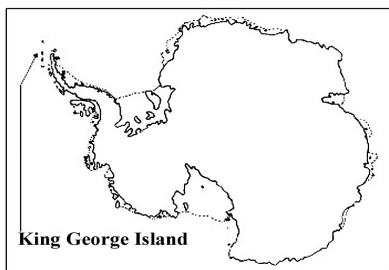
Ensure that the biologically the Area is adequately monitored and that sign boards and boundary markers are serviced.

4. Period of Designation

The Area is designated for an indefinite period.

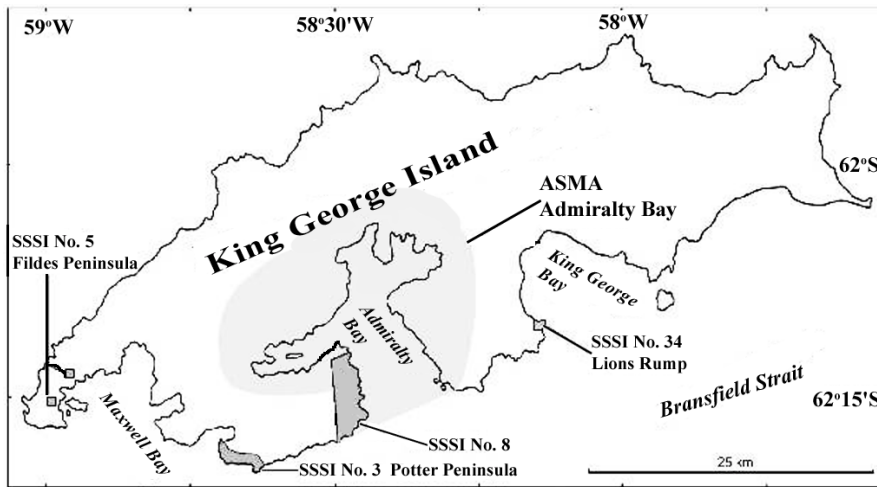
5. Maps

Map A shows the location of King George Island in Antarctica.



ASPA 128
Map A*

Map B shows the Western shore of Admiralty Bay, Site of Special Scientific Interest (SSSI) No. 8, in relation to King George Island.



ASP A 128
Map B*

ASP A 128 map B*

Map C shows the Area in greater detail.



ASP A 128
Map C*

6. *Description of the Area*

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

The area consists of land on the western shore of Admiralty Bay (Map C). The westerly boundary extends from Patelnia (Telefon) Point (62°13'55''S, 58°28'45''W), NNW to The Tower (a distinctive peak above Tower Glacier, 366.9 m at 62°12'50''S, 58°29'00''W), then continuing in a straight line to encompass the base of Jardine Peak (62°10'05''S, 58°29'45''W). This line then runs NE to the sea (Admiralty Bay) where it bisects the coast immediately north of Rakusa Point (62°09'45''S, 58°27'25''W). Thereafter the Area is all the land which is bounded by the coastline south towards Demay Point (62°12'50''S, 58°25'15''W), then SW along the coast to Patelnia (Telefon) Point.

The western edge of the Area is adjacent to the Warsaw Icefield, with the north-western corner being ice-free in the vicinity of Jardine Peak. Outside of the northern boundary is a small area of ice-free land. Steep cliffs overlook a narrow beach and the waters of Ezcurra Inlet in the north-western section of the ice-free area; and in the north-eastern section there are occasional shallow beaches which extend to the sea, where H. Arctowski station is located, 400 m. outside of the Area. Three small glaciers, Ecology, Baranowski, and Tower, descend from the Warsaw Icefield onto these shores.

There are markers on the northern edge of the Area where the site has a boundary on land, immediately south of H. Arctowski station. The western boundary is not delineated by virtue of fact that it traverses a high (ca. 350 m) mobile icefield. The coastline defines the Area's eastern and southern stretches.

Twelve bird species regularly nest in the Area: Adélie Penguin (*Pygoscelis adeliae*) - 18838 nests in 1988/89 and 15151 nests in 1994/95; Chinstrap Penguin (*Pygoscelis antarctica*) - 3353 nests in 1988/89 and 2545 nests in 1994/95; Gentoo Penguin (*Pygoscelis papua*) - 2239 nests in 1988/89 and 2287 nests in 1994/95; Giant Petrel (*Macronectes giganteus*) - 315 nests in 1988/89 and 201 nests in 1994/95; Cape Pigeon (*Daption capense*) - 43 nests in 1988/89 and 290 nests in 1994/95; Wilson's Storm Petrel (*Oceanites oceanicus*); Black-bellied Storm Petrel (*Fregetta tropica*); Sheathbill (*Chionis alba*) - 9 nests in 1988/89 and 2 nests in 1994/95; McCormick's Skua (*Catharacta maccormicki*) - 38 nests (together with *C. antarctica*) in 1988/89 and 64 territories in 1994/95; Dominican Gull (*Larus dominicanus*) - 52 nests in 1988/89 and 46 nests in 1994/95; Antarctic Tern (*Sterna vittata*) - 188 nests in 1988/89 and 132 nests in 1994/95.

Moreover 4 alien bird species from South America have been observed, as stray visitors but which stayed in the Area only temporarily: Black-necked Swan (*Cygnus melanocoryphus*), South Georgia Pintail (*Anas georgica*), White-rumped Sandpiper (*Calidris fuscicollis*), Wilson's Phalarope (*Phalaropus tricolor*).

Continuing long-term ecological studies in this area are aimed principally at penguins and associated species.

Elephant Seals (*Mirounga leonina*), Fur Seals (*Arctocephalus gazella*) and Weddell Seals (*Leptonychotes weddelli*) haul out at numerous sites. Leopard Seals (*Hudrurga leptonyx*) and Crabeater Seals (*Lobodon carcinophagus*) are frequently seen on the ice floes during the winter. Breeding of Elephant Seals and Weddell Seals are observed in the Area.

The ice-free areas within the Area (20% of its surface) are formed by recent and raised pebble-cobble beaches, recent and sub-recent moraines, mountainous peninsula, rocky islets and spurs. The terrain is heavily shaped by glacial, nival and coastal marine processes.

The Area vegetation is typical of the Maritime Antarctic. Ice-free terrain (20% of its surface) is only partly occupied by plants and thus the landscape is of a semi-desert character. Dry areas and rocks are dominated by lichens. Locally, flowering plants such as *Deschampsia* and *Colobanthus* are important, these species occupying fairly large areas particularly in the vicinity of H. Arctowski station and constitute one of the largest areas covered by these species in the Antarctic. In the immediate vicinity of H. Arctowski station, there is an alien grass, *Poa* sp. The vegetation from 0 to 60 m a.s.l. is dominated by *Bryophyta* and flowering plants, and above 60 m a.s.l. by lichens.

6(ii) Restricted zones within the Area

There are no prohibited zones within the Area, but access to bird breeding areas should be restricted during the breeding season (September to March) and damage to vegetation should be avoided by restricting access to the marked path.

6(iii) Location of structures within the Area

The following are the structures in the Area (Map C):

- P. J. Lenie field camp (United States of America); consisting of a small hut (for four persons), on the beach between Llano Point and Sphinx Hill which has been in use during the summer since 1977
- a caravan (belonging to Poland) functioning as a summer field laboratory for two persons, south of Demay Point.

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

The Western shore of Admiralty Bay, SSSI No. 8, is a part of Antarctic Specially Managed Area (ASMA), Admiralty Bay, King George Island (South Shetland Islands).

SSSI No. 5, Fildes Peninsula and SSSI No. 33, Ardley Island, lie about 27 km west of western shore of Admiralty Bay. SSSI No. 13, Potter Peninsula, lies about 15 km to the west and SSSI No. 34, Lions Rump, lies about 20 km to the east.

7. Permit Conditions

Permits may be issued only by appropriate national authorities as designated under Annex V Article 7 of the Protocol on Environmental Protection to the Antarctic Treaty.

Conditions for issuing a permit for the Area are that:

- it is issued only for scientific study of the ecosystem, or for compelling scientific reasons that cannot be served elsewhere,
- the actions permitted will not jeopardize the natural ecological system or scientific values of the Area,
- any management activities are in support of the objectives of the Management Plan,
- the actions permitted are in accordance with this Management Plan,
- the permit, or a copy, must be carried within the Area,
- a report is supplied to the authority named in the Permit, and
- the Permit shall be valid for a stated period.

7(i) Access to and movement within the Area

The access to the Area is restricted to the northern end, near H. Arctowski station. Access from the sea is only permitted by inflatable boats. No access to the beach area between Llano Point and Sphinx Hill from the sea is permitted, except to resupply the P. J. Lenie field camp, or in an emergency. Access from the sea to areas further south is permitted but the visitors should at all times avoid disturbance to birds and seals or damage of vegetation.

Landing of helicopters within the Area is permitted only on the glaciers, except in an emergency. Helicopters are allowed to land at *H. Arctowski* station only, on a special designed helipad. No helicopter or fixed wing aircraft is permitted to fly over the Area below 250 m altitude above the highest point. All helicopters should maintain a distance of at least 500 m from the Area during take-off and landing at *H. Arctowski* station. To avoid flying over bird colonies, approach from and towards the sea, or over Warsaw Icefield, is recommended.

Pedestrian routes are designated (Map C) and marked within the Area. Persons on foot should at all time avoid disturbance to birds, seals and damage of vegetation.

Vehicles are prohibited in the Area.

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

- Scientific research which cannot be conducted outside the Area, and which will not damage or interfere with any aspect of the Area's biological, geological, or aesthetic values.
- Essential management activities, including monitoring.

7(iii) Installation, modification or removal of structures

No further structures are to be erected in the Area, or scientific equipment installed, except for essential scientific or management activities, as specified in the Permit.

7(iv) Location of the field camps

Parties should not normally camp in the Area. Both P. J. Lenie field camp and the Polish caravan provide research accommodation, by agreement. The caravan can accommodate up to two persons.

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

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

Poultry product shall not be taken into the Area. Any chemical which may be introduced for compelling scientific 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, food and other materials are not to be stored in the Area except in support of activities for which the Permit has been granted. All such materials should be kept to a minimum, made secure against the elements and removed when no longer required.

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

Taking or harmful interference is prohibited, except in accordance with a Permit. When animal taking or harmful interference is involved this should be in accordance with the SCAR Code of Conduct for Use of Animal for Scientific Purpose in Antarctica, as a minimum standard.

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

Material may be collected or removed from the Area only in accordance with a Permit. This includes rock specimens, whale bones, artefacts of the whaling industry, and any item belonging to or attached to any aspect of the historical uses of Admiralty Bay which are not specifically described herein.

Debris of human origin may be removed from the beaches of the Area. Exceptionally, dead specimens of fauna or flora may be removed for laboratory examination without a Permit.

7(viii) Disposal of waste

All waste shall be removed from the Area, with the exception that human waste should be deposited in the sea.

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

The Permit, or a copy, must be carried within the Area.

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 audit, or to erect or maintain signposts, or other protective measures.

7(x) Requirements for reports

The principal Permit Holder for each issued Permit shall submit a report of activities conducted in the Area. The Visit Report form suggested by SCAR provides a suitable model. This report shall be submitted to the authority named in the Permit as soon as practicable, but no later than 6 months after the visit has taken place. Such reports should be stored indefinitely and made accessible to interested Parties, SCAR, CCAMLR and COMNAP if requested, to provide the documentation of human activities within the Area, which could be utilized for good management.

Antarctic Specially Protected Area No. 129 (Site of Special Scientific Interest No. 9)

Rothera Point, Adelaide Island

1. Description of Values to be Protected

Rothera Point was originally designated in Recommendation XIII-8 (1985, SSSI No. 9) after a proposal by the United Kingdom that the Site would serve as a biological research site and control area against which the effects of human impact associated with the adjacent Rothera Research Station (UK) could be monitored in an Antarctic fulfilled ecosystem. The Site itself has little intrinsic nature conservation value.

2. Aims and Objectives

2 (i) Aims

Management of Rothera Point aims to:

- avoid major changes to the structure and composition of the terrestrial ecosystems, in particular to the fellfield ecosystem and breeding birds, by:
 - preventing physical development within the site, and;
 - limiting human access to the Site to maintain its value as a control area for environmental monitoring studies;
- allow scientific research and monitoring studies of breeding birds, terrestrial and freshwater biota, and soils, while ensuring as far as possible that the Site is protected from over-sampling;
- allow regular visits for management purposes in support of the objectives of the management plan.

2. (ii) Objectives

The Site is unique in Antarctica as it is the only protected area currently designated (1995) solely for its value in the monitoring of human impact. The objective is to use the Site as an unaffected control area in assessing the impact of activities undertaken at Rothera Research Station on the Antarctic environment.

The hypothesis being tested is that the activities undertaken at Rothera Research Station have not caused environmental impact within the Site.

Monitoring studies undertaken by the British Antarctic Survey (BAS) began at Rothera Point in 1976, before the establishment of the station later that year, and have expanded considerably since 1989. The BAS plans to continue monitoring studies in the future.

The purposes of the monitoring programme (1995) are to:

- survey the distribution of terrestrial flora and invertebrates every decade;
- assess heavy metal concentrations in lichens every five years;
- assess petroleum hydrocarbon concentrations in gravel and soil every other year;
- survey the breeding bird population annually.

3. Management Activities

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

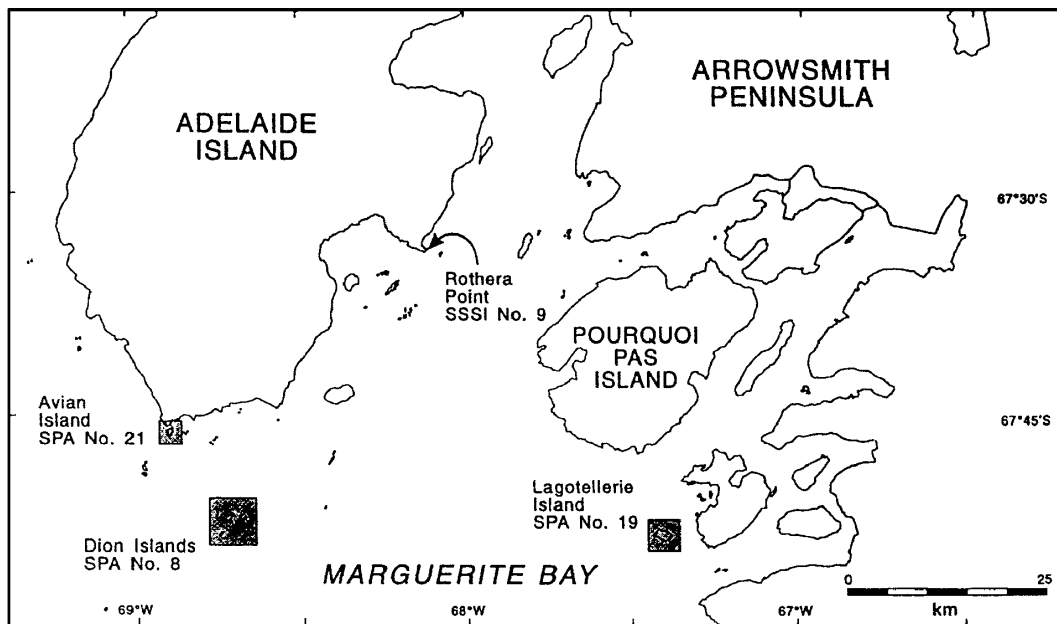
- signboards illustrating the location and boundary of the Site and stating entry restrictions shall be erected at the major access points and serviced on a regular basis;
- a map showing the location and boundaries of the Site and stating entry requirements shall be displayed in a prominent position at Rothera Research Station;
- visits shall be made as necessary (no less than once every two years) to assess whether the Site continues to serve the purposes for which it was designated and to ensure management activities are adequate.

4. Period of Designation

Designation for an indefinite period.

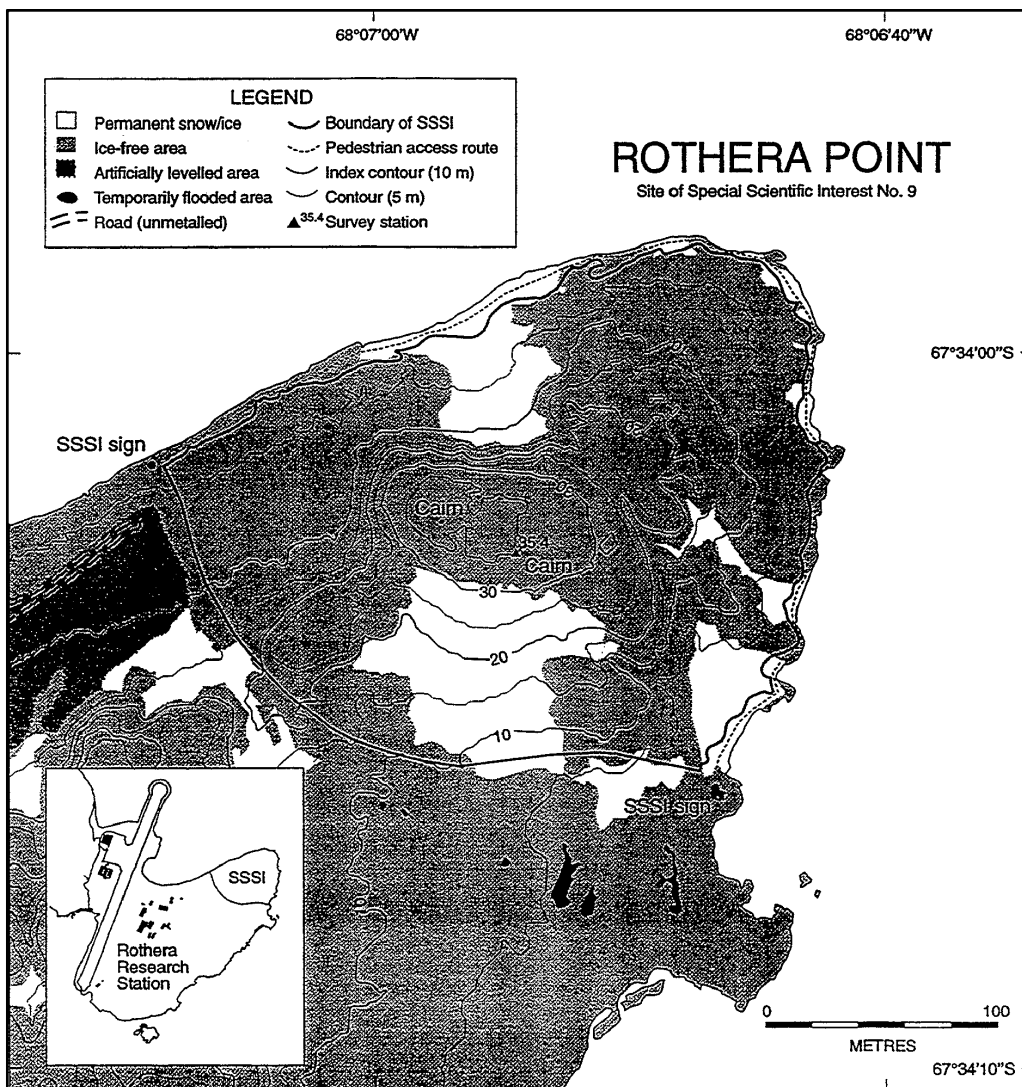
5. Maps

Map A shows the location of Rothera Point in relation to northern Marguerite Bay.



ASPA 129
Map A*

Map B shows the Site in greater detail, with an inset showing the Site in relation to Rothera Research Station



ASPA 129
Map B*

6. Description of the Area

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

Rothera Point (lat. 67°34'S, long 68°08'W) is situated in Ryder Bay, at the south-east corner of Wright Peninsula on the east side of Adelaide Island, south-west Antarctic Peninsula.

The Site is the north-eastern one-third of Rothera Point (Map 2), and is representative of the area as a whole. It is about 300 m from west to east and 250 m from north to south, and rises to a maximum height of 36 m. At the coast, the Site boundary is the 2.5 m contour. No upper shore, littoral or sublittoral areas of Rothera Point are therefore included within the SSSI. The southern boundary of the Site, running across Rothera Point, is marked by a line of pink fuel drums filled with concrete. The remaining boundary is unmarked. There are two signboards just outside the perimeter of the Site located at the starting points of the pedestrian access rout around Rothera Point.

The Site boundary extends to the 2.5 m contour at the coast. There is unrestricted pedestrian access below this contour height around Rothera Point. The recommended pedestrians access route follows the Mean High Water Mark (MHW) and is shown on Map 2.

Small areas of permanent ice occur to the north and south of the summit of the SSSI. There are no permanent streams or pools.

The rocks are predominantly heterogeneous intrusions of diorite, granodiorite and adamellite of the mid-Cretaceous-Lower Tertiary Andean Intrusive Suite. Veins of copper ore are prominent bright green stains on the rock. Soil is restricted to small pockets of glacial till and sand on the rock bluffs. Local deeper deposits produce scattered small circles and polygons of frost sorted material. There are no extensive areas of patterned ground. Around prominent rock outcrops used as bird perches by Dominican gulls (*Larus dominicanus*) there are accumulations of recent and decaying limpet (*Nacella concinna*) shells forming patches of calcareous soil. There are no accumulations of organic matter.

There are no special or rare geological or geomorphological features in the Site.

The limited terrestrial biological interest within the Site is confined to the rock bluffs where there is locally abundant plant growth dominated by lichens. The vegetation is representative of the southern "maritime" Antarctic fellfield ecosystem and is dominated by the fruticose lichens *Usnea antarctica*, *U.sphacelata*, and *Pseudephebe minuscula*, and the foliose lichen *Umbilicaria decussata*. Numerous crustose lichens are associated, but bryophytes (mainly *Andreaea* spp.) are sparse.

A single very small population of antarctic pearlwort (*Colobanthus quitensis*) occurs below the northern cliff of the Site, whilst a few plants of Antarctic hair grass

(*Deschampsia antarctica*) have become established at two locations since 1989.

The invertebrate fauna is impoverished and consists only of a few species of mites and springtails, of which *Halazetes belgicae* and *Cryptopygus antarcticus* are the most common.

There are no special or rare terrestrial flora and fauna in the Site.

Brown and south polar skuas (*Catharacta lonnbergii* and *C. maccormicki*) are the most abundant breeding birds found in the Site, with three pairs of skuas recorded nesting in the 1994/95 season. A pair of Dominican gulls (*Larus dominicanus*) nest in the Site. Wilson's storm petrels (*Oceanites oceanicus*) also breed, but only one nest has been found.

Rothera Research Station (UK) lies about 250 m west of the western boundary of the Site (see inset on Map 2).

6 (ii) Restricted zones within the Site

None.

6 (iii) Location of structures within the Site

A rock cairn marks the summit of the Site (36 m) and 35 m to the east south east of it there is another cairn (35.4) marking a survey station.

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

SPA No. 8, Dion Islands, Marguerite Bay, lies about 15 km south of Adelaide Island. SPA No. 19, Lagotellerie Island, Marguerite Bay, lies about 11 km south of Pourquoi Pas Island. SPA No. 21, Avian Island, Marguerite Bay, lies about 0.25 km south of the south-west tip of Adelaide Island. The locations of these SPAs are shown on Map 1.

7. Permit Conditions

Entry to the Site is prohibited without a Permit. Permits shall be issued only by appropriate national authorities, and may contain both general and specific conditions.

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

- activities limited to scientific research or monitoring purposes;
- the actions permitted will not jeopardize the ecosystem or scientific or monitoring values of the Site.
- any management activities are in support of the objectives of the Management Plan;
- the actions permitted are carried out in accordance with this Management Plan;
- the permit holder must carry the permit, or an authorized copy, within the Site.

National authorities may attach further general and specific conditions to a permit.

7 (i) Access to and movement within the Site

Access to the Site shall be on foot.

Landing of helicopters within the Site is prohibited. As far as practicable, helicopter overflight of the Site shall be avoided.

Vehicles are prohibited in the Site.

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

Activities which are or may be conducted within the Site are:

- scientific research or monitoring which will not jeopardise the ecosystems of the Site;
- essential management activities.

7 (iii) Installation, modification or removal of structures

No structures are to be erected in the Site, or equipment installed, except for essential scientific or management activities (ea. signboards, monitoring equipment) as specified in the permit.

All scientific and monitoring equipment, including marker stakes, installed in the Site must be approved by Permit and clearly identified to show principal investigator, project and year of installation. The Permit holder must remove any scientific or monitoring equipment installed as soon as it is no longer required or on the expiry of the permit whichever is the sooner.

7 (iv) Location of field camps

Camping in the Site is prohibited. Accommodation may be available at Rothera Research Station.

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

No non-indigenous living animals, plant material, microorganisms or soil shall be deliberately introduced into the Site.

Any hazardous substances or chemicals, including radioisotopes, which may be introduced for scientific, monitoring or management purposes specified in the Permit, shall be removed from the Site at or before the conclusion of the activity for which the Permit was granted.

Fuel, food and other materials must not be stored in the Site, unless required for essential purposes connected with the activity for which the Permit has been granted. All such materials introduced shall be removed from the Site at or before the conclusion of the activity for which the Permit was granted. Permanent depots are not permitted.

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

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

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

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

Material may be collected and/or removed from the Site only in accordance with a Permit and should be limited to the minimum necessary to meet scientific or management needs. Material of human origin not brought into the site by the Permit holder, or otherwise authorized, which is likely to compromise the values of the Site shall be removed unless the impact of removal is likely to be greater than leaving the material in situ. In the latter case the appropriate authority shall be notified.

7 (viii) Disposal of wastes

All wastes, including all human wastes, must be removed from the Site.

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 Site to carry out scientific research, monitoring and site inspection activities, which may involve the collection of a small number of samples for analysis, to erect or maintain signboards, or to carry out protective measures.

7 (x) Requirements for reports

Parties should ensure that the principal holder of 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 description 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 Site.

Antarctic Specially Managed Area N. 130 (Site of Special Scientific Interest No. 11)

Tramway Ridge, Mt. Erebus, Ross Island

1. Description of Values to be Protected

The lower end of Tramway Ridge was originally designated in Recommendation XIII-8 (1985, SSSI No. 11) after a proposal by New Zealand on the grounds that the Area supports an unusual ecosystem of exceptional scientific value to botanists, physiologists and microbiologists. Mt. Erebus (3794 m) is one of only three known high altitude localities of fumarolic activity and associated vegetation in the Antarctic. Tramway Ridge is an ice free area of gently sloping warm ground 1.5 km to the Northwest of the main crater of Mt. Erebus, located at an elevation of between 3350 m and 3400 m. The single, as yet unidentified, moss species found in the Area is unusual in that it persists in the protonematal stage. An unusual variety of a common thermophilic cyanobacterium is especially noteworthy. The plant communities which have developed on the fumarolic soils within the Area differ significantly from those found elsewhere in Antarctica. The regional uniqueness of the communities is of substantial scientific interest and value. The very limited geographical extent of the ecosystem, its unusual biological features, its exceptional scientific values and the ease with which it could be disturbed through trampling or alien introductions, are such that the Area requires long-term special protection.

2. Aims and Objectives

Management at Tramway Ridge aims to:

- avoid degradation of, or substantial risk to, the values of the Area;
- prevent unnecessary human disturbance to the Area;
- permit research on the unique vegetation and microbial communities while ensuring they are protected from over-sampling;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- preserve a part of the Area, which is declared a Restricted Zone, as a reference site for future studies;
- permit visits for management purposes in support of the objectives of the management plan.

3. Management Activities

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

- Durable wind direction indicators should be erected close to the designated helicopter landing site whenever it is anticipated there will be a number of landings near the Area in a given season. These should be replaced as needed and removed when no longer required.
- Markers, which should be clearly visible from the air and pose no significant threat to the environment, should be placed to mark the helicopter landing pad.

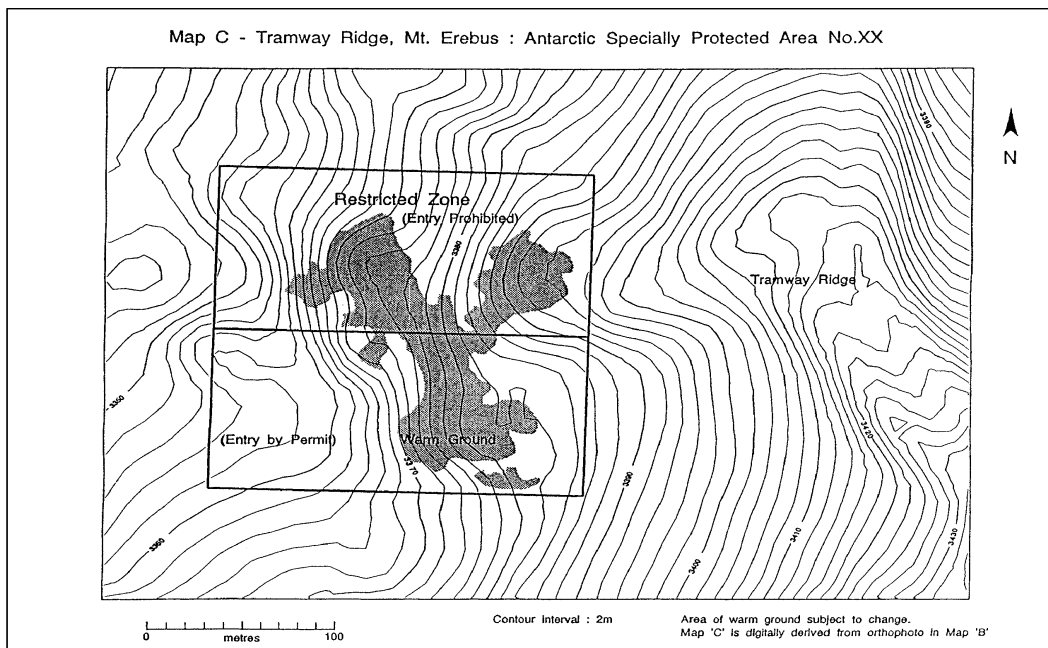
- A line of flags should be placed to mark the preferred snowmobile route (Map A) between the USAP Upper and Lower Erebus Huts, which should pass no closer than 200 m to the Area.
- Signs illustrating the location, boundaries and clearly stating entry restrictions shall be placed on posts marking the boundaries 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 should be kept available, in all of the research hut facilities located close to the summit of Mt Erebus.
- Markers, signs or structures erected within the Area for scientific or management purposes shall be 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 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: Tramway Ridge, protected area map. Contours are derived from a digital elevation model generated using a 10 m grid for the orthophotograph in Map B (accuracy ± 2 m). Precise area of warm ground is subject to variation seasonally and inter-annually.



ASPA 130
Map A*

6. Description of the Area

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

The boundary of the designated Area is defined as a square of 200 m by 200.8m which encompasses most of the warm ground area of lower Tramway Ridge (167°06'35"E, 77°31'05"S: Map B). The Area is divided into two parts of almost equal size, the northern half being a Restricted Zone. The boundaries of the Area and the Restricted Zone (marked by signposts at each corner) and prominent features are shown on Map B. Several boundary signposts have been offset owing to dangerous ground at the actual corner point.

The Area is in general on a gentle slope of about 5°, with much of the ice-free ground in the form of terraces which have a typical vertical height of about 0.5 m and steeper sides of up to 30° in slope. The steep sides of the terraces have the maximum development of crusts of vegetation, and it is from these sides that visible steam emissions occur. Visible vegetation covers about 16% of the Area. Low ice hummocks of up to about 1 m high are distributed over the Area where steam has frozen. Surface ground temperatures are up to about 75°C.

The steam-warmed lithosols in the Area provide an unusual habitat of limited extent. The acid reaction of the soils, the constant supply of moisture by condensation of steam and the regular supply of geothermal heat produce conditions which contrast markedly with most Antarctic soils. There is no evidence of the presence of microinvertebrate animals in the soils. The vegetation comprises protonematal moss and diverse microalgae, which has developed on the fumarolic soils and differs significantly from other Antarctic plant communities. The single moss species, which has not yet been identified, is unusual in that it has never been seen to produce leaves but persists in the protonematal stage. The vegetation occurs in zones related to surface temperature. Warmest ground, from about 35-60°C, is colonised by dark blue-green and reddish-brown mats of cyanobacteria, whereas cooler surfaces of about 10-30°C are dominated by green crusts of coccoid chlorophytes and moss protonema. Bare ground lacking a macroscopically visible vegetation occurs between 0-20°C.

The algal flora comprises four cyanobacteria and 11 coccoid chlorophytes. The presence of a thermophilic cyanobacterium is especially noteworthy as it is an unusual variety of the hot spring cyanobacterium *Mastigocladus laminosus*, which is common elsewhere in the world. Thermophilic bacteria have been isolated at 60°C. These include heterotrophic and a thiosulfate-utilising autotrophic species.

6(ii) Restricted zones within the Area

The northern half of the Area is designated a Restricted Zone in order to preserve part of the Area as a reference site for future comparative studies, while the southern half of the Area (which is essentially similar in biology, features and character) is available for research programmes and sample collection. The south boundary of the Restricted Zone is defined by a line that bisects the Area into two halves (Map B),

and is marked at both ends by signposts. This boundary may be identified on the ground approximately as an extension westwards of the south ridge line of lower Tramway Ridge. The other three boundaries of the Restricted Zone are defined by the boundaries of the Area. Access to the Restricted Zone is strictly prohibited until such time as it is agreed by management plan review that access should be allowed.

6(iii) Structures within and near the Area

Signposts mark the corner points of the boundaries. The USAP Lower and Upper Erebus Huts are located approximately 1 km to the Northeast (3400 m) and Southeast (3612.5 m) respectively.

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

None.

7. Permit Conditions

Permits may be issued only by appropriate national authorities. Conditions for issuing a Permit to enter the Area are that:

- it is issued only for scientific study of the ecosystem, or for a compelling scientific or management purpose that cannot be served elsewhere;
- access to the Restricted Zone shall be prohibited;
- the actions permitted are not likely to jeopardise the natural ecological system or scientific values of the Area;
- any management activities are in support of the objectives of the Management Plan;
- the actions permitted are in accordance with the Management Plan;
- any Permit issued shall be valid for a stated period.

7(i) Access to and movement within the Area

Landing of helicopters within the Area is strictly prohibited. Helicopter overflight of the Area should be avoided, except for essential scientific or management purposes when helicopters shall in no instance fly lower than 30 m above the ground surface of the Area. Use of helicopter smoke bombs is strictly prohibited within 200 m of the Area and is discouraged nearby. For short-duration visits which do not require camp establishment, access by helicopter should be to a designated landing site, located outside of the Area and 300 m to the Northwest (Map A and Figure 1). For visits which require camp establishment, helicopter access should be to the USAP Upper or Lower Erebus Huts, and thence on foot or by land vehicle to the edge of the Area at Tramway Ridge. Landing of helicopters at other sites close to the Area is strongly discouraged. Only those persons specifically authorised by Permit are allowed to enter the Area. No special restrictions apply to the air or land routes used to move to and from the Area, although those traveling between the Upper and Lower Erebus Huts should keep to the preferred snowmobile route and stay at least 200 m from the protected area boundary.

Access into the Area shall be on foot and land vehicles are prohibited. Visitors should avoid walking on visible vegetation and, as far as practicable, areas of warm ground. Visitors should be aware that walking in the Area can compact soil, alter temperature gradients (which may change rates of steam release), and break thin ice crusts which may form over warm ground, with resulting damage to soil and biota below. The presence of snow or ice surfaces is not a guaranteed indication of a suitable pathway: therefore every reasonable effort should be made to minimise the effects of walking activity. Pedestrian traffic should be kept to the minimum necessary consistent with the objectives of any permitted activities.

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

- Scientific research which will not jeopardise the ecosystem of the Area;
- Essential management activities, including monitoring.
- Entry to the Restricted Zone is prohibited.

7(iii) Installation, modification or removal of structures

No structures, except for boundary markers and signs, are to 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 the responsibility of the authority which granted the original Permit.

7(iv) Location of field camps

Camping required for work in the Area should be near the existing USAP Upper or Lower Erebus Hut sites, and is discouraged anywhere within 500 m of the boundaries of the Area (Map A).

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

To avoid compromising the microbial ecosystem for which this site is protected no living animals, plant material or microorganisms shall be deliberately introduced into the Area and precautions shall be taken against accidental introductions. 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.

Fuels are not to be brought into the Area. Food shall not be consumed within the Area. Equipment and other materials are not to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted. All such 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 of or harmful interference with native flora or fauna

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

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. Material of human origin, not brought into the Area by the Permit Holder, but which is likely to compromise the values of the Area may be removed from any part of the Area, including the Restricted Zone.

7(viii) Disposal of waste

All wastes, including all human wastes, must be removed from the Area. Excretion of human wastes is prohibited within the Area.

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

1. The Permit, or an authorised copy, must be carried within the Area.
2. 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 audit, to erect or maintain signposts, or protective measures.
3. To help maintain the scientific value derived from the unique communities found at Tramway Ridge visitors shall take special precautions against introductions, especially when visiting several thermal regions in a season. Of particular concern are microbial or vegetation introductions sourced from:
 - thermal areas, both Antarctic non-Antarctic;
 - soils at any other Antarctic sites, including those near stations;
 - soils from regions outside Antarctica.

To this end, visitors shall take the following measures to minimise the risk of introductions:

(a) Any sampling equipment or markers brought into the Area shall be sterilised and maintained in a sterile condition before being used within the Area. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including backpacks or carry-bags) shall be thoroughly cleaned or sterilised and maintained in this condition before entering the Area;

(b) Sterilisation should be by an acceptable method, such as by UV light, autoclave or by washing exposed surfaces in 70% ethanol solution in water.

(c) Sterile protective overclothing shall be worn. The overclothing shall be suitable for working at temperatures of -20°C or below and comprise at a minimum

sterile overalls to cover arms, legs and body and sterile gloves suitable for placing over the top of cold-weather gloves.

7(x) Requirements for reports

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 all usage, to be used both in any review of the management plan and in organising the scientific use of the Area.

Antarctic Specially Protected Area No. 131 (Site of Special Scientific Interest No. 12)

Canada Glacier, Taylor Valley, Victoria Land

1. Description of values to be protected

An area of 1 km² to the east side of Canada Glacier was originally designated in Recommendation XIII-8 (1985, SSSI No. 12) after a proposal by New Zealand on the grounds that it contains some of the richest plant growth (bryophytes and algae) in the southern Victoria Land Dry Valleys. As such, the Area is of exceptional intrinsic ecological value, and is also of scientific value to botanists, zoologists and microbiologists. The Area is designated primarily to protect the site's ecological values. It is also valuable as a reference site for other dry valley ecosystems. The boundaries of this site have been changed such that the Area now includes biologically rich communities that were previously excluded. The Area, located at an elevation of between 20 and 220 m, comprises gently to moderately sloping ice-free ground with summer ponds and small meltwater streams draining from the Canada Glacier to Lake Fryxell. Most of the plant growth occurs in a flush area close to the glacier in the central part of the Area. The composition and distribution of the plant communities in the Area are correlated closely with the water regime. Thus, water courses and water quality are important to the values of the site. The Area is unusual in that it receives higher levels of moisture compared with other parts of the south Victoria Land Dry Valleys, and is sheltered from strong winds by the nearby 20 m glacier face.

The Area has been well-studied and documented, which adds to its scientific value. However, the plant communities are fragile and vulnerable to disturbance and destruction by trampling and sampling. Damaged areas will be slow to recolonize. Sites damaged at known times in the past have been identified, which are valuable in that they provide one of the few areas in the Dry Valleys where the long-term effects of disturbance, and recovery rates, can be measured.

The Area requires long-term special protection because of its exceptional moss communities for the south Victoria Land Dry Valleys and thus ecological importance; its scientific values; the limited geographical extent of the ecosystem; the vulnerability of the Area to disturbance through trampling, sampling, pollution or alien introductions; and in view of the existing and increasing pressure from scientific, logistic and tourist activities in the region.

2. Aims and objectives

Management at Canada Glacier aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- allow scientific research on the ecosystem and elements of the ecosystem in particular moss communities 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 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:

- Signs illustrating the location and boundaries with clear statements of entry restrictions shall be placed at appropriate locations at the boundaries of the Area to help avoid inadvertent entry.
- 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 in the Taylor Valley that are within 20 km of the Area.
- Brightly coloured markers, clearly visible from the air and posing no significant threat to the environment, shall be placed to mark the helicopter landing pad.
- Durable wind direction indicators should be erected close to the designated helicopter landing site. These should be replaced as needed and removed when no longer required.
- 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 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:

Canada Glacier, Taylor Valley, location map. Map specifications:

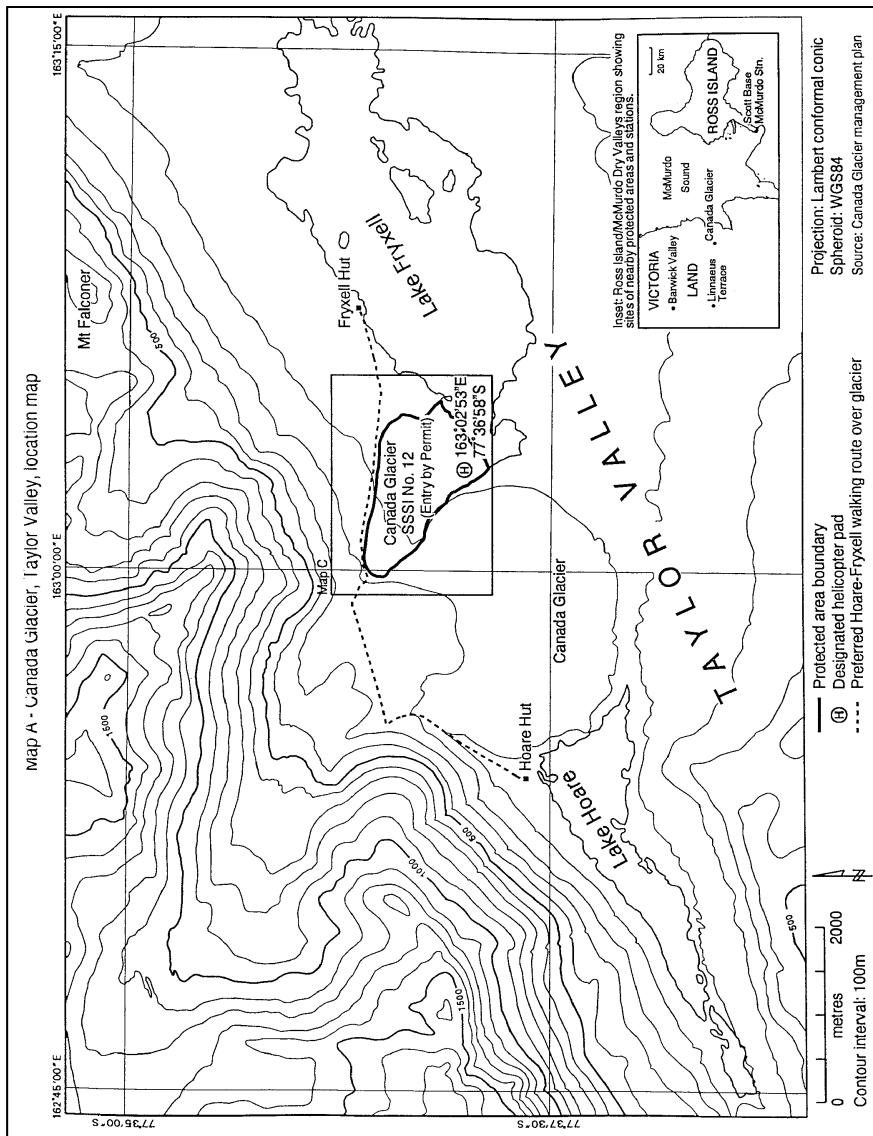
Projection: Lambert conformal conic;

Standard parallels: 1st 79°18'00" S; 2nd 76° 42' 00"S

Central Meridian: 162°30'00" E Latitude of Origin: 78°01'16.2106" S;

Spheroid: WGS84.

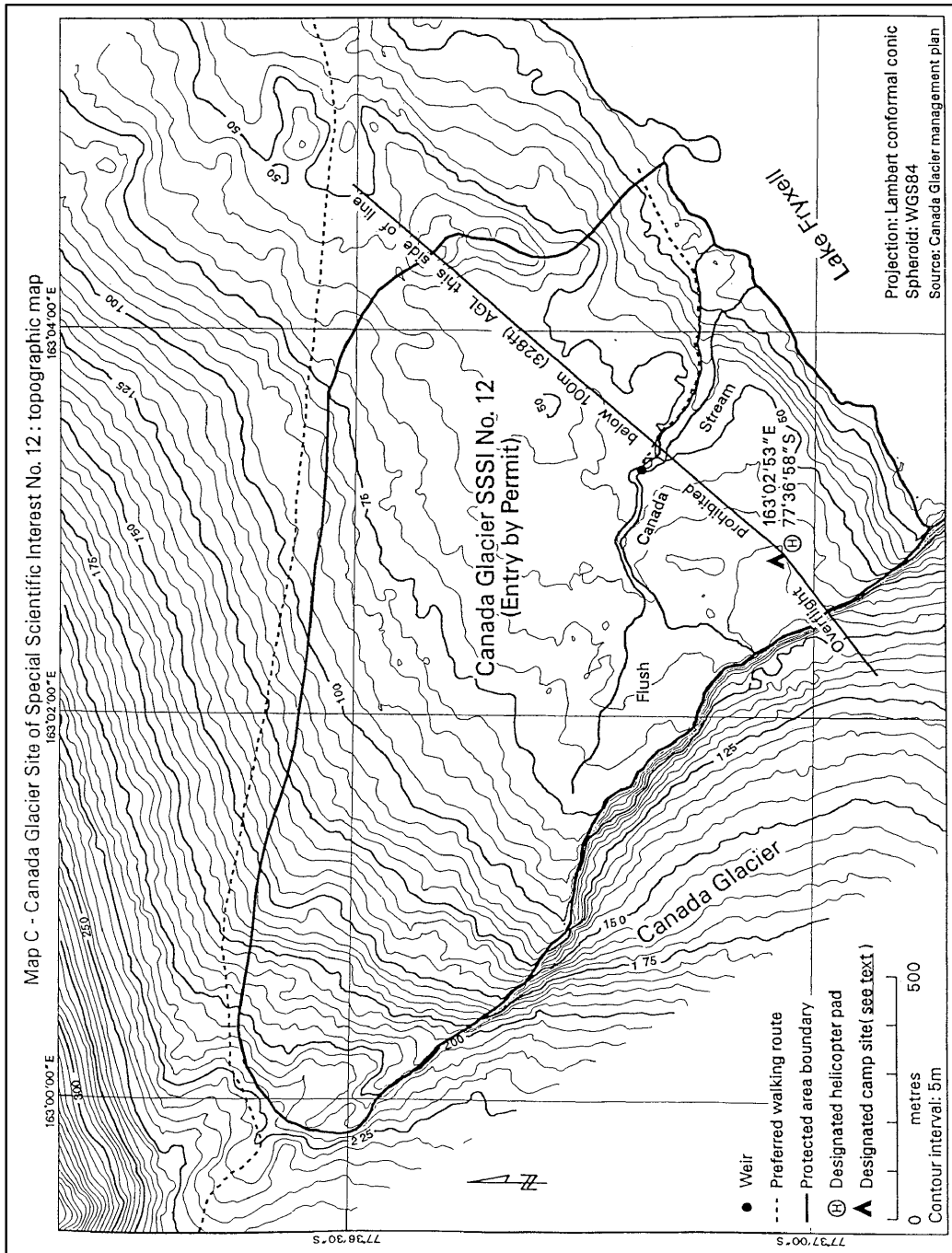
Inset: McMurdo Dry Valleys and Ross Island region, showing the location of McMurdo Station (US) and Scott Base (NZ), and the location of the other specially protected areas in the Dry Valleys (Barwick Valley SSSI-3, and Linnaeus Terrace SSSI-19).



ASPA 131
Map A*

Map B:

Canada Glacier, topographic map. Map specifications are the same as those for Map A. Contours are derived from the digital elevation model used to generate the orthophotograph in Map D. Precise area of moist ground associated with the flush is subject to variation seasonally and inter-annually.



ASPA 131
 Map B*

6. Description of the Area

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

The designated Area encompasses most of the glacier forefield area on the east side of the lower Canada Glacier, on the north shore of Lake Fryxell (77°37'S, 163°03'E: Maps A and B). The south boundary of the Area is defined as the shoreline of Lake Fryxell, to the water's edge, extending about 1 km east from where the Canada Glacier toe meets Lake Fryxell. The west boundary of the Area follows the edge of the Canada Glacier. The SE corner is near the neck of a small peninsula extending into L. Fryxell. The peninsula, outside of the Area, is marked by a large rock (split) surrounded by a circle of rocks which was a benchmark for the 1985 NZ survey of the original SSSI. A wooden post marking Dry Valley Drilling Project Site 7 (1973) is about 10 m to the NW of this point. A moraine ridge extends from the SE corner upward and in a northerly direction: this ridge defines the eastern boundary of the Area. The ridge dips sharply before joining the featureless slope of the main Taylor Valley wall: the NE corner of the Area is in this dip and will be marked by a cairn. A cairn will also be placed on a knoll on the ridge 450 m from the SE corner point.

Above the central flush a slope of lateral moraine of fairly even gradient extends upward and parallel to the glacier for about 1 km. At the top of this slope is a small knoll (220 m) about 300 m from where the glacier emerges into the Taylor Valley: a cairn and signpost will mark the boundary of the Area at this point. The upper, northern, boundary of the Area extends from the Canada Glacier to the boundary markers on the knoll and thence declines in elevation in an easterly direction for 1.7 km to the NE boundary cairn. The broad area above this upper boundary - outside of the Area - serves as an access 'corridor' between L. Fryxell and L. Hoare.

The central flush area (Maps C and D) containing the richest stands of vegetation is close to the glacier edge, near a small, shallow pond. The flush area is gently sloping and very moist with numerous small ponds and rivulets in the summer. The slopes above this area are better drained, but vegetation colonises several small stream channels which extend parallel to the glacier from the upper boundary of the Area down to the flush. Undulating moraines assist accumulation of persistent snow patches on this slope, which may also provide moisture for plant growth. Stream channels, and associated vegetation, become less obvious with distance from the glacier. These slopes and the central flush are drained to the SE by Canada Stream, one of three streams which dominate the water input to Lake Fryxell. In the 1990-91 season Canada Stream had a maximum streamflow of 0.65 m³s⁻¹ with a peak daily mean flow of 0.34 m³s⁻¹, both occurring in December.

Three moss species have been identified from the flush area: *Bryum argenteum*, *Bryum pseudotriquetrum* and *Pottia heimii*. Lichen growth in the Area is inconspicuous, but two epilithic lichens, *Carbonea capsulata* and an unknown species of *Sarcogyne*, and *Lecanora expectans* and *Caloplaca citrina* may be found in a small area near the outflow of the pond near Canada Glacier. Chasmoendolithic lichens occur in many boulders. Over 37 species of freshwater algae have been described at the site, predominantly from the Cyanophyta. The upper part of Canada

Stream superficially appears sparse in algal growth. However, abundant encrusting epilithophytes grow on the undersides of stones and boulders. Two algae, *Prasiola calophylla* and *Chamaesiphon subglobosus*, have been observed only in this upper part of the stream. Cyanobacterial mats are extensive in the middle and lower reaches of the stream. Mucilaginous colonies of *Nostoc commune* dominate wetter parts of the central flush, while oscillatoriacean felts cover much of the mineral fines. Epiphytic algae, dominated by *Nostoc*, are common over the surface of *Bryam argenteum* and *Pottia heimii*. The lower stream is similar in floral composition, although it is notable in that the alga *Tribonema elegans* is abundant while absent further upstream: this is the first record of this alga from Antarctica. *Phormidium* and *Gloeocapsa* species are common throughout the stream-course.

Invertebrates from six phyla have been described in the Area: the three main groups are Rotifera, Nematoda and Tardigrada, with Protozoa, Platyhelminthes, and Arthropoda also present.

Evidence of human activities is commonplace within the Area. The main forms of damage evident at sites of vegetation are paths and footprints, removal of core samples from bryophyte turfs, and removal of larger clumps of bryophyte turfs. A number of old markers exist in the flush area and there has been some site modification closeby in the form of small rock dams, soil pits and several old campsites - much of this was remediated in the 1995-96 season. A plastic greenhouse was erected within the Area close to the flush in 1979 for experimental growth of garden vegetables, but this was destroyed in 1983 by a winter storm. Remains of the greenhouse found in the Area have been removed.

6(ii) Restricted zones within the Area
None.

6(iii) Structures within and near the Area

The first New Zealand hut at Canada Glacier was relocated to a second site in 1989, and removed completely in 1995-96. The second site is now designated for essential camping associated with research, marked on Maps C and D. Paths marked by lines of rocks, areas cleared for use as campsites, an old helicopter pad, and several low rock structures associated with the first hut site have nosier been remediated. A series of at least four shallow pits (~1 m in depth) were dug close to the old hut site. The second hut site comprised two small buildings, several new campsites, and a new helicopter pad. A path exists between the site and the glacier edge, crossing a moist area of plant growth. The helicopter pad remains as the current designated landing site.

A rock weir had been constructed in the constricted part of Canada Stream prior to 1981; in 1990 a more substantial weir and 9-inch Parshall flume were installed nearby (Maps C and D). The flume is made of black fibreglass. The weir consists of polyester sandbags filled with alluvium from near the stream channel: areas disturbed during construction were restored and after one season were not evident.

The upstream side of the weir is lined with vinyl-coated nylon. A notch has been built into the weir for relief in case of high flow. Clearance of seasonal snow from the channel has been necessary to prevent water from backing up at the weir. Data logging instrumentation and batteries are stored in a plywood crate located nearby on the north side of the stream.

Signposts and cairns mark the Area boundaries.

The US Fryxell Hut (20 m ASL) is located 1.5 km to the east, and Hoare Hut (65 m ASL) is located 3 km to the west of the Area (Maps A and B).

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

The nearest protected areas to Canada Glacier are Linnaeus Terrace (SSSI-19) 47 km west in the Wright Valley, and Barwick Valley (SSSI-3) 50 km to the NW (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 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;
- the actions permitted will not jeopardise the ecological or scientific values of the Area;
- any management activities are in support of the aims of the Management Plan;
- the actions permitted are in accordance with the Management Plan;
- the Permit, or an authorized 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

Vehicles are prohibited within the Area and access shall be by foot or by helicopter. Helicopter access should be from south of the line marked on the accompanying site maps, and overflight within the Area less than 100 m Above Ground Level (AGL) north of this line is prohibited. Helicopters shall land only at the designated site (163°02' 53" E, 77°36' 58" S: Map B) and overflight of the Area should generally be avoided. Exceptions to these flight restrictions, which will only be granted for an exceptional scientific or management purpose, must be specifically authorized by Permit. Use of helicopter smoke grenades within the Area is prohibited unless absolutely necessary for safety, and then these should be retrieved. Visitors, pilots, air crew, or passengers en route elsewhere on helicopters, are prohibited from moving on foot beyond the immediate vicinity of the designated landing and camping site unless specifically authorised by a Permit.

Pedestrians travelling up- or down-valley shall not enter the Area without a Permit. Permitted visitors entering the Area are encouraged to keep to established routes where possible. Visitors should avoid walking on visible vegetation or through stream beds. Care should be exercised walking in areas of moist ground, 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, and step on larger stones when stream crossing is necessary. Care should also be taken of salt-encrusted vegetation in drier areas, which can be inconspicuous. 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.

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.

In view of the importance of the water regime to the ecosystem, activities should be conducted so that disturbance to water courses and water quality is minimised. Activities occurring outside of the Area (e.g. on the Canada Glacier) which may have the potential to affect water quality should be planned and conducted taking possible downstream effects into account. Those conducting activities within the Area should also be mindful of any downstream effects within the Area and on Lake Fryxell.

7(iii) Installation, modification or removal of structures

Any structures erected or scientific equipment installed within the Area are to be specified in a Permit. Scientific equipment shall be 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

Nearby permanent camps outside of the Area should be used as a base for work in the Area. Camping at the designated campsite (Maps B and C) may be permitted to meet specific essential scientific or management needs.

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 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 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

1. 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 protective measures.
2. Any specific sites of long-term monitoring shall be appropriately marked.
3. To help maintain the ecological and scientific values of the plant communities found 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 camping and sampling equipment and markers - before entering the Area.

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 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.

Antarctic Specially Protected Area No. 132 (Site of Special Scientific Interest No. 13)

Potter Peninsula, 25 de Mayo (King George) Island, South Shetland Islands

1. Description of Values to be Protected

This area was originally designated as SSSI No. 13 in ATCM Recommendation XIII-8 after a proposal by Argentina because of its diverse avian and mammal fauna and locally rich vegetation, providing a representative sample of maritime Antarctic ecosystem. Coastal areas support large breeding colonies of ten seabird species, including three penguin species and three species of marine mammals.

The reasons for the original designation of the Area are still relevant. Scientific research on the breeding ecology of elephant seals and seabirds has been undertaken since 1982. This includes both the CCAMLR Ecosystem Monitoring Programme and basic biological and ecological research that must be developed without interferences by other human activities. Long-term research programmes could be endangered by accidental interference, especially during breeding periods.

2. Aims and Objectives

Management of Potter Peninsula aims to:

- Avoid major changes in the structure and composition of communities of flora and fauna;
- Prevent unnecessary human disturbance to the area;
- Permit scientific research which cannot be served elsewhere, and allow the continuity of the ongoing long-term biological and ecological research programmes established in the Area.

3. Management Activities

The following management activities will be undertaken to protect the values of the area:

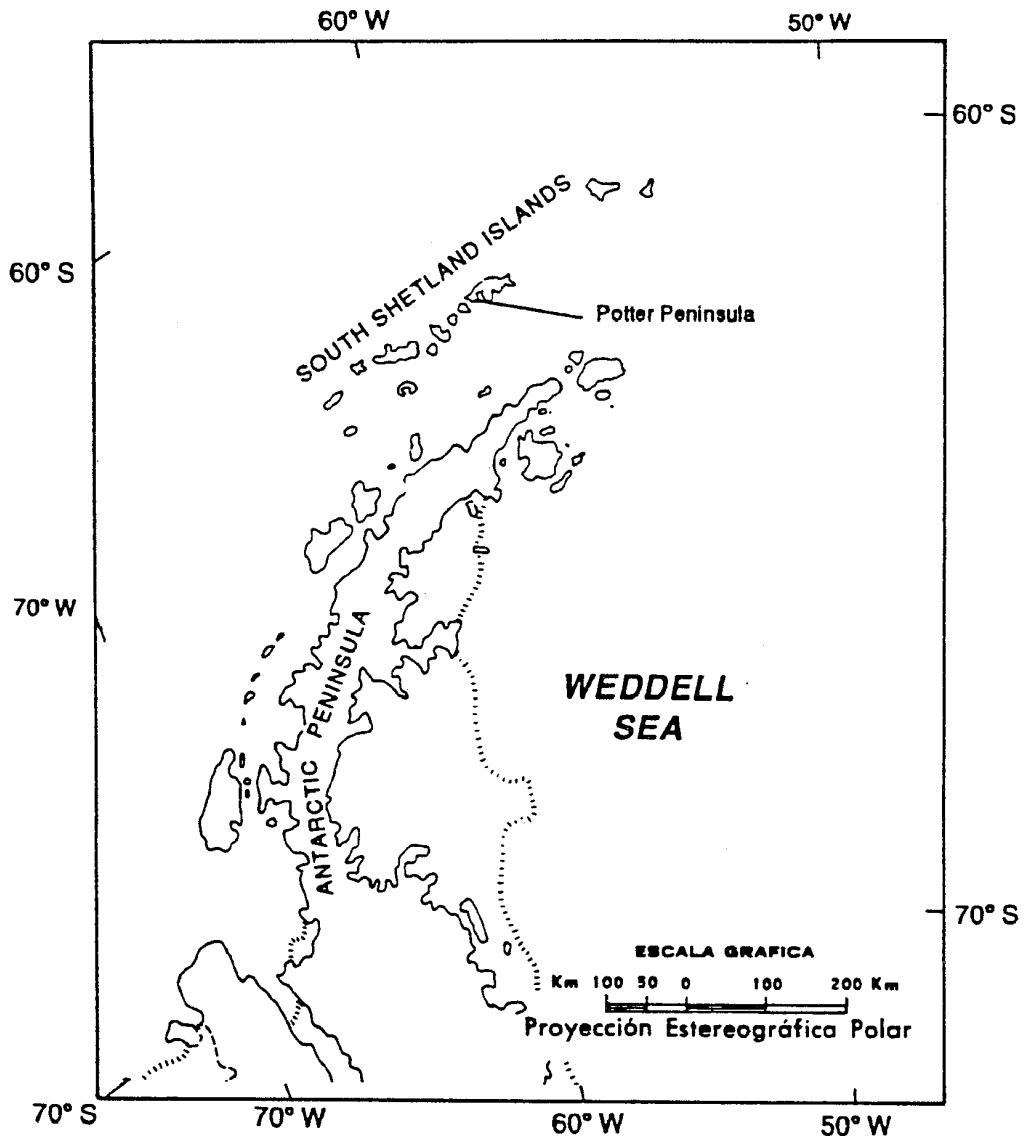
- Because the area is close to a station permanently occupied, a marker board will be placed at the principal access point illustrating the location boundaries and stating entry restrictions;
- Within the Area those locations used for research will be clearly marked.
- Priority pedestrian routes within the Area will be established for transit to sample sites.
- Collection of samples will be limited to the minimum required for approved scientific research.
- Visits shall be made as necessary to ensure management and maintenance measures are adequate.

4. Period of Designation

Designated for an indefinite period.

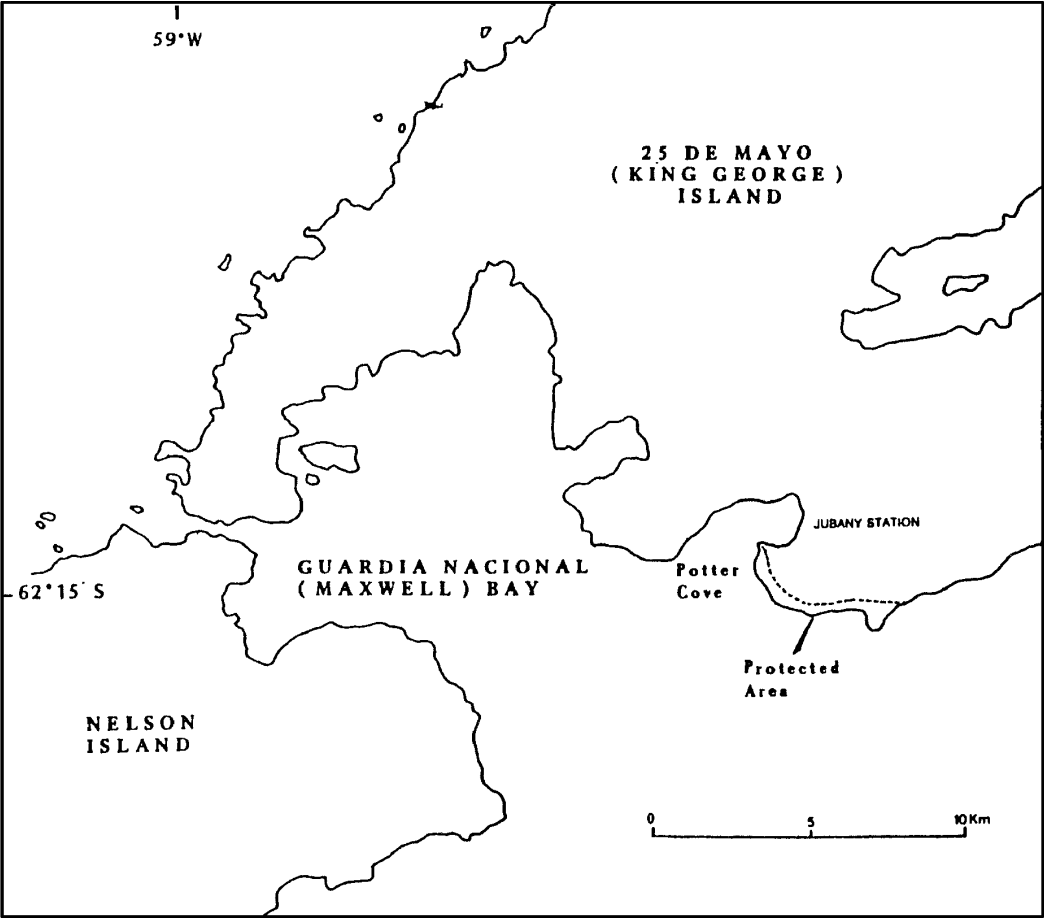
5. Maps

Map A shows the location of Potter Peninsula in relation with the Antarctic Peninsula.



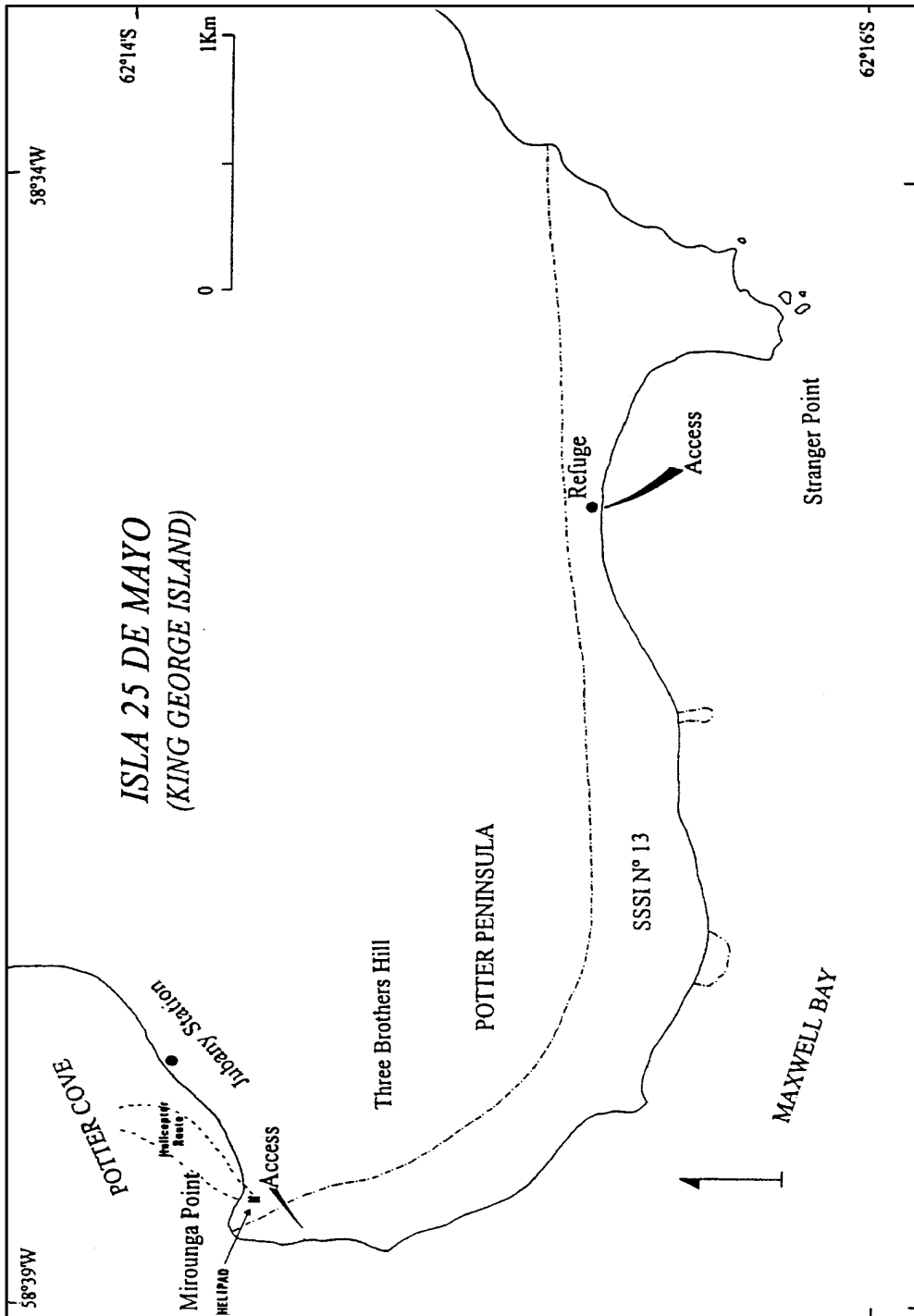
ASPA 132
Map A*

Map B shows the location of Potter Peninsula in relation with 25 de Mayo (King George) Island.



ASPA 132
Map B*

Map C shows the Protected Area in greater detail.



ASPA 132
Map C*

6. Description of the Area

6(i) Geographical co-ordinates and natural features of the Area

The site is located on the east side of Maxwell Bay, south-west of 25 de Mayo (King George) Island between Mirounga Point (the north-west most extreme point of Potter Peninsula) and the east side of Stranger Point (lat. 62°15' S - long 58° 37' W). The site occupies the coastal zone of variable width up to 500 m from the shore line (low water mark) and rising to above 70m altitude at Stranger Point. It is mainly an area of raised beaches, mostly pebble-covered, backed by basalt cliffs, terminal or lateral moraines and small glaciers. The coastline is very irregular and alternates between small base and rocky headlands.

This area offers a great scientific value by the presence of many bird colonies (Adelie penguin, gentoo penguin, chinstrap penguin, Dominican gull, brown skua, Antarctic tern, sheathbill, giant petrel and cape petrel) and breeding groups of marine mammals (Crabeater seal, Weddell seal, Southern elephant seal). There is a relatively abundant development of lichen-dominated plant communities, especially on the succession of prominent rocks along the beach. Long-term research and research programmes could be endangered by accidental interference, destruction of vegetation and soil, and perturbation of breeding birds and mammals.

6(ii) Restricted zones within the Area

None

6(iii) Location of structures within the Area

Within the Area there is a small Argentine refuge used by research teams. The refuge measuring 3 by 2.5m, is built of metal sheets and glass-fibre roof. It can accommodate up to two persons. Approximately 500 metres outside the site is placed Jubany Station.

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

SSSI No. 5, Fildes Peninsula lies about 20 km to the east direction. SSSI No. 8 Western Shore of Admiralty Bay lies 10 km to the north-east direction. SSSI No. 14 Harmony Point, lies about 30 km to the WSW direction.

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 used to continue study for the natural history, biology and ecology of the flora and fauna of the area or for a compelling scientific purpose that cannot be met elsewhere;
- The actions permitted will not jeopardise the natural ecological system in the Area;

- Any management activities are in support of the objectives of the Management Plan;
- The actions permitted are in accordance with this Management Plan;
- The Permit, or authorised copy, must be carried within the Site of Special Scientific Interest.
- A report or reports are supplied to the authority that issued the Permit.

7(i) Access to and movements within the Area

The access to the Area is restricted to the Northern end, near the helipad. Marine access will be restricted to a landing site in front of the refuge. No vehicles or aircraft are permitted in the Area except under emergency.

Limitation on access to particular localities used by breeding birds and mammals for specific periods may be necessary.

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

Scientific study and monitoring of the populations of flora and fauna in the area and compelling scientific research which cannot be conducted elsewhere and which will not interfere with ongoing long-term research programmes or jeopardise the structure or dynamics of the ecosystem of the Area.

Essential management activities, including monitoring.

7(iii) Installation, modification or removal of structures

No additional structures are to be erected in the Area, or scientific equipment installed, except for essential scientific or management activities, as specified in a Permit.

7(iv) Location of field camps

Parties using the Area will normally be able to use Jubany Station. In the event that this is not possible, a camp site should be used near the existing station and outside the Area.

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

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

No poultry products, including food products containing uncooked dried eggs, shall be taken into the Area. No herbicides or pesticides shall be brought into the Area. Any other chemicals, which may be introduced for compelling scientific purpose specified in the permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.

As far as possible the use of chemicals should be clearly documented for the benefit of later researchers.

Fuel, food and other material are not to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted. All such material introduced are to be removed when no longer required. Permanent depots are not permitted.

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

This 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 Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

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

Biological specimens and samples may be collected and/or removed from the Area only according to a permit. Debris of human origin should be removed and reported to the authority that issued the permit. Dead biological specimens may be removed for pathological analysis.

7(viii) Disposal of waste

All non-human wastes shall be removed from the Area to the nearby research station. Human waste may be deposited in the sea.

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

Permits may be granted to enter the area to carry out biological and ecological studies and monitoring, and site inspection activities, including the collection of small amounts of plant material and small numbers of animals for scientific purposes, to erect or maintain notice boards and protective measures.

All scientific structures and instrumentation, including research markers, installed in the Area must be authorised in a permit and clearly identified by country, name of investigator and year of installation. Research markers and structures must be removed at or before the expiry of the Permit. If specific scientific projects cannot be concluded within the permitted time, applications must be made for an extension to leave the items in situ.

7(x) Requirements for reports

The principal permit holder for each issued permit shall submit a report of activities conducted in the Area. This report shall be submitted to the authority named in the Permit as soon as practicable. Such report should be stored indefinitely and made accessible to interested Parties, SCAR, CCAMLR, and COMNAP if requested, to provide the documentation of human activities within the Area necessary for good management.

Antarctic Specially Protected Area No. 133 (Site of Special Scientific Interest No. 14)

Harmony Point, Nelson Island, South Shetland Islands

1. Description of Values to be Protected

This area was originally designated as SSSSI No. 14 in ATCM Recommendation XIII-8, after a proposal by Argentina and Chile, because of its diverse seabird community and extensive terrestrial vegetation cover and rich flora including mosses, lichens and two vascular plant species.

Ice free land supports large breeding colonies of 11 seabird species, and one of the largest single colonies of chinstrap penguin. The seabird colonies, and particularly the chinstrap penguin colony, are still important for scientific purposes, and have shown significant increases in the last decade. The Area supports a large giant petrel colony (500 breeding pairs), a species which is highly sensitive to any kind of human disturbance and is decreasing in many sites in Antarctica.

The Area is an excellent example of the South Shetland Islands maritime Antarctic seabird community and terrestrial ecosystem, allowing long term research without damage or interference.

2. Aims and Objectives

Management of Harmony Point aims to:

- Avoid major changes in the structure and composition of communities of flora and fauna;
- Prevent unnecessary human disturbance to the area;
- Permit scientific research which cannot be served elsewhere, and allow the continuity of the ongoing long-term biological and ecological research programmes established in the Area.

3. Management Activities

The following management activities will be undertaken to protect the values of the area:

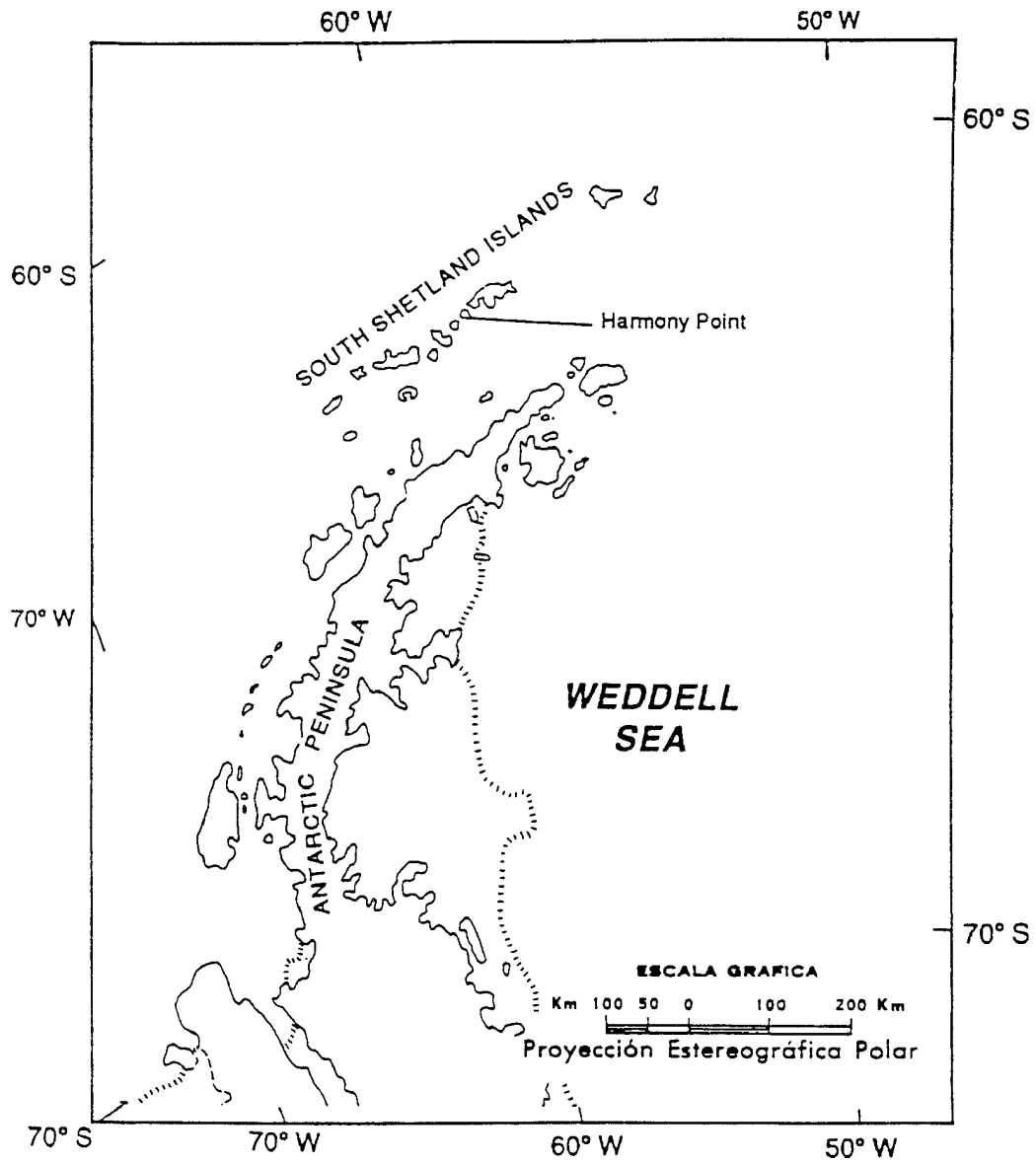
- A marker board will be placed at the principal access point illustrating the location, boundaries and stating entry restrictions;
- Access to the Area and paths will be marked;
- Preferred walking routes within the area will be established for transit to sample sites;
- Collection of samples will be limited to the minimum required for authorised scientific research;
- Visits shall be made as necessary to ensure management and maintenance measures are adequate.

4. *Period of Designation*

Designated for an indefinite period.

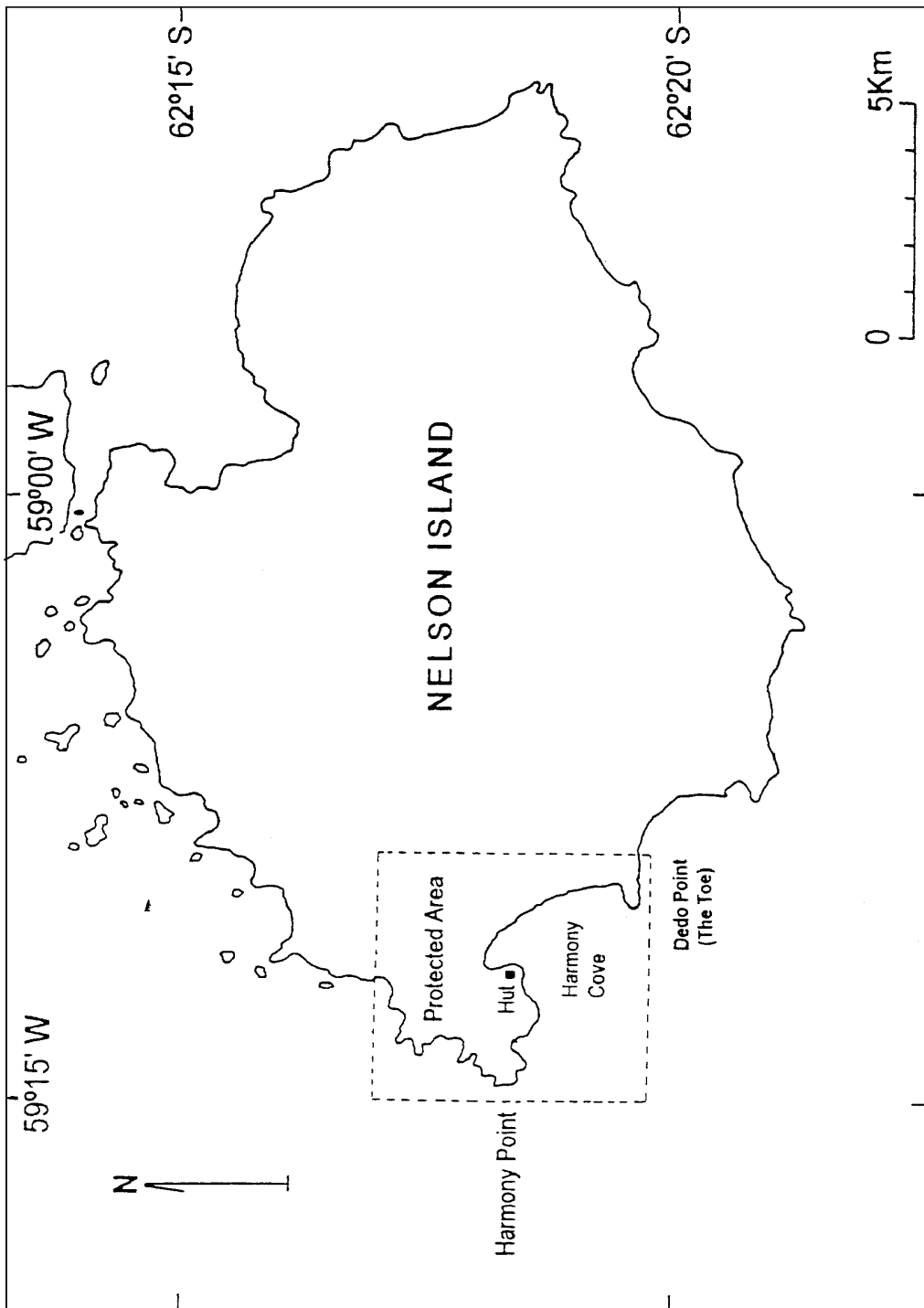
5. *Maps*

Map A: shows the location of Nelson Island in relation with the Antarctic Peninsula



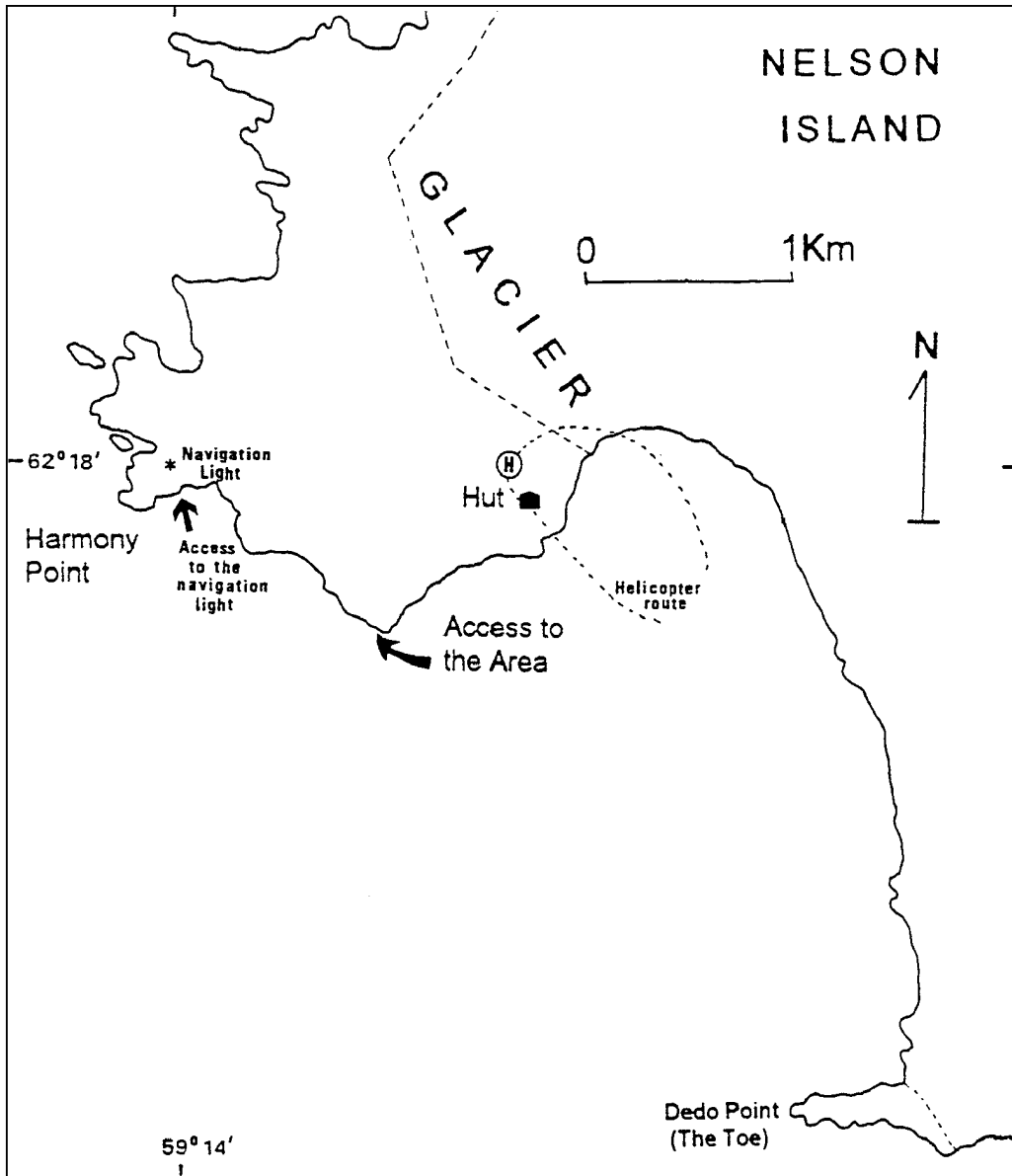
ASPA 133
Map A*

Map B: shows the location of Harmony point on Nelson Island.



ASPA 133
Map B*

Map C: shows the Protected Area in greater detail.



ASPA 133
Map C*

6. Description of the Area

6(i) Geographical coordinates and natural features of the Area

This Area is located in the west coast of Nelson Island, between 25 de Mayo (King George) Island to the Northeast and Robert Island to the Southwest (lat. 62°18'S; 59°14'W).

The Area includes Harmony Point and the Toe, the adjacent ice and surrounding marine zone within the rectangle showed on maps 2 and 3.

Geomorphologically Harmony Point presents three well defined units: an andesitic plateau, coastal andesitic outcrops and ancient sea levels (raised beaches). The plateau reaches 40 metres above sea level its area is covered by detritus resulting from the destruction of andeistic rock by freeze/thaw action, with a well-developed vegetation of mosses and lichens.

Lakes and streams with a limited flow appear on the undulations. Some isolated andesitic rocks stand out from the glacier ice, and some of them are formed on the degalciated plateau (ancient nuntaks), evidencing that the past extension of the glacier covered Harmony Point.

There are three successive raised beaches, between the coast and the westward extremity and the glacier. These beaches are defined by pebble accumulations of variable height.

The Area holds breeding colonies of eleven seabird species: gentoo penguin 4,000 pairs, chinstrap penguin 12,000 pairs, giant petrel 500 pairs, cape petrel 300 pairs, blue eyed shag 110 pairs, sheathbill 110 pairs, brown skua 40 pairs, Dominican gull 120 pairs, Antarctic tern 30 pairs. Other seabirds nesting in the Area are Wilson storm petrel and black-bellied storm petrel.

There are some extensive areas covered by a very rich and diverse development of bryophytes and lichen-dominated plant communities, including two vascular plant species, especially in the areas less affected by recent perturbation or breeding activities. Moss turf subformations are located in wind protected and moist places, whilst lichen-dominated subformations occur in places with a high wind exposure.

6(ii) Restricted zones within the Area

There are no prohibited zones within the Area, but access to bird breeding areas should be restricted during the breeding season (September to March) and damage to vegetation should be avoided by limited access to the marked paths.

6(iii) Location of structures within the Area

There is a refuge measuring 4.5 by 3.5m, that can house three scientists, and a storage building. The installations are used only during spring and summer. There is an Argentine navigation light on the westmost point of Harmony Point.

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

SPA No. 16, Coppermine Peninsula, Robert Island lies about 30 km south-west. SSSI No. 13 Potter Peninsula, 25 de Mayo (King George) Island lies about 30 km east-north-east. SSSI No. 5, Fildes Peninsula, 25 de Mayo (King George) Island lies about 23km north-north-east. SSSI No. 8, Western Shore of Laserre/Admiralty Bay, 25 de Mayo (King George) Island lies about 45km east-north-east.

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 to continue study of the natural history, biology and ecology of the flora and fauna of the area or for a compelling scientific purpose that cannot be met elsewhere;
- The actions permitted will not jeopardise the natural ecological system in the Area;
- Any management activities are in support of the objectives of the Management Plan;
- The actions permitted are in accordance with this Management Plan;
- The Permit, or authorised copy, must be carried within the Site of Special Scientific Interest;
- A report or reports are supplied to the authority that issued the Permit.

7(i) Access to and movements within the Area

Access to Harmony Point area from the sea, which is the preferred method, is restricted to the pebble beach 400m south-west to the refuge. There is a navigation light located in the westmost point of Harmony Point. Access to the navigation light is by boat from the coast at the south of the light. Special access points are not specified for the Toe, but access is limited to inflatable boats.

Aircraft landing should be avoided where practicable. Small planes could land on the glacier but flights over the Area are not allowed. Helicopters must not overfly any of the major bird breeding areas, and should land only in the vicinity of the refuge or landing beach. Map 3 shows proposed helicopter flight route. It is forbidden to overfly the Area below 250m above the highest point except for access to the landing point specified above.

Pedestrians must use established routes, particularly during the bird breeding season.

Vehicles are prohibited in the area.

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

Scientific study and monitoring of the populations of flora and fauna in the area and compelling scientific research which cannot be conducted elsewhere and which will not interfere with ongoing long-term research programmes or jeopardise the structure or dynamics of the ecosystem of the Area.

Essential management activities, including monitoring.

7(iii) Installation, modification or removal of structures

No additional structures are to be erected in the Area, or scientific equipment installed, except for essential scientific or management activities, as specified in a Permit.

7(iv) Location of field camps

No additional structures are to be erected in the Area, or scientific equipment installed, except for essential scientific or management activities, as specified in a Permit.

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

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

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

No herbicides or pesticides shall be brought into the Area. Any other chemicals, which may be introduced for compelling scientific purpose specified in the permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.

As far as possible the use of chemicals should be clearly documented for the benefit of later researchers.

Fuel, food and other material are not to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted. All such material introduced are to be removed when no longer required. Permanent depots are not permitted.

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

This 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 Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

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

Biological specimens and samples may be collected and/or removed from the Area only according to a permit. Debris of human origin should be removed and reported to the authority that issued the permit. Dead biological specimens may be removed for pathological analysis.

7(viii) Disposal of waste

All non-human waste shall be removed from the Area. Human waste may be deposited in the sea.

Waste resulting from research activities in the Area may be stored temporarily beside the refuge to await its removal from the Area at the first opportunity. Any such stored waste must be adequately contained, marked as waste and secured against accidental loss.

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

Permits may be granted to enter the area to carry out biological and ecological studies and monitoring, and site inspection activities, including the collection of small amounts of plant material and small numbers of animals for scientific purposes, to erect or maintain notice boards and protective measures.

All scientific structures and instrumentation, including research markers, installed in the Area must be authorised in a permit and clearly identified by country, name of investigator and year of installation. Research markers and structures must be removed at or before the expiry of the Permit. If specific scientific projects cannot be concluded within the permitted time, applications must be made for an extension to leave the items in situ.

7(x) Requirements for reports

The principal permit holder for each issued permit shall submit a report of activities conducted in the Area. This report shall be submitted to the authority named in the Permit as soon as practicable. Such reports should be stored indefinitely and made accessible to interested Parties, SCAR, CCAMLR, and COMNAP if requested, to provide the documentation of human activities within the Area necessary for good management.

Antarctic Specially Protected Area No. 134 (Site of Special Scientific Interest No. 15)

Cierva Point, Danco Coast, Antarctic Peninsula

1. Description of Values to be Protected

This area was originally designated as SSSI No. 15 in ATCM Recommendation XIII-8, after a proposal by Argentina, as an important example of well developed maritime vegetation and having breeding colonies of at least five bird species.

This area has a great scientific value due to the presence of important bird colonies (gentoo penguin, brown skua, blue-eyed shag, snow petrel, Dominican gull), an abundant development of plant cover, and a diverse flora that includes the two Antarctic flowering plant species and some liverworts and an associated invertebrate fauna. Its littoral area possesses abundant tidal pools inhabited by a large number of marine invertebrates. Long-term research programmes on terrestrial ecology and natural variability could be endangered by accidental interference, destruction of vegetation and soil, pollution of rock pools and perturbation of breeding birds.

2. Aims and Objectives

Management of Cierva Point aims to:

- Avoid major changes in the structure and composition of communities of flora and fauna;
- Protect long-term research programmes on terrestrial ecology and natural variability established in the Area;
- Prevent unnecessary human disturbance to the area;
- Utilize the Area as a monitoring site to assess direct and indirect effects of the neighbouring station.

3. Management Activities

The following management activities will be undertaken to protect the values of the area:

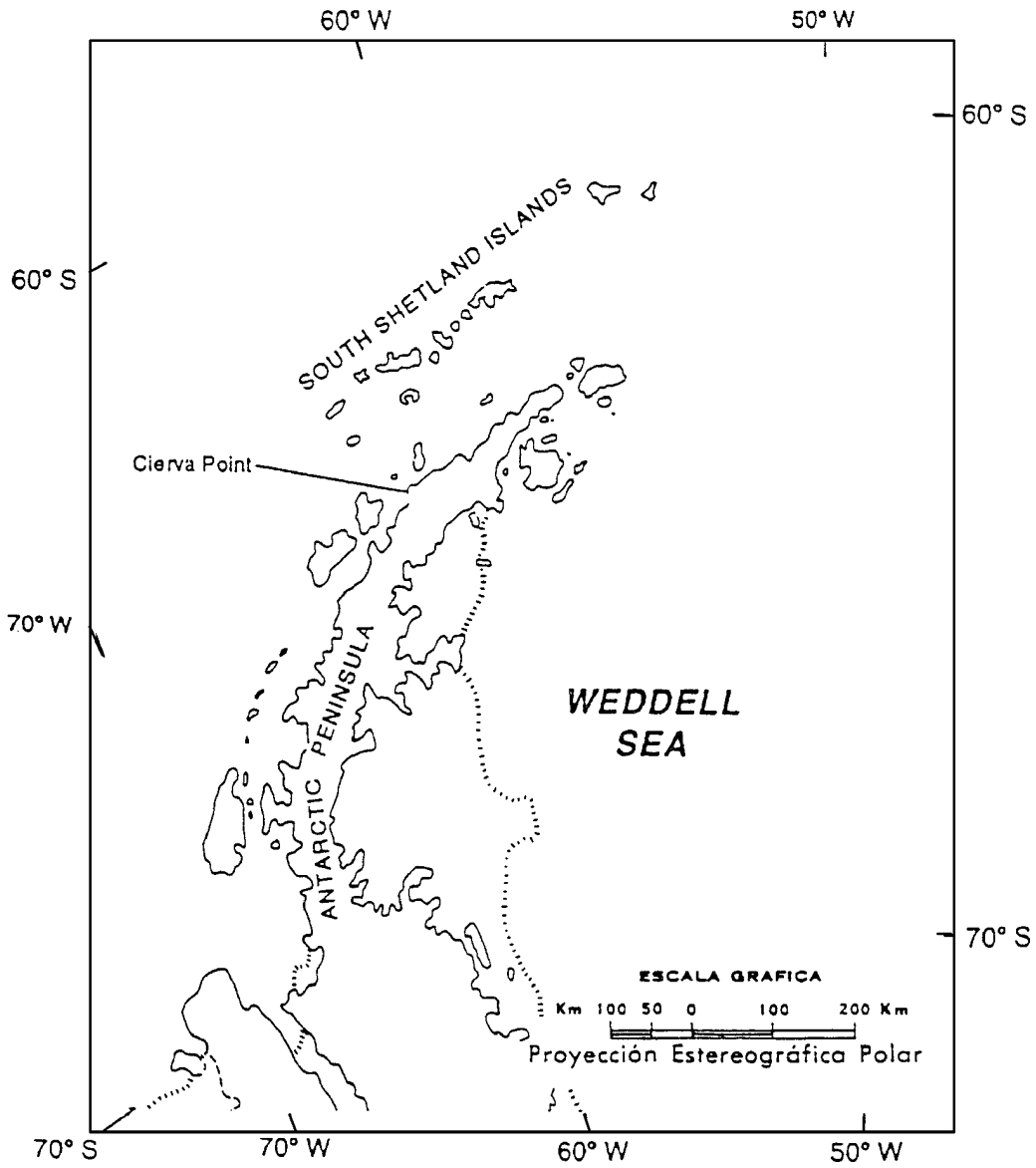
- A marker board will be placed at the principal access point illustrating the location boundaries and stating entry restrictions;
- Access to the Area and paths will be marked;
- Priority pedestrian routes within the Area will be established for transit to sample sites;
- Collection of samples will be limited to the minimum required for approved scientific research;
- Visits shall be made as necessary to ensure management and maintenance measures are adequate.

4. Period of Designation

Designated for an indefinite period.

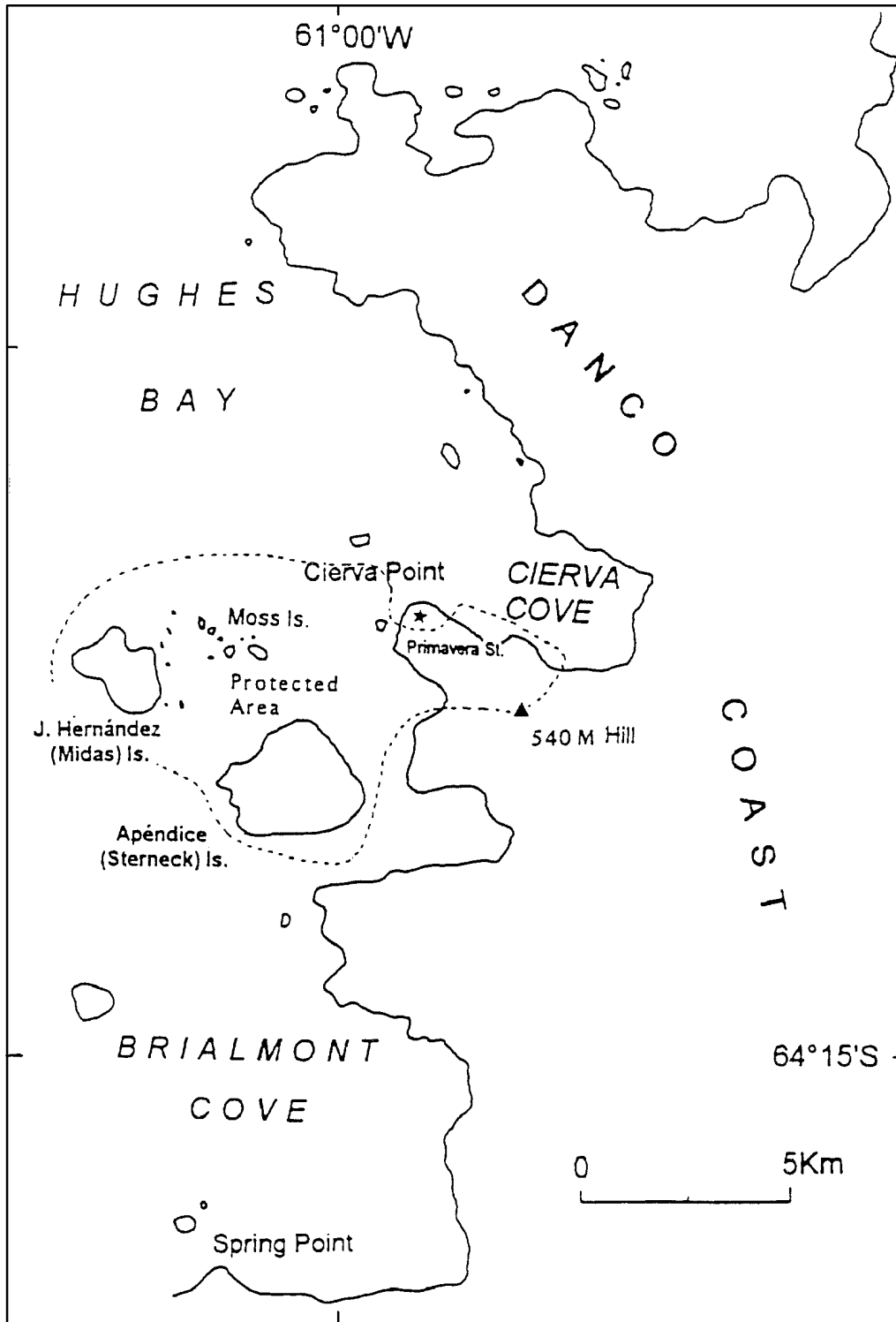
5. Maps

Map 1 shows the location of Cierva Point in relation with the Antarctic Peninsula.



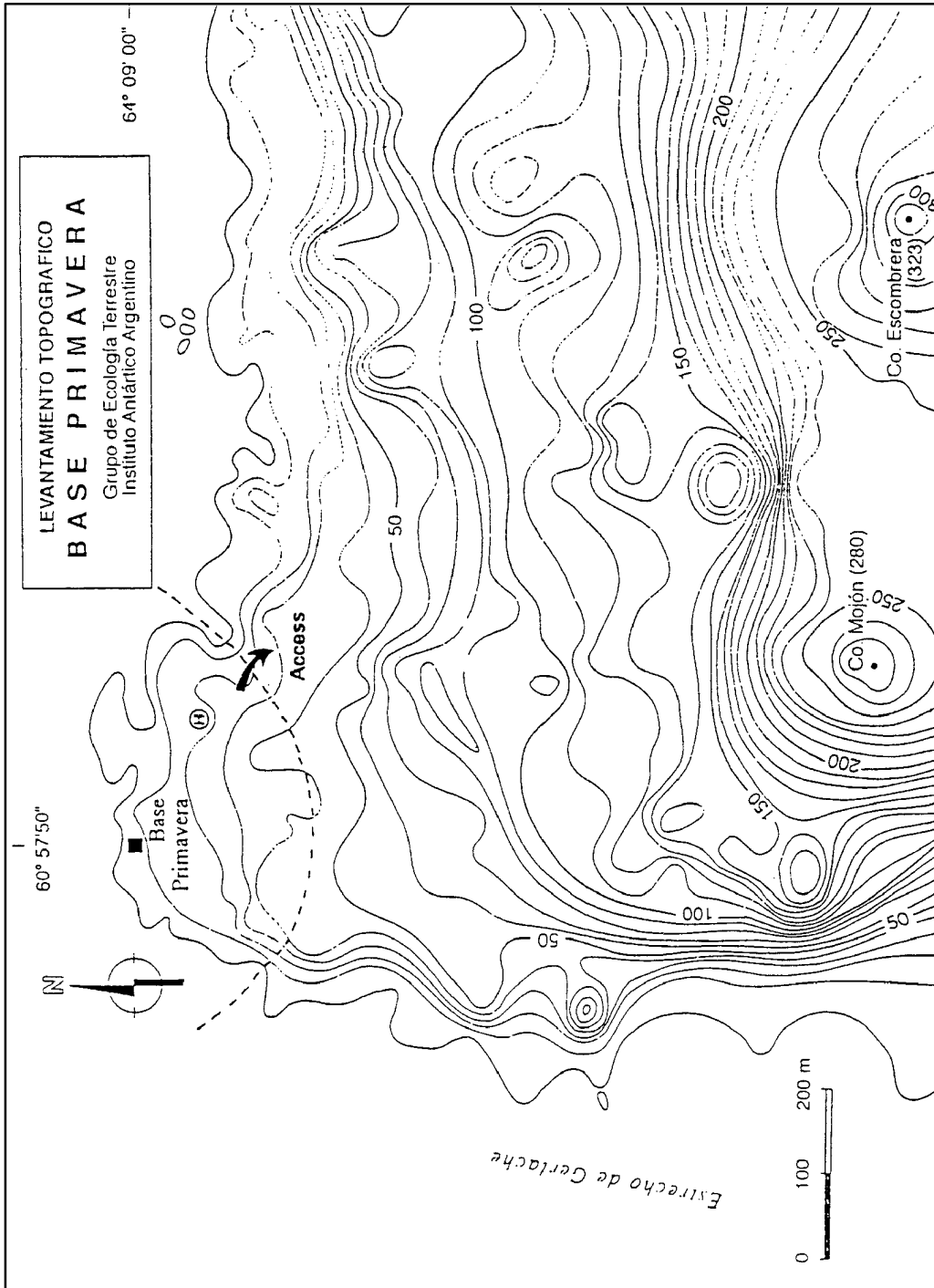
ASPA 134
Map A*

Map 2 shows the location of Cierva Point and adjacent islands in relation to Danco Coast.



ASPA 134
Map B*

Map 3 shows the area surrounding Primavera Station in detail to indicate access to the Protected Area.



ASP A 134
Map C*

6. Description of the Area

6(i) Geographical co-ordinates and natural features of the Area

Cierva Point (lat. 64°10' S. lon. 60°57' W) is in the north-west of the Antarctic Peninsula, on the south coast of Cierva Cove, at the north end of Hughes Bay. The site comprises Cierva Point, encompassing the land west on an imaginary line drawn from the southeast of the north side of the Point, through the summit of a flat hill of 540m high, to the southeast of the south side of the Point. Also included are Apendice/Rivera/Sterneck Island, and Jose Hernandez/Bofill/Midas Island and Lopez/Moss Island, which lie mainly between Jose Hernandez/Bofill/Midas Island and Cierva Point. Although the intertidal zone of each of these areas is included in the Area, the subtidal marine environment is not included.

Base Primavera (Argentina) and all its associated installations and areas of disturbance are excluded from the area.

The plant cover of lichen, moss and grass-dominated communities is very extensive. The dominant plant communities are lichen-dominated fellfield, *Polytrichum-Chorisodontian* moss turf and *Descampsia-Colobantus* subformation. Areas of more than a hundred square metres off the ground are covered by moss turves, with a peat depth of about 80 cm. This type of habitat allows the establishment of many bird colonies, including gentoo penguins, chinstrap penguins, blue-eyed shags, brown skuas, Wilson's storm petrels, sheathbills and kelp gulls.

6(ii) Restricted zones within the Area

None

6(iii) Location of structures within the Area

There are no vehicular routes, structures or refuges within the Area. Primavera Station (Argentina) located at the north west of the cape, is open in summers. It is composed of eight huts, and a place delimited for helicopter landings.

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

None

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 to continue study of terrestrial ecology and natural variability of the area or for a compelling scientific purpose that cannot be met elsewhere;
- The actions permitted will not jeopardise the natural ecological systems in the Area;

- Any management activities are in support of the objectives of the Management Plan;
- The actions permitted are in accordance with this Management Plan;
- The Permit, or authorised copy, must be carried within the Site of Special Scientific Interest;
- A report or reports are supplied to the authority that issued the Permit.

7(i) Access to and movements within the Area

There is only one access to the Area for helicopters. Helicopters may only land in the specified area ESE of the station. The aircraft route to be used is limited to a north approach and departure. Marine access is allowed to any point for any of the islands. Access will be by permit issued by a component authority and will only be allowed for activities which are in accordance with this management plan. Tourism or any kind of recreational activities are not permitted. Movement within the site should be by designated pedestrian routes. No vehicle access is permitted.

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

Scientific study and monitoring of the terrestrial ecosystem and natural variability in the area and compelling scientific research which cannot be conducted elsewhere and which will not interfere with ongoing long-term research programmes or jeopardise the structure or dynamics of the ecosystem of the Area.

Essential management activities, including monitoring.

7(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 a Permit.

7(iv) Location of field camps

Parties should not normally camp in the Area. If it is essential for safety reasons, tents should be erected having regard to causing the least damage to vegetation and disturbance to fauna.

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

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

No poultry products, including food products containing uncooked dried eggs, shall be taken into the Area. No herbicides or pesticides shall be brought into the Area. Any other chemicals, which may be introduced for compelling scientific purpose specified in the permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted.

As far as possible the use of chemicals should be clearly documented for the benefit of later researchers.

Fuel, food and other material are not to be stored in the area, unless required for essential purposes connected with the activity for which the permit has been granted. All such material introduced are to be removed when no longer required. Permanent depots are not permitted.

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

This 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 Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

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

Biological specimens and samples may be collected and/or removed from the Area only according to a permit. Debris of human origin should be removed and reported to the authority that issued the permit. Dead biological specimens may be removed for pathological analysis.

7(viii) Disposal of waste

All non-human wastes shall be removed from the Area to Primavera station. Human waste may be deposited in the sea.

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

Permits may be granted to enter the area to carry out biological and ecological studies and monitoring, and site inspection activities, including the collection of small amounts of plant material and small numbers of animals for scientific purposes, to erect or maintain notice boards and protective measures.

All scientific structures and instrumentation, including research markers, installed in the Area must be authorised in a permit and clearly identified by country, name of investigator and year of installation. Research markers and structures must be removed at or before the expiry of the Permit. If specific scientific projects cannot be concluded within the permitted time, applications must be made for an extension to leave the items on site.

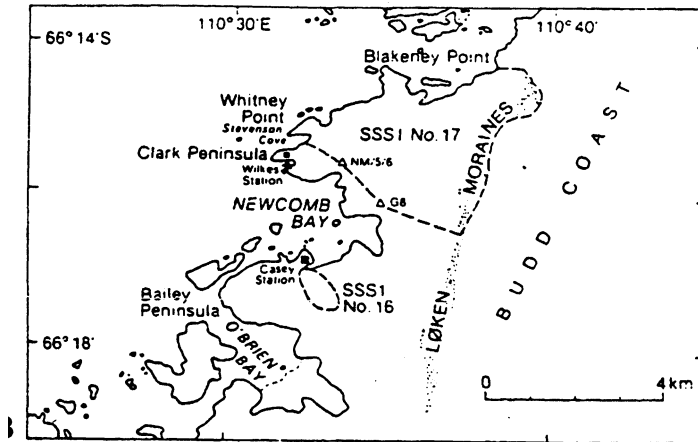
7(x) Requirements for reports

The principal permit holder for each issued permit shall submit a report of activities conducted in the Area. This report shall be submitted to the authority named in the Permit as soon as practicable. Such reports should be stored indefinitely and made accessible to interested Parties, SCAR, CCAMLR, and COMNAP if requested, to provide the documentation of human activities within the Area necessary for good management.

Antarctic Specially Protected Area No. 135 (Site of Special Scientific Interest No. 16)

North-East Bailey Peninsula, Budd Coast, Wilkes Land

i. *Description of Site.* Bailey Peninsula is situated between Newcomb and O'Brien Bays at the west end of Vincennes Bay, opposite the Windmill Islands, on Budd Coast at lat 66°17'S, long 110°32'E. The Site consists of an irregular area of rock exposed during summer, surrounding the Casey Station transmitter building. The boundary, which is demarcated, is shown on the map attached to the Management Plan for Site of Special Scientific Interest No 17 (below).



ASPA 135
Map A*

ii. *Reason for designation.* The Site is not unique in the Windmill Islands region context but is representative of a diverse assemblage of vegetation; it contains contrasting habitats and water bodies; has extremely rich (by continental Antarctic standards) lichen and moss communities and an important stand of liverwort. Proximity to Casey Station minimizes logistic problems with respect to field research and, at the same time, maximizes the potential for disturbance of study areas. It is primarily for this latter reason that this Site, where research is concentrated, requires protection.

iii. *Outline of research.* The Site contains three extensive and contrasting moss fields which are the subject of taxonomic, ecological and physiological studies which commenced during the summer of 1982-83. Additional studies include population ecology of invertebrates associated with the vegetation, and soil/water chemistry. Permanent lichen growth monitoring sites have also been established as have sites monitoring annual growth increments in mosses.

iv. *Date of expiry of designation.* 31 December 1995.

v. *Access points.* None Specified, although access to the transmitter building near the south-east end of the Site should be via the ice/snow of the oversnow access route to Law Dome, several kilometres to the south.

vi. *Pedestrian and vehicular routes.* Access to the area should be restricted as far as possible to that necessary to conduct scientific work and operate the transmitter building. Vehicles should be restricted to existing access routes. These are clearly demarcated. No helicopter landing is permitted within the Site. Particular care

should be taken to avoid damage to bryophytes and lichens, disrupting of soils and periglacial features, and to avoid causing changes to water quality or drainage. Selected study reference areas (eg three contrasting moss communities) have been delimited by marked stakes without causing disturbance to the environment. Access to these areas should be restricted to scientists participating in the study programme.

vii. *Other kinds of scientific investigations which would not cause harmful interference.* Scientific research other than the programmes for which the Site has been designated should be kept to a minimum.

viii. *Scientific Sampling.* Sampling should be kept to a minimum and should not affect the existing research programmes.

ix. *Other restraints.* No storage or disposal of any products relating to human occupancy of the Station should occur in the Site.

Antarctic Specially Protected Area No. 136 (Site of Special Scientific Interest No. 17)

Clark Peninsula, Budd Coast, Wilkes Land

Clark Peninsula was designated as a Site of Special Scientific Interest in 1985 (ATCM Recommendation XIII-8): put forward by Australia. The Area is approximately 9.75 square kilometres in area and is adjacent to the Windmill Islands Group on the Budd Coast, Wilkes Land, Eastern Antarctica. (Maps A and B.) Scientific research within the Area has focused on the plant communities but has also included studies of the Area's penguin colonies. The Area has served as a valuable comparative site for similar plant communities and penguin colonies closer to Casey Station which are subject to greater disturbance.

1. Description of Values to be Protected

Excluding the Antarctic Peninsula, the largely undisturbed terrestrial ecosystem of Clark Peninsula supports one of the most extensive and best-developed plant communities on continental Antarctica. The Area has rich associations of macrolichens and bryophytes that occupy very specific ecological niches. Within the relatively complex plant communities, 33 species of bryophytes and macrolichens have been found with 11 cryptogamic sociations being identified. This vegetation forms a continuum of ecological variation along environmental gradients of soil moisture, soil chemistry, and microclimate. As such, the Area has intrinsic ecological value and scientific importance, particularly to botanists, microbiologists, soil scientists and glacial geomorphologists.

Within the Area, moss and lichen communities are used as control plots to monitor the environmental impacts of nearby Casey Station. The Area provides baseline data with which to compare changes in similar plant communities in the immediate surroundings of Casey Station. The cryptogamic plant communities are also being monitored in relation to short-term microclimate fluctuation and long-term climate change in the region since deglaciation 8000-5000 years BP.

Significant and relatively undisturbed breeding populations of Adélie penguin (*Pygoscelis adeliae*), South polar skuas (*Catharacta maccormicki*), Wilson's storm petrels (*Oceanites oceanicus*), and Snow petrels (*Pagodroma nivea*), are established at Whitney and Blakeney Points within the Area. These populations provide valuable comparative data for assessing and measuring human impacts and disturbance of penguin colonies on nearby Shirley Island close to Casey Station.

The Area supports an exceptional vegetation cover for continental Antarctic ice free localities, with a wide range of vegetation communities. The Area requires protection because of its ecological importance, its significant scientific value, and the limited geographical extent of the ecosystem. The Area is vulnerable to disturbance through trampling, sampling, pollution or alien introductions, while being sufficiently distant from Casey Station to avoid immediate impacts and disturbances from activities carried out there. It is because of the scientific and ecological values, and the values of the Area for long term monitoring, that it should continue to be protected.

2. *Aims and Objectives*

Management at Clark Peninsula aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing undue human disturbance;
- conserve a part of the natural ecosystem as a reference area for the purpose of comparative studies and to assess direct and indirect effects of Casey Station;
- allow scientific research on the ecosystem and elements of the ecosystem, both geological and biological, while ensuring protection from over-sampling and disturbances;
- 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 will be undertaken to protect the values of the Area:

- signs illustrating the location and boundaries, with clear statements of entry restrictions, shall be placed at appropriate locations at the boundaries of the Area to help avoid inadvertent entry;
- information on the location of the Area (stating special restrictions that apply) shall be displayed prominently, and a copy of this Management Plan shall be kept available, at the adjacent abandoned Wilkes Station, the “Wilkes Hilton” (unofficial name) Refuge Hut on Stonehocker Point, “Jack’s Donga” (unofficial name) Refuge Hut, and at Casey Station and will be provided to all visiting ships;
- 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 required;
- the Management Plan shall be reviewed at least every five years and updated as required.

4. *Period of Designation*

Designated for an indefinite period.

5. *Maps*

Map A: East Antarctica, showing location of Clark Peninsula.

Projection: Polar Stereographic

Horizontal Datum: WGS84. True scale of latitude 71°.



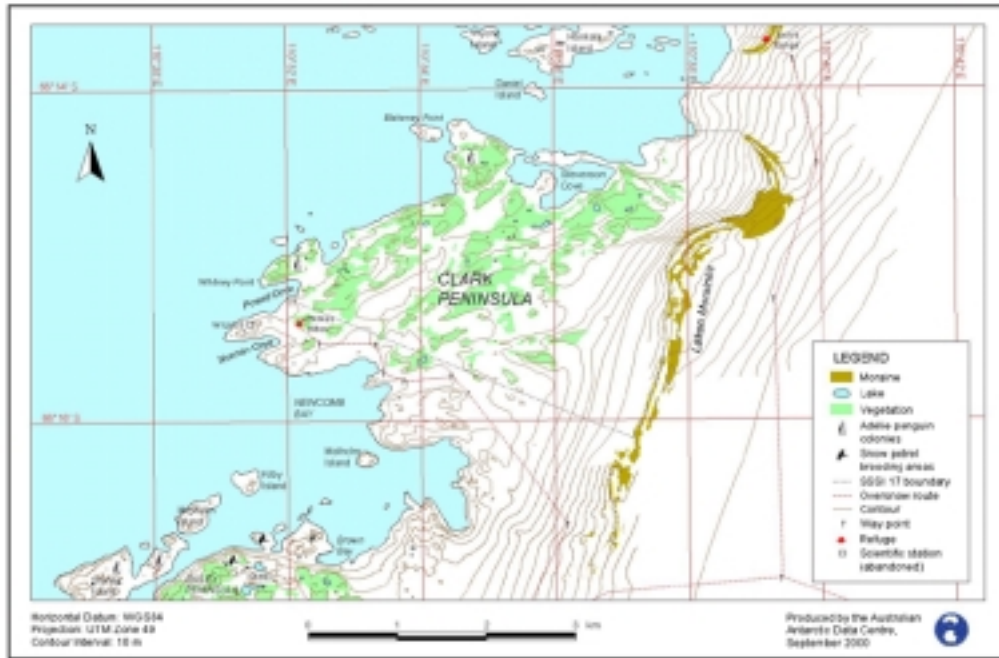
ASPA 136
Map A*

Map B: Windmill Islands, showing location of Clark Peninsula.
Projection: UTM Zone 49
Horizontal Datum: WGS84.



ASPA 136
Map B*

Map C: Topographic map of the Area.
 Projection: UTM Zone 49 Horizontal Datum: WGS84.
 Contour Interval: 10 m.



ASPA 136
 Map C*

6 Description of the Area

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

Clark Peninsula, an area of rock exposures and permanent ice and snow fields, is situated on the north side of Newcomb Bay at the east end of Vincennes Bay, opposite Windmill Islands region, on Budd Coast, Wilkes Land, in latitude 66°15'S and longitude 110°36'E. The Area is approximately 9.75 square kilometres in area. (Map C.)

The Area comprises all the land on Clark Peninsula within the southern boundary line connecting the east side of Powell Cove at a point which originates at latitude 66.254424° South, longitude 110.53330° East, to trigonometrical station G7 at latitude 66.25809° South, longitude 110.55664° East thence to a point to the east-south-east on Løken Moraine. The eastern boundary is the westernmost limit of Løken Moraines as far north as a point due east of Blakeney Point, and thence to the coast, returning along the coast to the point of origin. The boundary of the Area will be indicated by prominent markers, and is shown on Map C.

Topographically, the Clark Peninsula comprises low lying, rounded ice-free rocky outcrops (maximum altitude approximately 40 metres), rising in the east to the Løken Moraines (altitude approximately 130 metres). Intervening valleys are filled with permanent snow or ice, or glacial moraine and exfoliated debris and contain water catchment areas.

The Windmill Islands represent one of the easternmost outcrops of a Mesoproterozoic low-pressure granulite facies terrain that extends west to the Bunger Hills and further to the Archaean complexes in Princess Elizabeth Land, to minor exposures in the east in the Dumont D'Urville area and in Commonwealth Bay. The total outcrop areas do not exceed more than a few square kilometres.

The rocks of the Windmill Islands area comprise a series of migmatitic metapelites and metapsammites interlayered with mafic to ultramafic and felsic sequences with rare calc-silicates, large partial melt bodies (Windmill Island supacrustals), undeformed granite, charnockite, gabbro, pegmatite, aplites and late dolerite dykes. Clark Peninsula distinguishes the northern transition of a metamorphic grade transition which separates the northern part of the Windmill Islands area from the southern part.

On Clark Peninsula outcrops of metapelitic rock and leucocratic granite gneiss are dominant. The metapelitic rock is generally foliated, migmatized and fine to medium grained. Mineralogy of the metapelitic rock involves biotite-sillimanite and biotite-sillimanite±cordierite. The sillimanite is strongly lineated in the foliation and the cordierite is generally pinnitized. The early granite gneiss is white, medium grained and foliated, it comprises two felsic to intermediate intrusions which predate and/or are synchronous with the deformation in the Windmill Islands. The larger intrusion, which occupies most of central Clark Peninsula is a quartz, K-feldspar, biotite, white mica and opaque-bearing granitic augen gneiss. Small outcrops of mafics and metapsammite occur. The rock beds lie in a south-west north-east orientation. The geology of Clark Peninsula is shown at Map F.

Gravels and soils appear to be derived from marine sediments deposited in the Pleistocene with a thin cover of weathered rock. Subfossil penguin colonies are common along the central ridge running south-west to north-east on Clark Peninsula and at Whitney Point and Blakeney Point. In the vicinity of abandoned penguin colonies, the soils, derived from penguin guano, are fine and silty with relatively high percentage of organic matter. Melt streams and pools and small lakes are prevalent in summer. The distribution of pools and lakes on Clark Peninsula is shown at Map E.

Conditions on Clark Peninsula, in comparison with many other continental Antarctic areas, are favourable enough to have induced relatively stable, complex, well developed, and species rich vegetation. The ice-free rocks support an extensive cover of lichen and in lower lying areas mosses predominate. Principal factors responsible for the distribution of vegetation on Clark Peninsula are exposure to wind, availability of water and the presence of abandoned penguin colonies which have a marked influence on the distribution and abundance of species.

To the north-east of the Peninsula, well-developed *Umbilicaria decussata*, *Pseudephebe minuscula*, *Usnea sphacelata* communities dominate. Further from the coast, *U. sphacelata* is dominant and forms extensive carpets over the metamorphic rocks and gravel beds in association with *P. minuscula* and *U. decussata*, together with scattered bryophytes. The bryophytes comprise, *Bryum pseudotriquetrum*, *Grimmia antarctici* and *Ceratodon purpureus*. Within these communities, well-

developed bryophyte patches dominate in moist, sheltered sites and locally form closed stands comprising a moss turf up to almost 30 cm depth.

In the north-western and western coastal areas where penguin colonies are present, *Xanthoria mawsonii*, *Candelariella flava* and *Buellia frigida* are more common. On the abandoned penguin colonies in the southern coastal areas, this community type contains a higher proportion of *U. decussata* and *U. sphacelata*.

In the centre of Clark Peninsula the vegetation is dominated by *U. decussata*, *P. minuscula*, *B. soledians* and *B. frigida*, with scattered occurrences of *Pleopsidium chlorophanum*.

The vegetation distribution of Clark Peninsula is shown at Map D.

The microflora comprises algae, with *Botrydiopsis constricta* and *Chlorella conglomerata* dominating, together with bacteria, yeasts and filamentous fungi.

Adélie penguins (*Pygoscelis adeliae*) are abundant within the Area, with colonies present at Whitney and Blakeney Points. Approximately 5,500 breeding pairs were counted in 1999 at Whitney Point, and 4,600 breeding pairs were present at Blakeney Point in 1991. The penguin population has shown a long-term increase since studies commenced in 1959/60. This is in contrast to nearby Shirley Island, opposite Casey Station, where the breeding population of Adélie penguins has remained stable since 1968.

Wilson's storm petrels (*Oceanites oceanicus*), South polar skuas (*Catharacta maccormicki*) and Snow petrels (*Pagodroma nivea*) breed within the Area.

Terrestrial invertebrate microfauna consists of protozoa, nematodes, mites, rotifers and tardigrades. The invertebrates are mainly confined to the moss beds, lichen stands and moist soils.

The climate of the Windmill Islands area is frigid-Antarctic. Meteorological data from Casey Station on nearby Bailey Peninsula show mean temperatures for the warmest and coldest months of 0.3 and -14.9°C , respectively, with extreme temperatures ranging from 9.2 to -41°C . The climate is dry with a mean annual snowfall of 195 mm year⁻¹ (rainfall equivalent). There is an annual average of 96 days with gale-force winds, which are predominantly easterly in direction, off the polar ice cap. Snowfall is common during the winter, but the extremely strong winds scour the exposed areas of the Peninsula of snow. On most hill crests on Clark Peninsula snow gathers in the lee of rock outcrops and in depressions in the substratum. Further down the slopes snow forms deeper drifts.

6(ii) Special Zones within the Area

There are no special zones within the Area.

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

The only structures known to exist in the Area are a severely deteriorated wood and canvas hide, known as "Wannigan," located on "Lower Snow Slope" (unofficial name) on the eastern portion of Whitney Point. This hide was constructed in 1959 for behavioural studies of penguins. There are a number of boundary markers along the southern boundary, and survey markers within the Area.

The “Wilkes Hilton” Refuge Hut is located approximately 200 metres south of the southern boundary. Approximately one kilometre to the south-west is the abandoned Wilkes Station on Stonehocker Point. Another Refuge Hut, “Jack’s Donga” is located approximately 1.5 kilometres north of the northern boundary of the Area.

6(iv) Location of other Protected Areas in the vicinity

Nearby protected areas to Clark Peninsula are: North-east Bailey Peninsula, Site of Special Scientific Interest No. 16, 66°17’S, 110°33’E, 2.5 km, south-west of Clark Peninsula, across Newcomb Bay, adjacent to Casey Station; and Specially Protected Area, No. 3, Ardery Island, 66°22’S, 110°27’E, and Odbert Island, 66°22’S, 110°33’E, Budd Coast lying in Vincennes Bay, 13 km south of the former Wilkes Station.

7. Permit Conditions

Entry into the Area is prohibited except in accordance with a permit issued by an appropriate National Authority.

A permit to enter the Area may only be issued for scientific research, or for essential management purposes consistent with the Management Plan’s objectives and provisions, and providing that the actions permitted will not jeopardise the ecological or scientific values of the Area or interfere with existing scientific studies.

Conditions that must be included in the permit are provisos that the permit or an authorised copy shall be carried within the Area, and that the permit specify the period for specific activities. Additional conditions, consistent with the Management Plan’s objectives and provisions, may be included by the issuing Authority.

7(i) Access to and Movement within or over the Area

Access into the Area should, except in emergency/exceptional circumstances be from “Wilkes Hilton” Refuge Hut in the south-west, “Jack’s Donga” Refuge Hut in the north-east, or from the over snow route between Casey Station and “Jack’s Donga” by descending the western slope of Løken Moraines in the vicinity east of Stevenson Cove, see Map C.

Access from Casey to abandoned Wilkes Station is via a well-defined marked cane route outside the southern boundary of the Area. As the Casey-Wilkes route is very close to the boundary, pedestrian and vehicular traffic should take care not to stray northward of it. See Map C.

Vehicles are not allowed within the Area (except for emergency) and access should be by foot. Helicopters (except in emergencies or for essential management activities) are not allowed to land within the Area. Persons authorised to enter the Area should, to the maximum extent possible, avoid walking on visible vegetation. Care should be exercised walking in areas of moist ground, where foot traffic can easily damage sensitive soils, plant or algae communities, and degrade water quality. Persons should walk around such features, 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.

Persons should avoid disturbance of penguin populations and individuals, and not approach penguins within 40 metres during the breeding season, October to April, unless this is an integral part of the permitted research activity.

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

The following may be conducted within the Area:

- scientific research programs consistent with the Management Plan for the Area, including the values for which the Area has been designated, and which will not jeopardise the ecosystem of the Area;
- essential management activities, including monitoring;
- sampling, which should be the minimum required for the approved research programs.

7(iii) Installation, modification or removal of structures

No structures are to be erected within the Area, or scientific equipment installed, except for essential scientific or management activities, and as authorised in a permit. All scientific equipment installed in the Area must be clearly identified by country, name of principal investigator, year of installation and expected date of completion of the study. Details are to be included in the visit report. All such items should be made of materials that pose minimum risk of contamination of the Area and must be removed at the completion of the study.

7(iv) Location of field camps

Camping is not allowed within the Area and field parties should camp at either “Wilkes Hilton” Refuge Hut or “Jack’s Donga” Refuge Hut (see Map C).

7(v) Restrictions on materials and organisms that may 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 poultry or poultry products 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 and which have been authorised, shall be removed from the Area at or before the conclusion of the activity.

Fuel is not to be stored in the Area unless required for essential purposes connected with the authorised activity. Permanent depots are not permitted.

All material 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 to the environment is minimised.

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

Taking of, or harmful interference with native flora and fauna is prohibited, except in accordance with a permit. Where authorised, the activity shall, as a minimum standard, be in accordance with the requirements of the Protocol on Environmental Protection to the Antarctic Treaty, 1991, Annex II, Article 3.

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

Material may only be collected or removed from the Area as authorised 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 unless the impact of the removal is likely to be greater than leaving the material *in situ*. If material is to be removed the appropriate Authority must be notified and approval obtained.

7(viii) Disposal of waste

All wastes generated by persons in the Area, including human faeces and urine, shall be removed from the Area, and none deposited within the Area.

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

The following may be necessary to ensure the objectives of the Management Plan are met:

- permits may be granted to enter the Area to carry out biological monitoring and Area inspection activities, which may involve the collection of samples for analysis or review; the erection or maintenance of scientific equipment and structures, and signposts; or for other protective measures.
- any specific sites of long-term monitoring shall be appropriately marked and a GPS position obtained for lodgement with the Antarctic Data Directory System through the appropriate National Authority.
- to help maintain the ecological and scientific values of the plant communities found in 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, before entering the Area, visitors shall thoroughly clean footwear and any equipment, particularly sampling equipment and markers to be used in the Area.

7(x) Requirements for reports

The principal permit holder for each permit issued should submit to the appropriate National Authority a visit report describing the activities undertaken. Such reports should be submitted as soon as possible and include the types of information contained in the SCAR Visit Report form or as required by national laws. The Authority should maintain a record of such activities and make this accessible to interested Parties.

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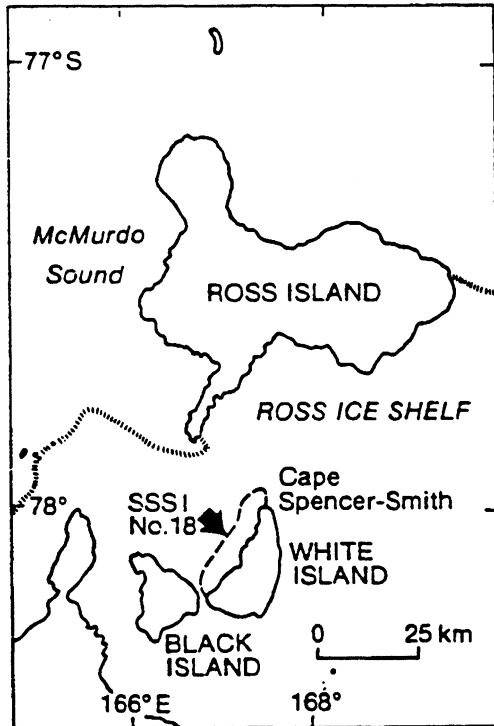
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Antarctic Specially Protected Area No. 137 (Site of Special Scientific Interest No. 18)

Northwest White Island, McMurdo Sound

i. *Description of Site.* White Island (lat 78°10'S, long 167°25'E) rises out of the Ross Ice Shelf, about 30 km south-south-east of Hut Point, Ross Island. The Site includes the north-west coastline of White Island from Cape Spencer-Smith in the north to a point protruding into the Strait between White and Black Islands in the south-west. It extends from high water mark to 5 km offshore, across the Ross Ice Shelf. The boundary of the Site is shown on the attached map.



ASPA 137
Map A*

ii. *Reason for designation.* This Site supports a small breeding population of Weddell seal (*Leptonychotes weddellii*) which is physically isolated from the rest of mainland Antarctica by shelf ice. It is one of very few areas where Weddell seals feed under shelf ice. It is also one of the most southerly Weddell seal populations and has been studied year round.

iii. *Outline of research.* This unique Weddell seal population is the focus of continuing research in the area. Several hypotheses have been proposed to explain how this population originated and has remained isolated, 25 km from the nearest open water.

iv. *Date of expiry of designation.* 31 December 1991.

v. *Access points.* None designated.

vi. *Pedestrian and vehicular routes.* Vehicles should approach no closer than 50 m to the seal population and helicopters and low-flying aircraft should avoid the area, approaching no lower than 250 m altitude.

- vii. *Other kinds of scientific investigations which would not cause harmful interference.* None specified.
- viii. *Scientific sampling.* Taking samples of Weddell seals by killing or capture should be done only for compelling scientific purpose and in accordance with the Agreed Measures for the Conservation of Antarctic Fauna and Flora.
- ix. *Other restraints.* No underwater explosives may be used for any purpose.

Antarctic Specially Protected Area No. 138 (Site of Special Scientific Interest No. 19)

Linnaeus Terrace, Asgaard Range, Victoria Land

1. Description of Values to be Protected

Linnaeus Terrace was originally designated in Recommendation XIII-8 (1985, SSSI No. 19) after a proposal by the United States of America on the grounds that the Area is one of the richest known localities for the cryptoendolithic communities that colonize the Beacon Sandstone. Exposed surfaces of the Beacon Sandstone are the habitat of cryptoendolithic microorganisms, which may colonize a zone of up to 10 millimetres deep below the surface of the rocks. The sandstones exhibit a range of biological and physical weathering forms, as well as trace fossils, and many of the formations are fragile and vulnerable to disturbance and destruction by trampling and sampling. Cryptoendolithic communities are known to develop over time periods in the order of tens of thousands of years, and damaged rock surfaces would be slow to recolonize. The excellent examples of these communities found at the site are the subject of the original detailed Antarctic cryptendolithic descriptions. As such, Linnaeus Terrace is considered a type locality with outstanding scientific values related to this ecosystem. These values, as well as the vulnerability of the site to disturbance and destruction, require that it receives long-term special protection.

2. Aims and objectives

Management at Linnaeus Terrace aims to:

- avoid degradation of, or substantial risk to, the values of the Area;
- prevent unnecessary human disturbance to the Area and protect the fragile rock formations from breakage;
- permit research on the cryptoendolithic communities while ensuring they are protected from over-sampling;
- permit visits for management purposes in support of the objectives of the management plan.

3. Management activities

- Durable wind direction indicators should be erected close to the designated helicopter landing site whenever it is anticipated there will be a number of landings at the Area in a given season. These should be replaced as needed and removed when no longer required.
- Brightly colored markers, which should be clearly visible from the air and pose no significant threat to the environment, shall be placed to mark the helicopter landing pad.
- Markers or structures erected within the Area for scientific or management purposes shall be 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 Programs operating in the region shall consult together with a view to ensuring these steps are carried out.

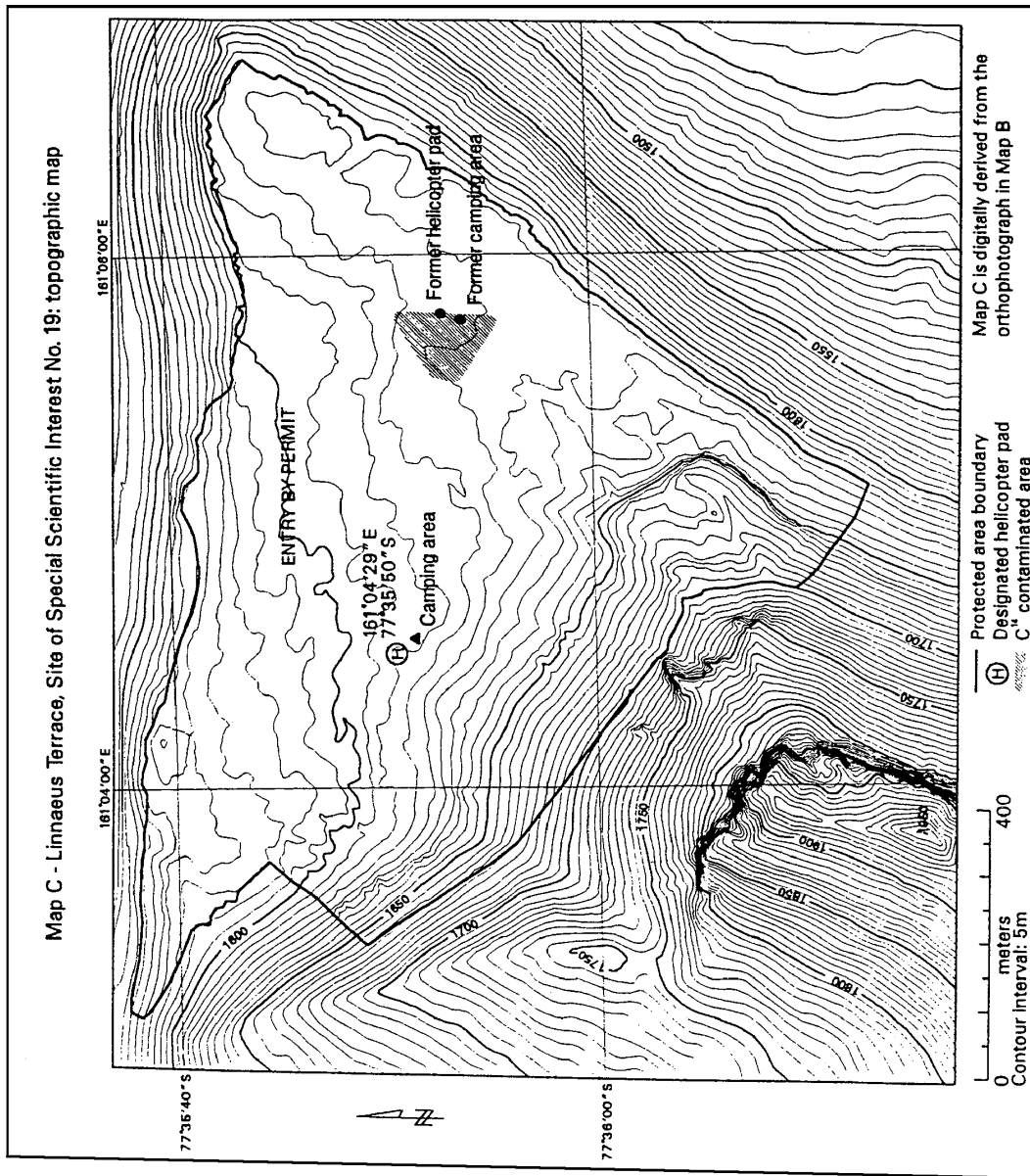
4. *Period of designation*

Designated under ATCM Measure XX-1 (1995) for an indefinite period.

5. *Maps and photographs*

Map C: Linnaeus Terrace, topographic map.

Projection: Lambert conformal conic; Standard parallels: 1st - 79°18'00"S; 2nd - 76°42'00"S. Central Meridian: 162°30'00"E Latitude of Origin: 78°01'16.211"S Spheriod: WGS84; Positional accuracy of original orthophotograph at 1:2,500 is ca. 0.5m.



ASPA 138
Map A*

6. Description of the Area

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

Linnaeus Terrace (161°05'00"E, 77°35'50"S) is an elevated bench of weathered Beacon Sandstone approximately 1.5 km in length and 1 km in width. It is located at the east end of the Asgaard Range, 1.5 km north of Oliver Peak (161°02'30"E, 77°36'40"S) at an elevation of about 1600 m. The Area overlooks the South Fork of the Wright Valley, is about 4 km from Don Juan Pond and 10 km from the terminus of the Wright Upper Glacier (Map A and Figure 1). The boundaries of the Area and prominent features are shown in the accompanying maps and figures.

On the ground, the lower (northern) boundary of the Area is characterized by the presence of a predominantly sandstone outcrop of approximately 3 m in height which extends for much of the length of the terrace. The lower boundary of the Area is defined as the upper edge of this outcrop, and as straight lines adjoining the visible edges where the outcrop is covered by surface talus (Figure 2). The upper (southern) boundary of the Area is characterized by a line of sandstone outcrop of about 2-5 m in height, occurring between the elevations of 1660-1700 m about 70 m above the general elevation of the terrace. The upper boundary of the Area is defined as the uppermost edge of this outcrop, and shall be considered a straight line between the visible edges where the outcrop is covered by surface talus (Map B, Figure 2). The west end of the Area is defined as where the terrace narrows and merges with a dolerite talus slope on the flank of the NW ridge of Oliver Peak. The boundary at the west dips steeply from where the upper outcrop disappears, following the border of the dolerite talus with the terrace sandstone down to the westernmost corner. The east boundary is defined as the 1615 m contour, which follows closely the edge of an outcrop which extends much of the width of the terrace. At the southernmost corner of the Area the terrace merges with the slopes into the valley to the east: from this point the boundary extends upward to the 1700 m contour, from where it follows the line of outcrop defining the south boundary (Map B, Figure 2).

Winter air temperature at Linnaeus Terrace ranges between -20°C and -45°C, while in January the daily mean is -5°C. Cryptoendolithic microorganisms typically colonize porous Beacon sandstones with a 0.2 - 0.5 mm grain size, with an apparent preference for rocks stained tan or brown by Fe⁺³-containing oxyhydroxides. A silicified crust of about 1 mm thickness on many of the rocks probably facilitates colonization by stabilizing the surface and reducing wind erosion. Three of the five described cryptoendolithic microbial communities have been found on Linnaeus Terrace: the Lichen Dominated, Red-Gloeocapsa and Chroococciopsis Communities. Linnaeus Terrace is the type locality of the endemic green algal genus *Hemichloris* and of the endemic Xanthopycean algal species *Heterococcus endolithicus*. The Area is unusual in that so many different living and fossil endolithic communities are present within a small area. The main physical and biological features of these communities and their habitat are described in Friedmann, E.I. (ed) 1993 *Antarctic Microbiology*, Wiley-Liss, New York.

A small area (Map C) has been contaminated by release of the C(14) radioactive isotope. While the contamination poses no significant human or environmental threat, any samples gathered within this area are considered unsuitable for scientific work using C(14) techniques.

6(ii) Restricted zones within the Area

None.

6(iii) Structures within the Area

A number of rocks within the Area have small instruments installed into them for scientific purposes and should not be disturbed.

6(iv) Location of other Specially Protected Areas or Sites of Special Scientific Interests within close proximity of the Area

None.

7. Permit conditions

Permits may be issued only by appropriate national authorities as designated under Annex V, Article 7 of the Protocol on Environmental Protection to the Antarctic Treaty. Conditions for issuing a Permit to enter the Area are that:

- it is issued only for scientific study of the cryptoendolithic ecosystem, or for a compelling scientific or management purpose that cannot be served elsewhere;
- the actions permitted will not jeopardize the natural ecological system or scientific values of the Area;
- 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 an authorized copy, shall be carried within the Area;
- a Visit Report is supplied to the authority named in the Permit;
- any Permit issued shall be valid for a stated period.

7(i) Access to and movement within the Area

Access to the Area is permitted by foot or by helicopter. No special restrictions apply to the routes used to move to and from the Area. Helicopters shall land only at the designated site at the west end of the terrace (161°04'29"E, 77°35'50"S, elevation 1610 m: Maps B and C), except when specifically authorized by Permit otherwise for a compelling scientific or management purpose. Use of helicopter smoke bombs within the Area is discouraged. When transporting permitted visitors, pilots, air crew, or passengers en route elsewhere on helicopters are prohibited from moving on foot beyond the immediate vicinity of the designated landing and camping sites unless specifically authorized by a Permit. Land vehicles are prohibited within the area.

Pedestrian traffic should be kept to the minimum necessary consistent with the objectives of any permitted activities. Visitors should avoid breaking fragile rock formations.

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

- Scientific research which will not jeopardize the ecosystem of the Area;
- Essential management activities, including monitoring.

7(iii) Installation, modification or removal of structures

No structures, except boundary markers and signs, are to 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 the responsibility of the authority which granted the original Permit.

7(iv) Location of field camps

Camping is permitted within the Area only at the designated site in the immediate vicinity of the helicopter landing pad (Maps B and C).

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

To avoid compromising the microbial ecosystem for which this site is protected, no living animals, plant material or microorganisms shall be deliberately introduced into the Area and precautions should be taken against accidental introductions. 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. Food, fuel, and other materials are not to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted. All such 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 minimized.

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 be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

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. Material of human origin, not brought into the Area by the Permit Holder, but which is likely to compromise the values of the Area may be removed from any part of the Area.

7(viii) Disposal of waste

All wastes, including all human wastes, must 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 amounts of biological material for analysis or audit, or to carry out protective measures.

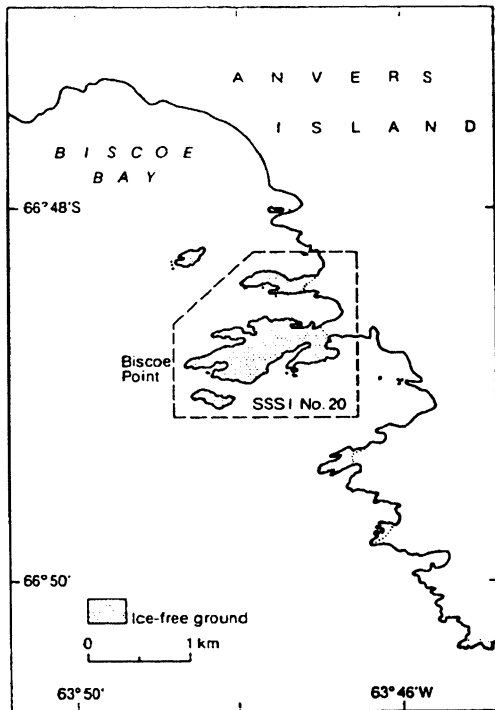
7(x) Requirements for reports

Parties should ensure that the principal holder of each permit issued submit to the appropriate authority a report describing the activities undertaken. Such report should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. Parties 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 of 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 organizing the scientific use of the Area.

Antarctic Specially Protected Areas No. 139 (Site of Special Scientific Interest No. 20)

Biscoe Point, Anvers Island

i. *Description of Site.* Biscoe Point (lat 64°49'S, long 63°49'W) is situated on the south-east side of Biscoe Bay on the south side of Anvers Island in the Palmer Archipelago off the mid-west coast of the Antarctic Peninsula. The Site includes the rocky promontory ending in Biscoe Point, the smaller headland immediately to the north and the small islet off the south-west of Biscoe Point. A narrow area of land between the two promontories is included, as is the inshore marine environment within the Site boundaries, which are shown on the attached map.



ASPA 139
Map A*

ii. *Reason for designation.* This Site contains a large (approximately 5,000 m) but discontinuous stand of the two native vascular plants, Antarctic hair grass (*Deschampsia antarctica*) and, less commonly, Antarctic pearlwort (*Colobanthus quitensis*). A relatively well developed loam occurs beneath closed swards of the grass and contains a rich biota, including the apterous midge *Belgica antarctica*. Long-term research programmes could be jeopardized by interference from nearby Palmer Station and from tourist ships.

iii. *Outline of research.* Several plant community studies are in progress. Most of the available surfaces support the two Antarctic vascular plants which form several communities, particularly on the north facing slope. Some communities are dominated by the vascular plants, particularly the grass; in others the co-dominants or subordinate taxa are mosses or lichens. The discontinuous vascular plant stand occurs on more or less flat, mesic terrain with fine mineral soil. It contains large (up to 20 m²) patches of dead vascular plants which appear to be produced by

environmental fluctuations, such as dessication, flooding and frost during some summers.

iv. *Date of expiry of designation.* 31 December 1995.

v. *Access points.* None specified.

vi. *Pedestrian and vehicular routes.* Vehicles should not enter the Site and helicopters landings should be made outside the Site. Boat landings are permitted at any point. Tourists and other casual visitors should not enter the Site.

vii. *Other kinds of scientific investigations which would not cause harmful interference.* Besides the botanical studies outlined above, the Site offers excellent opportunities for research on invertebrate fauna and pedology. The littoral and sublittoral, particularly of the cove between the two promontories, could be used for comparative studies with the more perturbed marine environment associated with Palmer Station in Arthur Harbour.

viii. *Scientific sampling.* Sampling the biota and soils should be the minimum required for the research programme, and should not cause undue disturbance to the environment particularly the closed stands of vascular plants.

ix. *Other restraints.* Any long-term experiments left in situ should be checked regularly for maintenance, and all artefacts removed when they are no longer required. No refuse should be deposited within the Site, or at sea beyond the Site in a manner which may allow it to be washed ashore within the Site.

Antarctic Specially Protected Area No. 140 (Site of Special Scientific Interest No. 21)

Shores of Deception Island, South Shetland Islands

i. *Description of Site.* The Site includes 5 areas on the coast of Port Foster, Deception Island (lat 62°55'S, long 60°37'W):

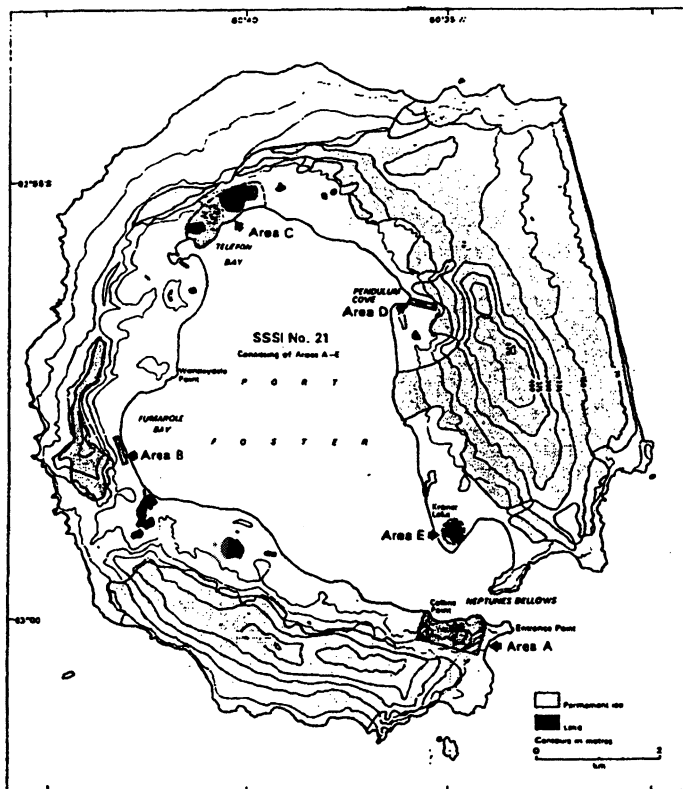
Area A. From the west side of Entrance Point to the west side of Collins Point on the south side of Neptune's Bellows, and extending 500 m inland from the shore.

Area B. Mid Fumarole Bay, south-west of Wensleydale Point extending for 500 m along the shore, to the line precipitous lava cliffs about 100 m inland.

Area C. The 'island' created during the 1967 eruption in Telefon Bay, and including the low land, containing a lake, which presently joins the new 'island' to the main island.

Area D. A strip 100 m wide extending from the high-water mark of the heated shoreline of Pendulum Cove inland to a series of gullies about 750 m inland. The area lies about 300 m south of the former Chilean station Pedro Aguirre Cerda.

Area E. Kroner Lake including the land within 50 m of its shore. The boundaries of these areas of the Site are shown on the attached map.



ASPA 140
Map A*

ii. *Reason for designation.* Deception Island is exceptional because of its volcanic activity, having had major eruption 1967, 1969 and 1970. Parts of the island were completely destroyed, new areas were created, others covered by varying depths of ash. Few areas of the interior were unaffected. The island offers unique

opportunities to study colonization processes in an Antarctic environment (the South Sandwich Islands and Bouvetøya are at a more advanced stage of colonization while Mt. Erebus and Mt. Melbourne are at considerable altitude and the biota are restricted to micro-organisms. Each of the area has been selected for different reasons:

Area A contains stands of closed vegetation buried by shallow ash but which have regenerated as isolated colonies. The beach area was occupied in summer 1981 by about 200 fur seals.

Area B was unaffected by the three eruptions and contains the most diverse flora on the island, including a few endemic and rare mosses and lichen.

Area C provides an entirely new substrate of known age, the colonization of which has been studied since its creation.

Area D includes two areas of heated ground-on the beach close to the shore and inland in a gully - where unique bryophyte communities have developed containing several species not known elsewhere in the Antarctic.

Area E is a small shallow crater lake with geothermal activity, the water and shore being warm to hot and the benthos colonized by various thermophilic algae.

iii. *Outline of research.* Several studies of the terrestrial and freshwater biota have been carried out before and after the eruptions, and changes in the biota and recolonization of new surfaces are being studied. Theses will continue but will also be extended to other areas of the island, while the succession of organism associated with heated ground and the biota of the various types of lakes will be investigated in greater detail.

iv. *Date of expiry of designation.* 31 December 1995.

v. *Access points.* No access points are stated.

vi. *Pedestrian and vehicular routes.* Entry to the Areas should be limited to research scientists. Tourists should be excluded. No vehicles, including helicopters, should be used within any Area of the Site. Pedestrians should exercise great care when walking over the terrain which is loose and soft, where the substrate and vegetation are extremely vulnerable to damage by trampling.

vii. *Other kinds of scientific investigations which would not cause harmful interference.* Other research which would not interfere with that outlined above may be carried out.

viii. *Scientific sampling.* The collection of specimens should be the minimum required for the research being undertaken.

ix. *Other restraints.* In order to minimize microbial and cryptogamic contamination of substrate, the soles of footwear should be cleaned and disinfected (for example, by rinsing with alcohol) before entering the Areas.

Antarctic Specially Protected Area No. 141 (Site of Special Scientific Interest No. 22)

Yukidori Valley, Langhovde, Lützow-Holm Bay

1. Description of values to be protected

The Yukidori Valley (69°14'30"S, 39°46'00"E) is located in the middle part of Langhovde on the east coast of Lützow-Holm Bay, continental Antarctica, which is about 20 km south of the Japanese Syowa Station (69°00'22"S, 39°35'24"E) on the Ongul Islands (Map 1). The Valley is 2.0-2.5 km long from east to west, 1.8 km wide and contains a prominent melt stream and two lakes (Map 2). A typical continental fellfield ecosystem has developed in this Valley. Field surveys of geological and biological sciences have been carried out in Langhovde since 1957 of the IGY period and a long-term monitoring program started in the Yukidori Valley area in 1984. More intensive studies have been carried after the Area was designated as SSSI No.22 in 1987. Permanent quadrats for monitoring lichen and moss vegetation have been established in this typical continental ecosystem in relation to long-term environmental change. Therefore, the Area requires protection in order that this long-term scientific monitoring program not be compromised.

The Area was originally designated in Recommendation XIV-5 (1987, SSSI No.22) after a proposal by Japan on the grounds that it contains a typical continental Antarctic fellfield ecosystem. Yukidori Valley is inhabited by several thousand snow petrels and the excrement of snow petrels is important as a major supply of nutrients for mosses and lichens.

These are still valid reasons for maintaining protection. Since 1984, the long-term monitoring program has continued in this Area, in particular to monitor temporal and spatial change in vegetation of mosses and lichens (Map 2).

The values to be protected are those associated with this typical continental Antarctic fellfield ecosystem and the long-term scientific studies that have been carried out since 1984. The Area contains fluvioglacial terraces in the lower part of the Valley and a dissected deltaic fan at the mouth of the stream.

2. Aims and objectives

Management at Yukidori Valley aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- allow a continuation of long-term monitoring programs;
- avoid major changes to the structure and composition of the terrestrial vegetation, in particular the moss and lichen banks.
- prevent unnecessary human disturbance to the snow petrels, as well as to the surrounding environment.

3. Management activities

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

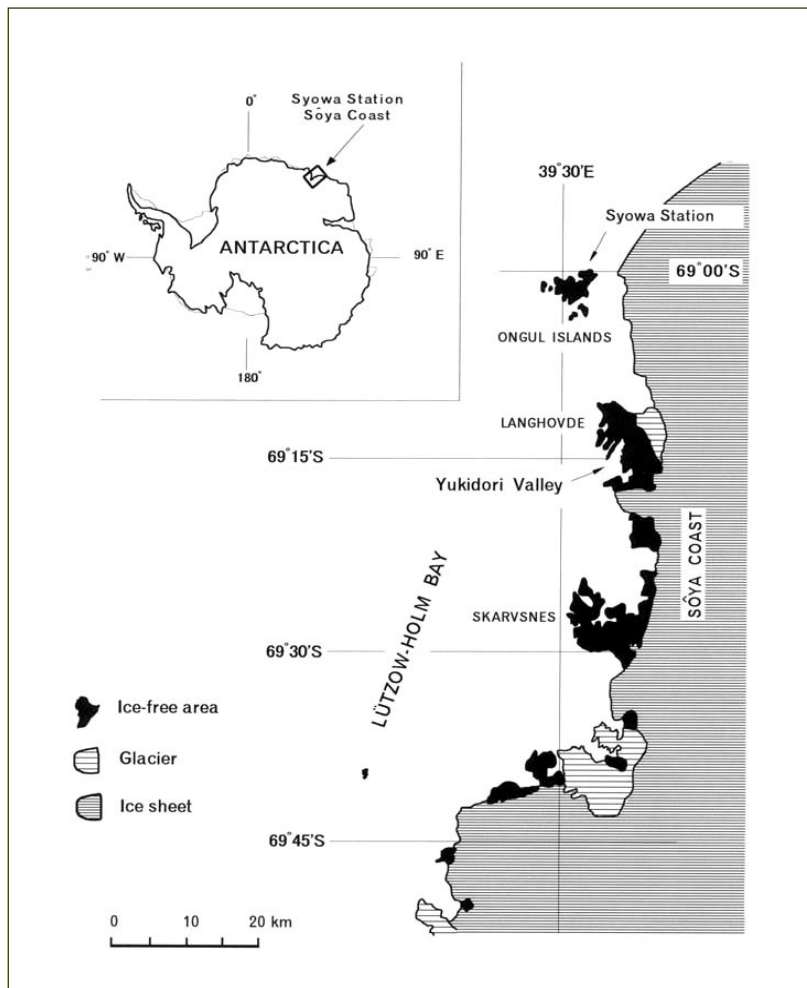
- Maps showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently at "Biological research hut" located outside of the western boundary of the Area, where copies of this management plan shall also be made available.
- Signs showing the location and boundaries of the Area and listing entry restrictions should be placed at the entry point at the western boundary of the Area 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.

4. Period of designation

Designated for an indefinite period.

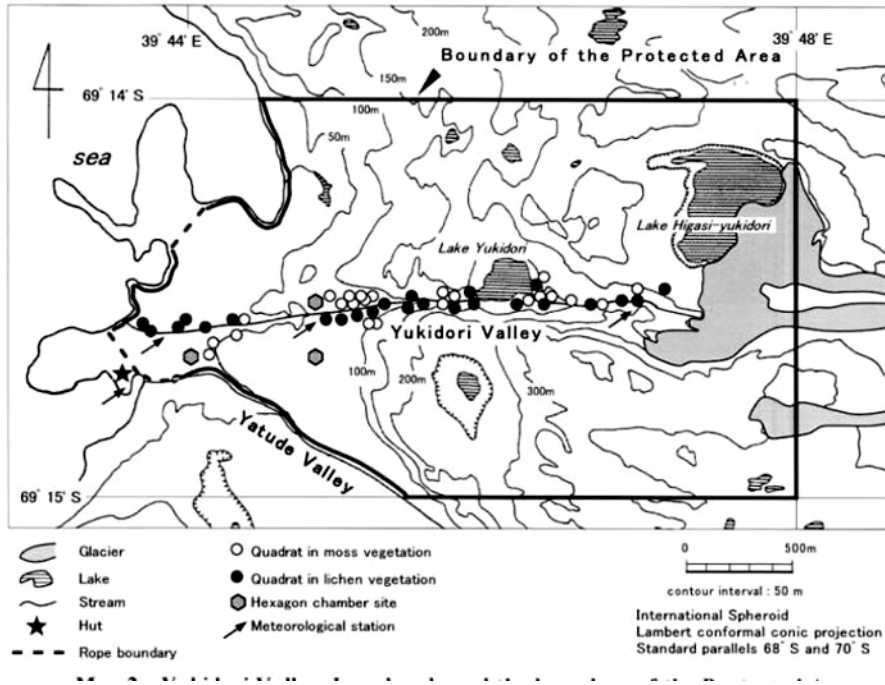
5. Maps

Map A: Sôya Coast, Lützw-Holm Bay, East Antarctica.



ASPA 141
Map A*

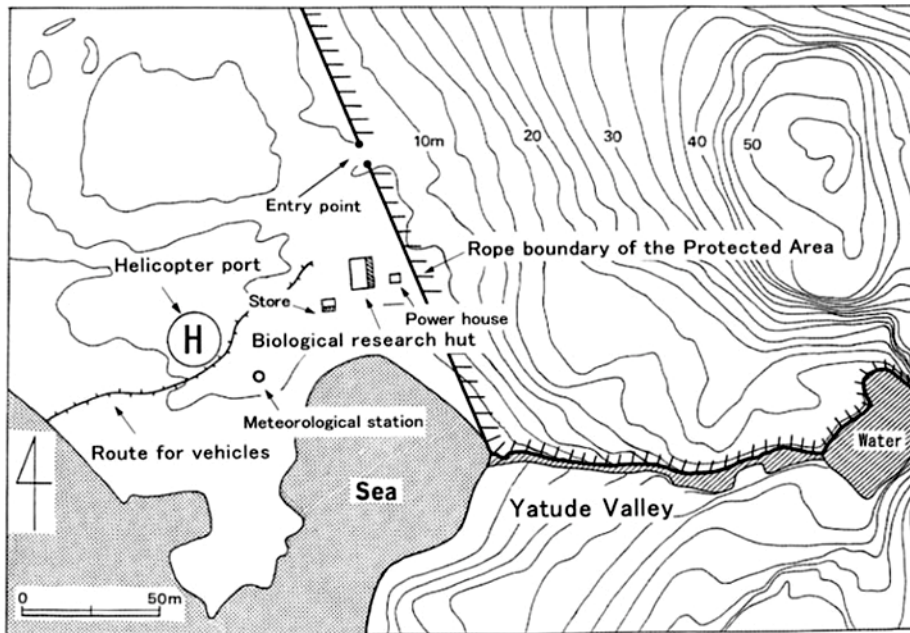
Map B: Yukidori Valley, Langhovde and the boundary of the Site of Special Scientific Interest (SSSI No. 22).



ASP A 141

Map B*

Map C: The biological research hut and surroundings.



ASP A 141

Map C*

6. Description of the Area

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

Yukidori Valley (69°00'30"S, 39°46'00"E) is situated in the middle part of Langhovde, on the east coast of Lützow-Holm Bay, Continental Antarctica. The Area encompasses 2.0-2.5 km by 1.8 km, located between a tongue of the ice cap and sea at the western end of the Valley.

The location of the Area and its boundaries are shown on the attached maps (Map 2). It is described as all the land within the Area bounded by the following coordinates:

69°14'00"S, 39°44'20"E

69°14'00"S, 39°48'00"E

69°15'00"S, 39°48'00"E

69°15'00"S, 39°45'20"E

The boundary from the point 69°14'00"S, 39°44'20"E to the point 69°15'00"S, 39°45'20"E includes a part of Yatude Valley, the coast line and is delineated with ropes. The Yukidori Valley contains a prominent melt stream and two lakes. The stream flows from the ice cap towards the sea through V-shaped and U-shaped sectors of the Valley and enters Lake Yukidori, in the middle of the Valley, 125 m above sea level; it then flows from the south-west corner of the lake and runs through the lower valley formed by steep cliffs. Sorted stone circles with mean diameter of 1 m are situated on moraines near the northwestern part of Langhovde Glacier to the east of Lake Higasi-Yukidori, which is located at the head of the Valley, about 200 m above sea level abutting the edge of the ice cap. Poorly-developed stone circles are found on fluvio-glacial deposits in the Yukidori Valley. Small talus aprons and talus cones are located around Lake Yukidori. In the lower reaches of the Yukidori Valley, at an altitude of about 20 m, fluvio-glacial terraces 20 to 30 m wide stand 2 to 3 m high above the present channel bed. These flat terraces consist of rather fine sand and gravel. There is a dissected deltaic fan formed at the mouth of the stream. The Valley is underlain by well-layered sequences of late Proterozoic metamorphic rocks, consisting of garnet-biotite gneiss, biotite gneiss, pyroxene gneiss and hornblende gneiss with metabasite. The foliation of the gneisses strike N10°E and dips monoclinally to the east (Map 3).

Almost all of the plant species recorded from the Langhovde area occur within the Area. They include the mosses *Bryum pseudotriquetrum* (= *Bryum algens*), *Bryum argenteum*, *Bryum amblyodon*, *Ceratodon purpureus*, *Hennediella heimii*, *Pottia austrogeorgica*, *Grimmia lawiana* and lichens *Usnea sphacelata*, *Umbilicaria antarctica*, *Umbilicaria decussata*, *Pseudephebe minuscula*, and *Xanthoria elegans*. Four species of free living mites (*Nanorchestes antarcticus*, *Protoreunetes minutus*, *Antarcticola meyeri*, *Tydeus erebus*), have been reported. There are over sixty species of microalgae, including species endemic to Yukidori Valley, *Cosmarium yukidoriense* and a variety of *Cosmarium clepsydra*. Several pairs of the south polar skua (*Catharacta maccormicki*) and several thousand snow petrels (*Pagodroma nivea*; note "Yukidori" is Japanese for the snow petrel) breed in the Area. The Area does not include any marine area.

6(ii) Restricted and managed zones within the Area

None.

6(iii) Structures within and near the Area

The boundary of the Area near the hut is enclosed by ropes. The biological research hut was constructed in 1986 near the beach at the mouth of the Valley so that there would be minimal impact on the flora, fauna, and terrain of the Area. The location of hut is excluded from the Area. There are three sites for microclimatic observations in the lower, middle and upper reaches of the stream within the Area. In addition, a meteorological station is located near the hut, outside the Area. Microclimatic factors such as relative humidity and air temperatures at ground level, soil temperatures and temperatures at moss level are measured. Hexagon chambers made of acrylic fiber are installed at the vegetated area in the lower and middle reaches in order to assess vegetational and environmental changes. These sites are indicated in the attached maps.

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

None.

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 a 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 jeopardize 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 this management plan;
- the Permit, or an authorized copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permit shall be issued for a stated period.

The appropriate authority should be notified of any activities/measures undertaken that weren't included in the authorized Permit.

7(i) Access to and movement within the Area

Vehicles are prohibited within the Area and helicopter should not land within the Area. Only those pedestrians with compelling research activities are allowed to enter at the entry point (Map 4). No pedestrian routes are designated within the Area, but persons on foot should at all times avoid walking on vegetated areas or disturbance to birds and natural features.

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

or place

- Compelling scientific research which cannot be undertaken elsewhere and which will not jeopardize the ecosystem of the Area
- Essential management activities, including monitoring

7(iii) Installation, modification or removal of structures

No further structures are to be erected in the Area, or scientific equipment installed, except for essential scientific or management activities, as specified in the Permit.

7(iv) *Location of field camps*

Camping should be avoided within the Area.

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 in the Area, 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 authorized 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 minimized. 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 authorized 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 in the Area 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 authorized, 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 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 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 Yukidori Valley 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 sterilized. 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, 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 organizing the scientific use of the Area.

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Management Plan for Site of Special Scientific Interest No. 22
Yukidori Valley, Langhovde, Lützow-Holm Bay

Antarctic Specially Protected Area No. 142 (Site of Special Scientific Interest No. 23)
Svarthamaren Mountain, Mulig-Hofmann Mountains, Queen Maud Land.

1. Description of values to be protected

The Area was originally designated in Recommendation XIV-5 (1987, SSSI No. 23) after a proposal by Norway based on the following factors, which still give relevant grounds for designation:

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

2. Aim and objectives

The aim of managing Svarthamaren is to:

- avoid human induced changes to the population structure, composition and size of the seabird colonies present at the site
- prevent unnecessary disturbance to the seabird colonies, as well as to the surrounding environment
- allow for undisturbed research on the adaptations of the Antarctic petrel, snow petrel and south polar skua to the inland conditions in Antarctica (*Primary Research*)
- allow access for other scientific reasons where the investigations will not damage the objectives of the bird research

The focus of the Primary Research in Svarthamaren SSSI is as follows:

- *Monitoring of the population size*
- Monitoring of the annual variation in hatching success and adult survival rates in the petrel colonies in order to estimate changes in the size and structure of the colony.
- Experimental studies in order to increase the understanding of the mechanisms that regulate nesting success and survival rates, and the adaptation of the Antarctic petrel to the extreme environmental conditions in Antarctica.

3. Management activities

Management activities at Svarthamaren shall:

- ensure that the seabird colonies are adequately monitored, to the maximum extent possible by non-invasive methods.
- allow erection of signs/posters, border markers, etc. in connection to the site, and ensure that these are serviced and maintained in good condition

- include visits as necessary to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate. Any direct intervention management activity in the area must be subject to an environmental impact assessment before any decision to proceed is taken.

4. Period of Designation

Designated for an indefinite period.

5. Maps and Illustrations

Map A: Dronning Maud Land (showing location of Map B). Map specifications:

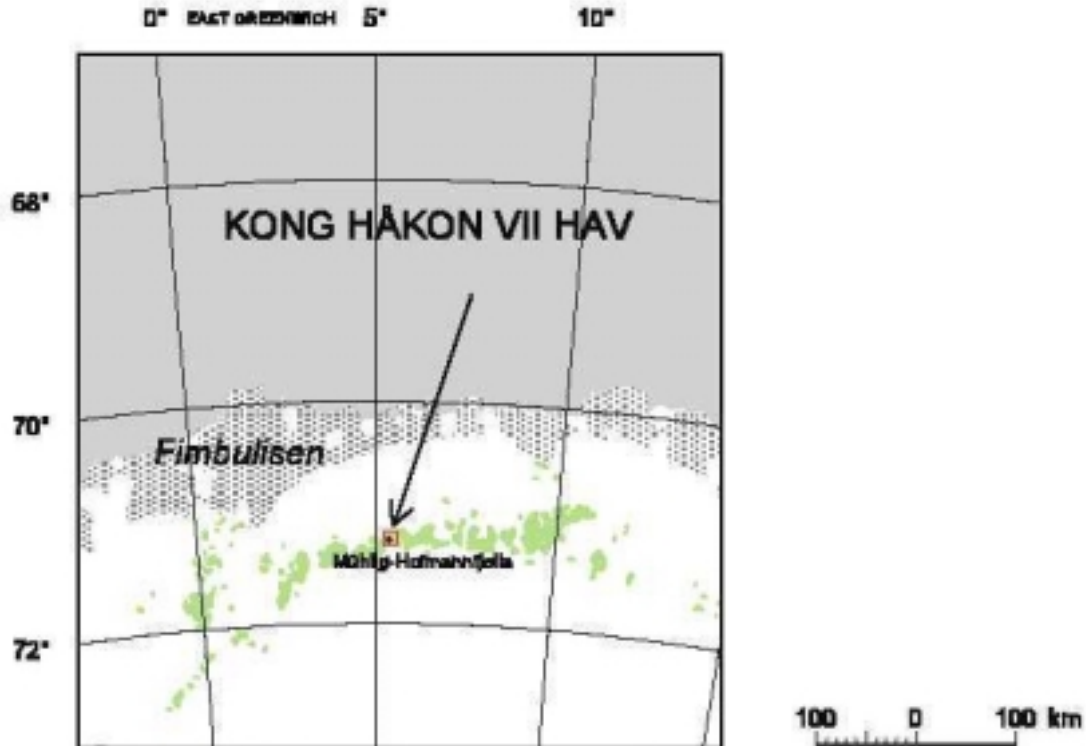
Projection: Lambert Conformal Conic;

Standard parallels: SP1 70° S, SP2 73°S

Central Meridian: 5°E

Latitude of origin: 71°30'S

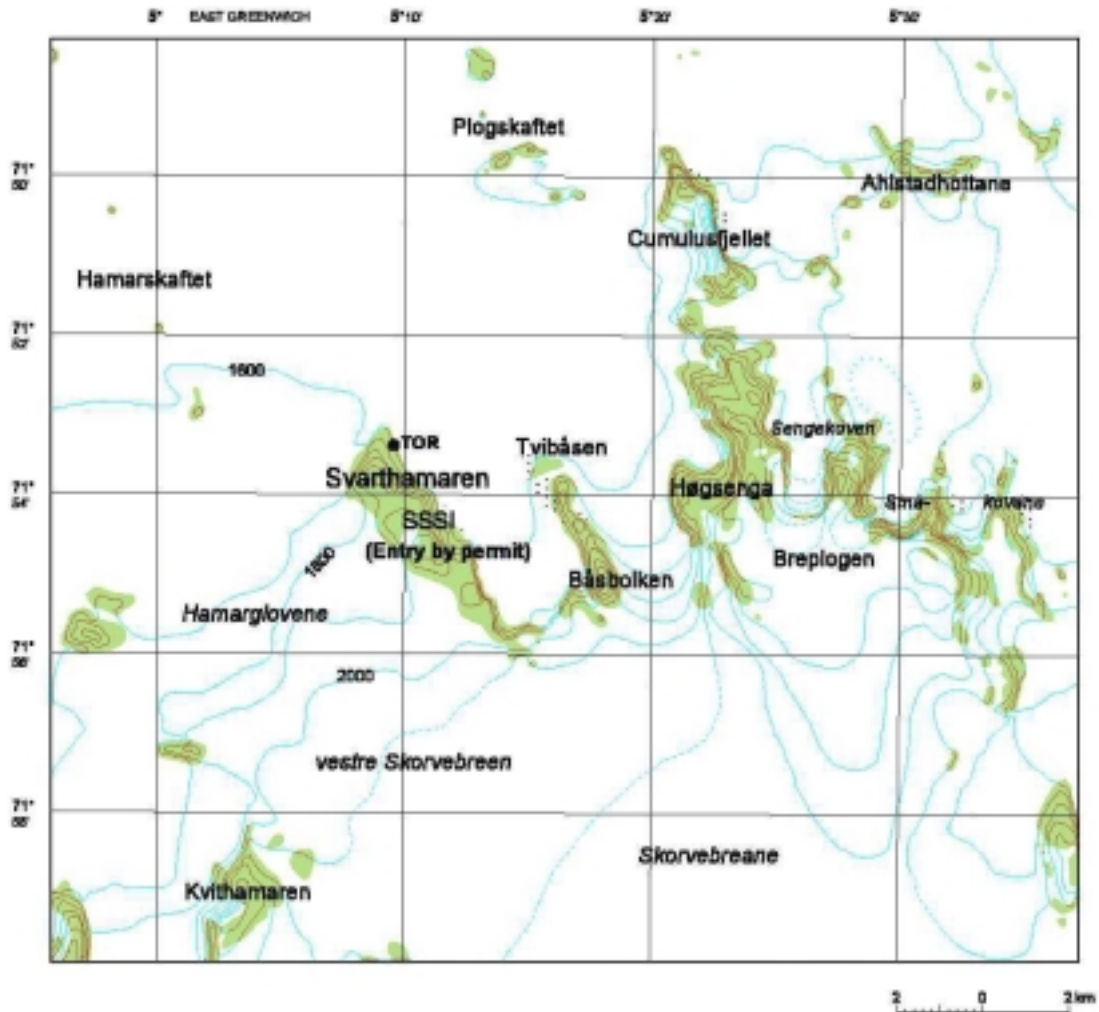
Spheroid: WGS84



ASPA 142

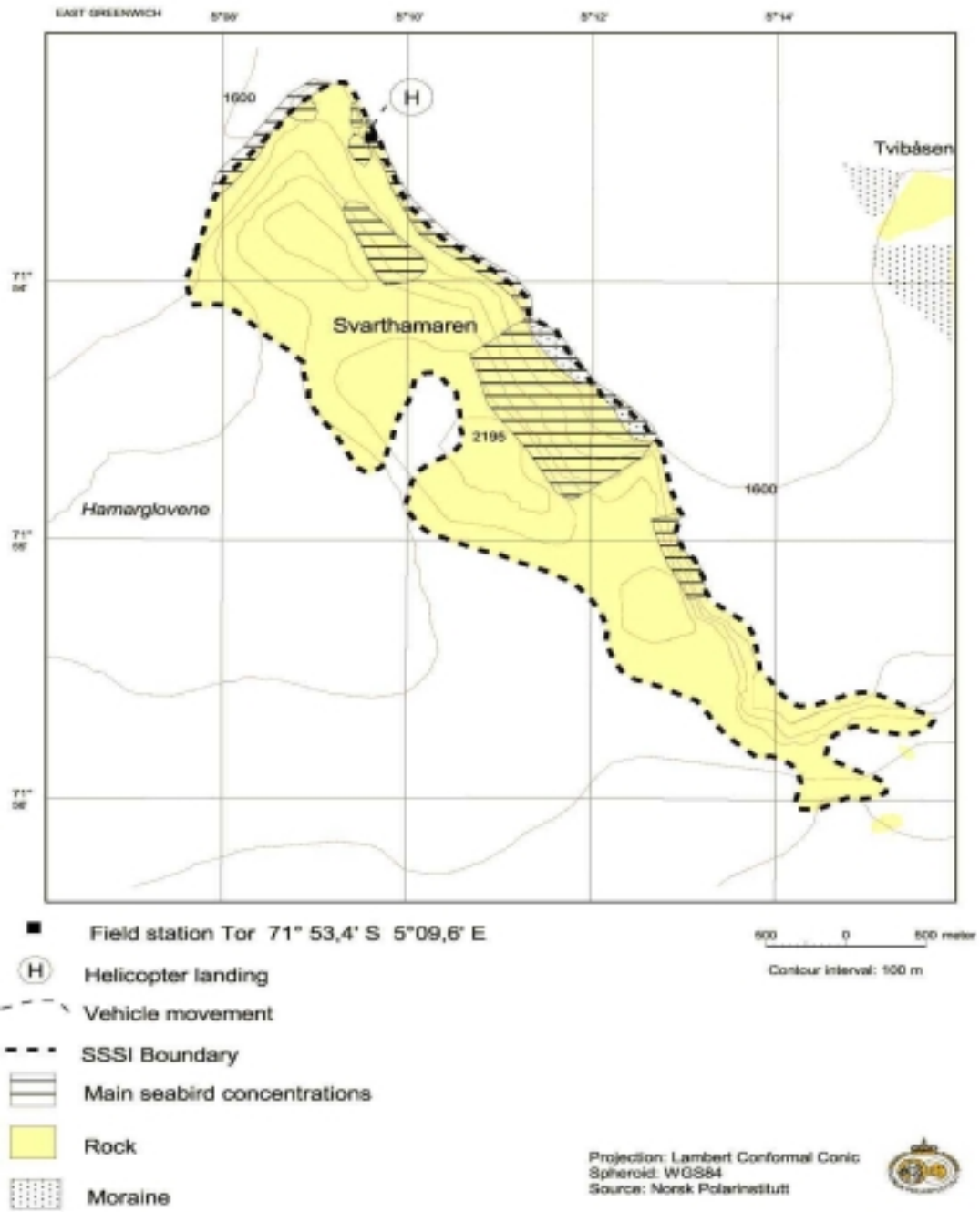
Map A*

Map B: Svarthamaren and surroundings (showing location of Svarthamaren SSSI).
Map specifications are the same as for Map A.



ASP A 142
Map B*

Map C: Site of Special Scientific Interest No. 23, protected area topographic map.
 Map specifications are the same as for Map A.



ASPA 142

Map C*

6. Description of Area

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

The Svarthamaren SSSI is situated in Mühlig-Hoffmannfjella, Dronning Maud Land, stretching from approx. 71° 33' 17" S, 5°09' 12" E the north-west to approx. 71°55'58"S, 5°15' 12" E in the south-east. The distance from the ice front is about 200 km. The Area covers approximately 6.4 km², and consists of the ice-free areas of the Svarthamaren nunatak, including the areas in the immediate vicinity of the ice-free areas naturally belonging to the nunatak (i.e. rocks). The Area is shown in Map B and C.

The Norwegian field station Tor is located in the Svarthamaren nunatak at lat. 71°53'S, long. 5°10'E. The station, including a 10 metre buffer zone around the station buildings, is excluded from the Svarthamaren Site of Special Scientific Interest. Access to the station is by the shortest route from the ice.

The main rock types in the Area are coarse and medium grained charnockites with small amounts of xenoliths. Included in the charnockitoids are banded gneisses, amphibolites and granites of the amphibolite facies mineralogy. The slopes are covered by decomposed feldspathic sand. The north-eastern side of the Svarthamaren nunatak is dominated by scree slopes (slope 31°-34°), extending 240 metres upwards from the base of the mountain at about 1600 metres above sea level. The major features of this area are two rock amphitheatres inhabited by breeding Antarctic petrels. It is this area which makes up the core of the protected site.

No continuous weather observations have been carried through in the Area, but prevalent air temperature has been observed to range between -5° and -15°C in January, with somewhat lower minimum temperatures in February. The flora and vegetation at Svarthamaren are sparse compared with other areas in Mühlig-Hofmannfjella and Gjelsvikfjella to the west of the site. The only plant species occurring in abundance, but peripherally to the most manured areas, is the foliose green alga, *Prasiola crispa*. There are a few lichen species on glacier-borne erratics 1-2 km away from the bird colonies: *Candelariella hallettensis* (= *C. antarctica*), *Rhizoplaca* (= *Lecanora melanophthalma*), *Umbilicaria* spp. and *Xanthoria* spp. Areas covered with *Prasiola* are inhabited by collembola (*Cryptopygus sverdrupi*) and a rich fauna of mites (*Eupodes anghardi*, *Tydeus erebus*) protozoan, nematodes and rotifers. A shallow pond measuring about 20 x 30 m, lying below the middle and largest bird sub-colony at Svarthamaren, is heavily polluted by petrel carcasses, and supports a strong growth of a yellowish-green unicellular algae, *Chlamydomonas*, sp. No aquatic invertebrates have yet been recorded.

The colonies of breeding seabirds are the most conspicuous biological element in the Area. The north-eastern slopes of Svarthamaren are occupied by a densely populated colony of Antarctic petrels (*Thalassoica antarctica*) divided into three separate sub-colonies. The total number of breeding pairs is estimated to be approximately 250,000

pairs. In addition, 500-1000 pairs of snow petrels (*Pagodroma nivea*) and approximately 80 pairs of south polar skuas (*Catharacta maccormicki*) breed in the area. The two main colonies of Antarctic petrels are situated in the two rocky amphitheatres. The main colonies of snow petrels are located in separate parts of the scree-slope that are characterised by larger rocks.

The south polar skuas nest on the narrow strip of flat, snow-free ground below the scree-slopes. The main concentrations of seabirds are indicated on Map C. Readers should, however, be aware that birds are also found in other areas than these densely populated areas.

6 (ii). Restricted zones within the Area

None

6 (iii). Location of structures within the Area

There are no structures within the Area.

The Norwegian field station Tor is located on the Svarthamaren nunatak, at 71°53.4'S, 5°09.6'E. The station, including a 10 meter buffer zone around the station buildings, is excluded from the Area. Access to the station is by the shortest route from the ice.

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

None

7. Permit Conditions

Permits may be issued only by appropriate national authorities as designated under Annex V, Article 7 of the Protocol on Environmental Protection to the Antarctic Treaty. Conditions for issuing a permit to enter the Area are that:

- the actions permitted are in accordance with this Management Plan
- the permit, or a copy, shall be carried within the area
- any permit issued shall be valid for a stated period
- a visit report is supplied to the authority named in the permit

7 (i) Access to and movement within the Area

Access to the area is restricted by the following conditions:

- No pedestrian routes are designated, but persons on foot shall at all times avoid disturbances to birds, and as far as possible also to the sparse vegetation cover in the Area.
- Vehicles should not enter the site.
- No flying of helicopters or other aircraft over the Area is allowed.
- Helicopter landings are not allowed within the boundaries of the SSSI. Landings associated with activities at the field station Tor should preferably take place at the north-eastern tip of the Svarthamaren nunatak (as marked on map C).

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

The following activities may be conducted within the Area in accordance with permit:

- Primary biological research programs for which the area was designated.
- Other research programs of a compelling scientific nature that will not interfere with the bird research in the Area.

7 (iii) Installation, modification or removal of structures

No structures are to be erected in the Area, or scientific equipment installed, except for equipment essential for scientific or management activities as specified in a permit, or for modification of the field station, also as specified in a permit.

7 (iv) Location of field camps

No field camps should be established in the Area. The field station Tor should only be used with permission from the Norwegian Polar Institute.

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

- No living animals or plant material shall be deliberately introduced into the Area.
- No poultry products, including food 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 fuel), which may be introduced for a compelling scientific purpose specified in the permit, shall be removed from the Area before or at the conclusion of the activity for which the permit was granted.
- All materials introduced shall be for a stated period, 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 and fauna

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

It is recommended that those responsible for the primary research in the Area should be consulted before a permit is granted for taking of birds for purposes not associated with the primary research. Studies requiring taking of birds for other purposes should be planned and carried through in such a manner that it will not interfere with the objectives of the bird research in the Area.

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

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

7 (viii) Disposal of waste

All wastes is to be removed from the area.

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

Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities which may involve the collection of small amounts of plant material or small numbers of animals for analysis or audit, to erect or maintain notice boards, to maintain the field station, or to undertake protective measures.

7 (x) Requirements for reports

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, 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.

Antarctic Specially Protected Area No. 143 (Site of Special Scientific Interest No 25)

Marine Plain, Mule Peninsula, Vestfold Hills, Princess Elizabeth Land

i. *Description of Site*

Physical features. Marine Plain (23.4 km, lat 68°3'S, long 78°08'E) opens into an arm of Crooked Fjord on the southern side of Mule Peninsula, the southernmost of the three major peninsulas which comprise the Vestfold Hills. The Vestfold Hills comprise an essentially ice-free oasis (approx. 400 km²) of bedrock, glacial debris, lakes and ponds at the eastern side of Prydz Bay, Princess Elizabeth Land. The boundary of the site is as follows: commencing at lat 68°36'30"S, long 78°09'00"E it runs southeasterly to lat 68°36'45"S, long 78°10'30"E; thence southeasterly to lat 68°37'30"S, long 78°10'30"E, then south along the parallel of long 78°12'30"E to its intersection by the low water mark on the northern shore of Crooked Fjord; from here it follows the low water mark of the northern shore of Crooked Fjord to its intersection with the meridian of long 78°03'00"E; thence north along the meridian of long 78°03'00"E to its intersection with the parallel of lat 68°37'30"S, then northeasterly to lat 68°37'00"S, long 78°05'00"E, and finally northeastwards to the point of commencement.

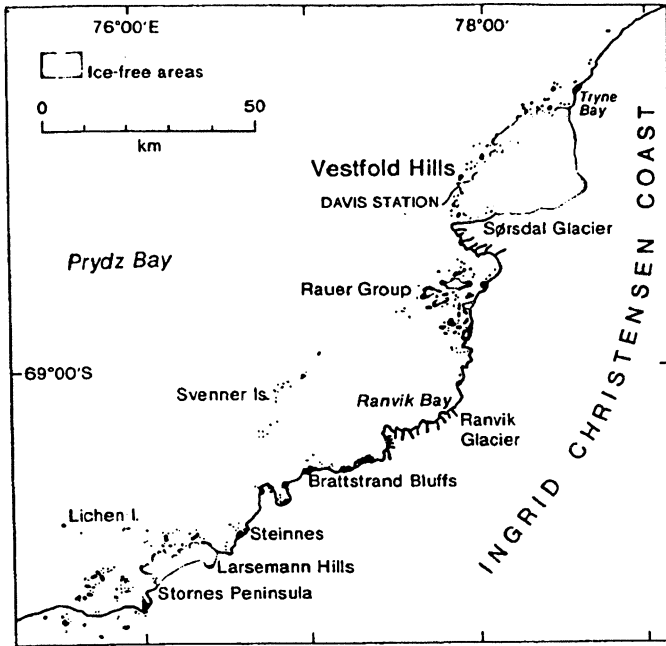
Topography. The site includes Burton Lake (surface at sea level) as a major component of the western part of the region. An extensive low level (less than 20 m above sea level) area occupies the centre of the site with a north-south orientation. In the north-east is another area below 20 m. Areas above 20 m are mostly low, rugged hills of Precambrian rock acting as divides between the lower part and characterized at their base by a marked change in their slope, probably representing an old (Holocene?) shoreline. The surface of the lower areas below 20 m is marked by a series of concave-to-the-south recessional moraine ridges.

Geology. The Precambrian rock consists for the most part of 3000 Ma gneisses from both igneous and metamorphic protoliths intruded in the course of at least three intervals between 1800 and 1375 Ma by numerous metabasalt dykes with a rough north-south orientation. These dykes are a major feature of the Vestfold Hills. Low lying areas consist of at least 8 metres of early Pliocene (40–46 million years) diatomites and, less commonly, lenticular sandstone overlying the Precambrian rock and occupying the sites of what were embayments in the early Pliocene. In the western part of the central area below 20 m a.s.l., the Pliocene deposits are overlain by a thin veneer of Holocene (6490~130 y BP) glacial debris covering an area of 8–10 sq km, in places containing a few molluscs (*Laternula elliptica*) King and Broderip *in situ*. Low scarps in the Pliocene adjacent to small lakes have yielded remains of a new genus, species and probably family, all extinct, of dolphin, and there is evidence of another larger, fossil form.

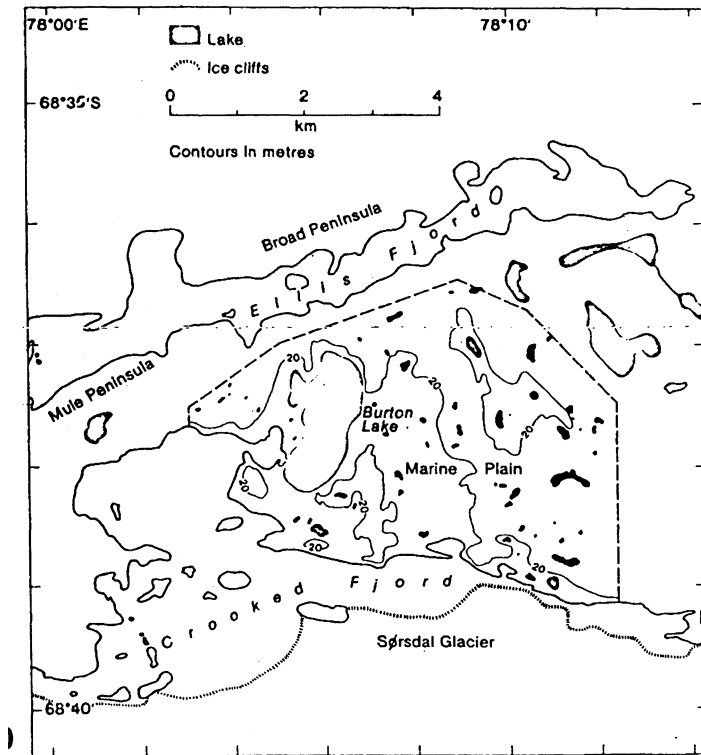
Meteorology. No data are available from the area, but conditions are similar to those at Davis station, 6 km to the north-west.

Biological features. *Terrestrial.* Reconnaissance studies have reported few species and no significant stands of vegetation within the site. *Inland waters.* There are many small lakes and ponds. *Marine.* Burton Lake opens to Crooked Fjord at its south-western corner and is affected by tides in summer. It has been the site of biological research for several years. *Birds and seals.* No bird or seal surveys have been conducted but it is relatively devoid of birds and sea mammals. Wilson's storm petrels

(*Oceanites oceanicus*) and snow petrels (*Pagodroma nivea*) occur sporadically and nest in the Precambrian hills.



ASP A 143
Map A*



ASP A 143
Map B*

ii. *Reason for designation.* The site is of exceptional scientific interest because of its vertebrate fossil fauna. In addition to the dominant important fossils such as molluscs and diatoms, which define the age of the Pliocene marine sediments, the site has yielded well-preserved vertebrate remains of a new species, genus and probably family of fossil dolphin and evidence of at least one other vertebrate species. Burton Lake, as a hypersaline lake which is still in seasonal connection with the sea, presents the opportunity for important limnological research. It represents a unique stage in the biological and physico-chemical evolution of a terrestrial water body from the marine environment. Burton Lake together with several of the smaller lakes, provide important examples of the spectrum of lake types in the Vestfold Hills. Davis (68° 85'S, 77° 58'E), a permanently occupied Australian scientific station, is located on Broad Peninsula, the central peninsula of the Vestfold Hills, 6 km to the north-west of the site. It is the focus of continuing biological, including limnological, studies within the Vestfold Hills. As a result of its proximity to Davis station, the scientific value of the site could be diminished by accidental interference. The site lies on the frequently used pedestrian route to the Mule Peninsula lakes (clear, Laternula, Cemetery and McCallum) from Ellis Rapids and it is critical that fossil fauna should be protected from unrecorded sampling or collection.

iii. *Outline of research.* A palaeontological research programme has commenced following the initial discovery of vertebrate fossils at the site in 1985. The programme consists of the collection of well-preserved fossil molluscs and diatoms and, in particular, fossil vertebrates, with the aim of documenting the fauna of the epoch. Oxygen isotope studies on the well-preserved bivalve fauna will be employed to help quantify water temperature at that time. Burton Lake is the subject of detailed year-round research as part of a programme aimed at understanding the evolution of the hydrological system in the Vestfold Hills, by looking at various stages of isolation from the marine environment.

iv. *Date of expiry of designation.* 31 December 1997.

v. *Access points.* Access should, where possible, be from the sea ice in Ellis Fjord or Crooked Fjord, or by helicopter at places where no disturbance can be caused by the aircraft to water bodies, vegetation or sediment deposits. If these means of access are not possible, access by land, either by vehicle or on foot, should be via Ellis Rapids at the eastern end of Ellis Fjord.

vi. *Pedestrian and vehicular routes.* Vehicles should not be used within the site except for over-snow travel by motorized toboggan. Pedestrians or vehicles must not damage areas of vegetation, or disturb steep inclines marking sediment outcrops or the lake margins near these outcrops.

vii. *Other kinds of scientific investigations which would not cause harmful interference.* Research on the ecology of Wilson's storm petrels, snow petrels, mosses and lichens, and other biota, and investigation of water bodies other than Burton Lake. Other scientific investigations which do not disturb the palaeontological, ecological and limnological programmes being conducted.

viii. *Scientific sampling.* Scientific sampling should be restricted to that required for the programmes described in (iii) and (vii) above.

ix. *Other restraints.* All waste materials taken into, or generated within the site should be removed as soon as practicable. No fuel depots should be made within the site, nor

should refuelling operations be undertaken. No permanent buildings should be erected within the site. Power boats should not be used on Burton Lake and use of other boats should be restricted to the minimum necessary to support programmes consistent with this plan.

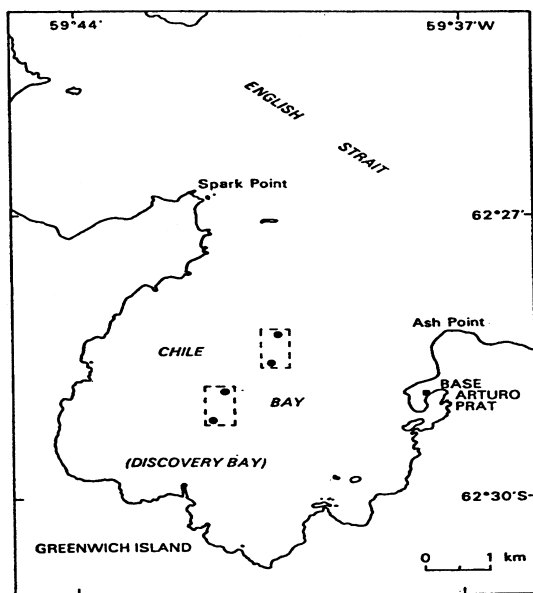
Antarctic Specially Protected Area No. 144 (Site of Special Scientific Interest No. 26)

Chile Bay (Discovery Bay), Greenwich Island, South Shetland Islands

i. *Description of the site*

Physical features. The site comprises two small areas of benthic habitat in Chile Bay located as follows: Benthic habitat A: Between 50 and 100 m depths and the following coordinates: lat 62°28.9'S long 59°41'12"W, lat 62°29.3'S long 59°41'43"W. Benthic habitat B: Between 100 and 200 m depths and between the following coordinates: lat 62°28.3'S long 59°40'15"W, lat 62°28.7'S long 59°40'47"W. The bottom of both sites consists of coarse to fine silt. The lithological and mineralogical composition of the sediments show their provenance from the outcrops and littoral deposits surrounding Chile Bay, i.e., porphyritic andesite, aphanitic andesite, diorite and andesitic volcanic breccia and tuffs. This material is transported to the coastline mainly by glaciers, solifluction and mud flows. These processes are intensified in the inner part of the bay where the glacier terminates. Chile Bay has a transverse submarine barrier, possibly a submerged moraine, separating habitats A and B and dividing the bay into an inner and an outer part. Sediments in the inner bay are protected from the action of waves and currents, thereby preserving the grain size distribution, sorting and shape of the contained material.

Biological features. The benthic assemblages have high species diversity and biomass. Bottom topography and sediment features influence the structure of the communities and distribution pattern. Two assemblages have been recognized: one, dominated by the polychaete *Maldane sarsi antarctica*, is located in the outer part of the bay, mainly below 100 m depth; other characteristic species are *Genaxinus bongranii*, *Cyamonactra denticulum*, *Typhlotanais greenwichensis* and *Pycnogonida* spp. The inner assemblage, on the other hand, is not dominated by any one species but contains *Yoldia eightsii* and *Eudorella gracilor* as characteristic fauna.



ASPA 144
Map A*

- ii. *Reason for designation.* In Chile Bay there has been continued quantitative and qualitative benthic research since 1967. Data being accumulated provide a baseline for long-term investigations. The site is of exceptional scientific interest and therefore requires long-term protection from possible harmful interference.
- iii. *Outline of research.* A long-term research program was started in 1967 in connection with the study of benthic fauna re-establishment within Port Foster, Deception Island, following the volcanic eruption of December 1967. Chile Bay has been designated a control area. These studies are performed yearly in the summer. Community studies to observe biota changes will be augmented with other relevant studies to suit the requirements of a long-term biological monitoring programme.
- iv. *Date of expiry of designation.* 31 December 1997.
- v. *Access points.* Although access points as such are not applicable, free passage of ships through these areas is not in any way prejudiced.
- vi. *Pedestrian and vehicular routes.* Not applicable.
- vii. *Other kinds of scientific investigations that would not cause harmful interference.* Scientific research other than that disturbing benthic habitats and communities.
- viii. *Scientific sampling.* Samples from the benthic habitats should be taken only for compelling scientific purposes.
- ix. *Other restraints.* The dumping of waste from ships and bottom hauling should be avoided. Anchoring should be avoided except in compelling circumstances. Siting of bottom devices should be avoided.

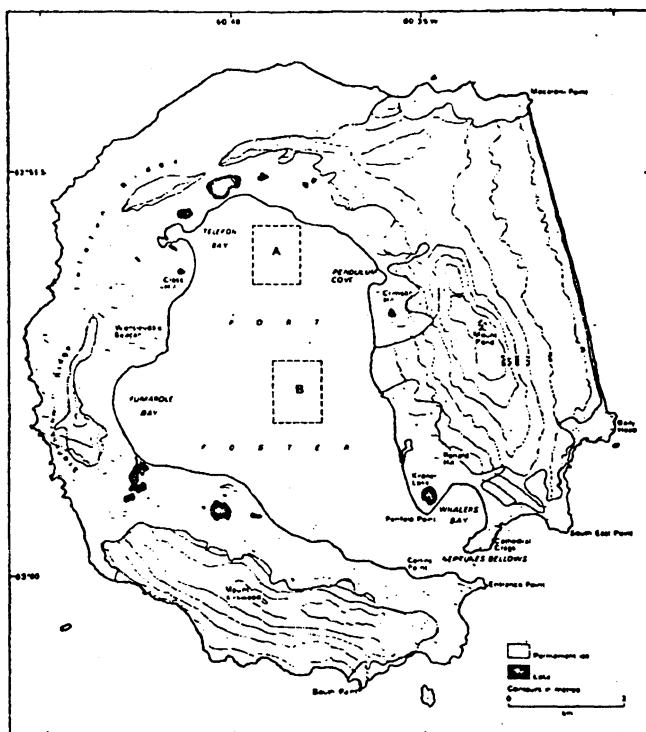
Antarctic Specially Protected Area No. 145 (Site of Special Scientific Interest No. 27)

Port Foster, Deception Island, South Shetland Islands

i. *Description of the site*

Physical features. The site comprises two small areas of benthic habitat located in Port Foster as follows: Benthic habitat A: between 50 and 150 m depths and the coordinates: lat 62°55.5'S long 60°38'00"W, lat 62°56.2'S long 60°37'00"W. Benthic habitat B: between 100 and 150 m depths and the coordinates: lat 62°57.2'S long 60°37'20"W, lat 62°57.9'S long 60°36'20"W. Deception Island is a caldera formed by subsidence of a group of Cenozoic volcanoes superimposed along radial faults. Port Foster is an almost entirely enclosed body of water which receives large volumes of fresh water during periods of melt. In several places there is geothermal activity. The bottom of habitat A consists of coarse to medium-sized, poorly sorted volcanic sediment, and that of habitat B of medium to fine, better sorted volcanic ash.

Biological features. The composition of the benthic assemblages has varied greatly since the volcanic eruption of December 1967. The most recent data indicate a high dominance of polychaetes, both in terms of numbers and biomass. The most conspicuous macrofauna in dredge samples include the nemerteans *Lineus* sp and *Paraborlasia corrugatus*, the isopod *Serolis kemp*: the bivalve *Yoldia eightsii*, the echinoids *Abatus agassizi* and *Sterechinus neumayeri*, the asteroids *Lysasterias perrieri* and *Odontaster validus*, the ophiuroid *Ophionotus victoriae* and the holothurian *Ypsilothuria* sp.



ASPA 145
Map A*

- ii. *Reason for designation.* The area is of exceptional ecological interest because of its actively volcanic character. The two habitat areas are subject to long-term research programmes and the purpose in designating them is, as far as possible, to reduce the risk of accidental interference which could jeopardize these scientific investigations.
- iii. *Outline of research.* Following the volcanic eruption of December 1967 at Deception Island, a long-term programme of research was initiated at Port Foster to study the mechanism and paths of the re-establishment of the benthic communities. Community studies to observe biota changes, augmented with other relevant studies to suit the requirement of a long-term biological monitoring programme, are performed periodically.
- iv. *Date of expiry of designation.* 31 December 1997.
- v. *Access points.* Although access points as such are not designated, free passage of ships through these areas is not in any way prejudiced.
- vi. *Pedestrian and vehicular routes.* Not applicable.
- vii. *Other kinds of scientific investigation that would not cause harmful interference.* Scientific research other than that disturbing benthic habitats and communities.
- viii. *Scientific sampling.* Samples from the benthic habitats should be taken only for compelling scientific purposes.
- ix. *Other restraints.* The dumping of waste from ships and bottom trawling should be avoided. Anchoring should be avoided except in compelling circumstances. Siting of bottom devices should be avoided.

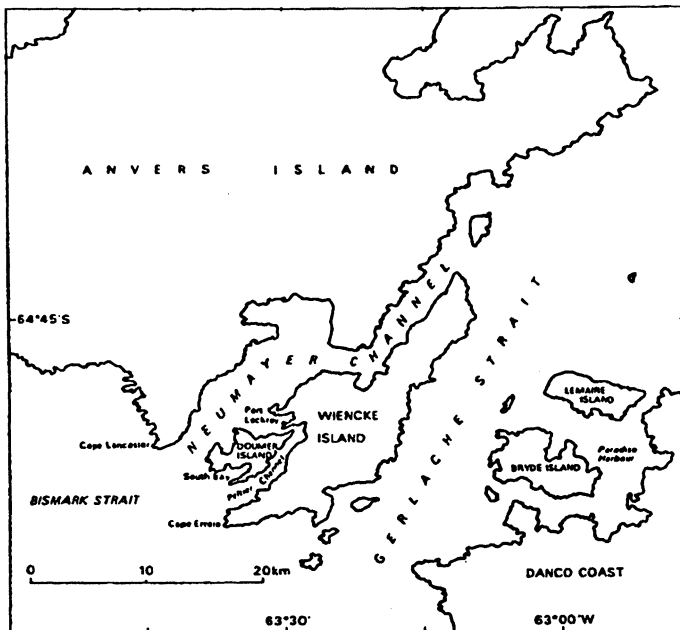
Antarctic Specially Protected Area No. 146 (Site of Special Scientific Interest No. 28)

South Bay, Doumer Island, Palmer Archipelago

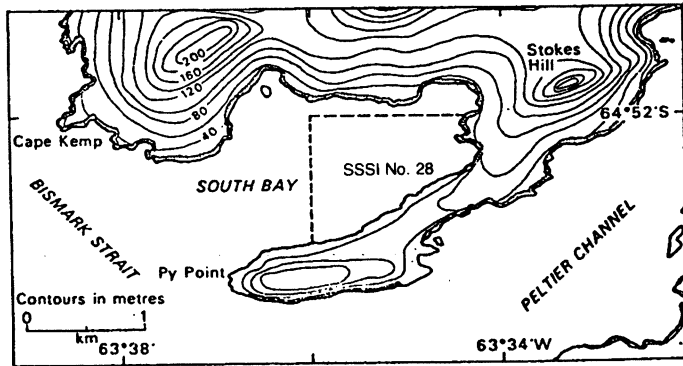
i. *Description of site*

Physical features. Doumer Island lies at the south-west entrances to Neumayer Channel. It is separated from Wiencke Island by the Peltier Channel. South Bay lies on the south coast of Doumer Island. The site consists of a small area of coastal and sub-tidal benthos down to 45 m depth as follows: lat 64°51'42"S to the north, between long 63°34'00"W and long 63°35'20"W, and to the south by a diagonal line that starts at a point 100 m north of the Refuge (Sub-base Yelcho) on the southern shore of South Bay and extends to lat 64°51'58"S and long 63°34'00"W. Boundaries are shown on the attached map.

Biological features. Four different kinds of bottom surface have been described: rocky with algae growth, from 0 to 30 m depth; predominantly rock, covered by algae, silt and large quantities of sponges, from 30 to 110 m depth; mixed bottoms with predominantly deposits of mud and few rock outcrops with sponges, from 100 to 150 m depth; soft bottoms of silt and mud, from 150 to 200 m depth, corresponding to the deepest depression, occurs near the centre of the bay just outside the site. The benthic macrofauna richness increases with depth and is accentuated in bottoms with a steep slope. Ice scour exerts a strong influence on the patterns of distribution and the abundance of benthic fauna. Seals, in particular Weddell seals *Leptonychotes weddellii*, visit the area to feed. Cetaceans, like killer whales, *Orcinus orca* and humpback whales *Megaptera novaeangliae* enter the bay. Many Antarctic seabirds occur transiently in the site.



ASPA 146
Map A*



ASPA 146
Map B*

- ii. *Reason for designation.* The site is the subject of a long-term research program on marine ecology and the purpose of designating it is to reduce, as far as is possible, the risk of accidental interference which might jeopardize these scientific investigations.
- iii. *Outline of research.* The research covers the study of the relationships of the marine organisms in the area. This was started by SCUBA diving in 1972. Since 1981 advanced experiments to elucidate community structure and functioning have been in progress and will continue in the future.
- iv. *Date of expiry of designation.* 31 December 1997.
- v. *Access points.* None specified. The area is not affected by the passage of boats.
- vi. *Pedestrian and vehicular routes.* Not applicable.
- vii. *Other kinds of scientific investigation that would not cause harmful interference.* Scientific research other than that disturbing benthic habitats and communities.
- viii. *Scientific sampling.* Collection of samples should be made only for compelling scientific reasons.
- ix. *Other restraints.* The dumping of wastes from ships or boats and bottom trawling should be avoided. Anchoring should be avoided except for compelling reasons.

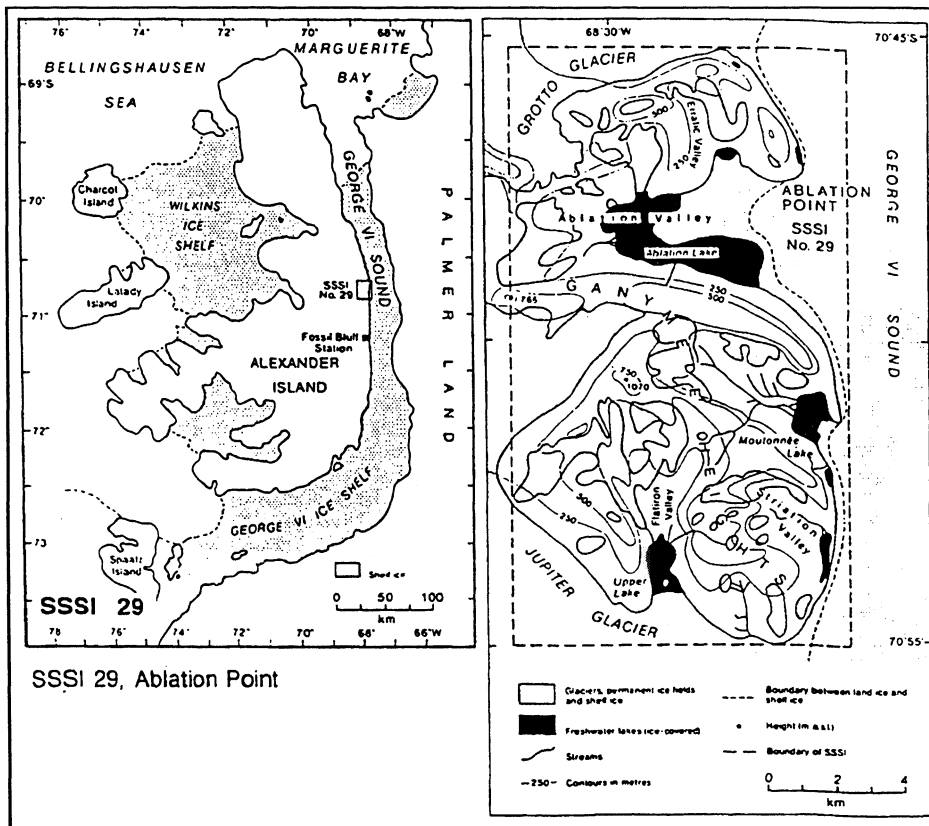
Antarctic Specially Protected Area No. 147 (Site of Special Scientific Interest No. 29)

Ablation Point-Ganymede Heights, Alexander Island

1. *Geographical location.* The Ablation Valley-Ganymede Heights massif and its valley systems (70°49'S, 68°25'W) is situated on the mid-east coast of Alexander Island overlooking the shelf ice of George VI Sound and about 120 km from open sea to the north.

2. *Management plan*

i. *Description of site.* The Site extends from lat. 70°45' to lat. 70°55' and from long. 68°40'W to the George VI Sound coastline. The largely ice-free area comprises three main and two lesser valley systems separated by often precipitous ridges and plateaux 650–760 m high. The site is bounded by Grotto Glacier to the north, Jupiter Glacier to the south and west, and George VI Sound to the east. The area extends 18 km from north to south and 10 km from east to west, rising to a maximum altitude of 1070 m.



ASP 147
Map A and B*

- ii. *Reason for designation.* The Site represents one of the largest ablation areas in West Antarctica. It has a complex geology, the main rock types being conglomerates, arkosic sandstones and shales with subordinate pebbly mudstones and sedimentary breccias. The base of the succession is formed of a spectacular *mélange*, including large blocks of lava and agglomerate. This outcrops on the valley floors and at the base of several cliffs. It possesses a wide range of geomorphological features including raised beaches, moraine systems and patterned ground. There are several permanently frozen freshwater lakes and many ice-free ponds supporting a diverse flora (including aquatic bryophytes) and fauna. There are a few major streams and many smaller ones in summer. The vegetation is generally sparse, with a unique moss and liverwort-dominated community type being restricted to 'oases' where water issues from otherwise dry barren hillsides. The terrestrial and freshwater ecosystems are vulnerable to human impact and therefore merit protection from uncontrolled human presence.
- iii. *Outline of research.* Several detailed geological, geomorphological, glaciological and limnological studies have been made by British Antarctic Survey scientists within the Site and it is proposed to undertake terrestrial ecological research throughout the area.
- iv. *Date of expiry of designation.* 31 December 1999
- v. *Access points.* None specified, but the most convenient point is by landing on Ablation Lake. Access is not possible from the shelf ice of George VI Sound because of the dangerous and variable condition of the pressure ice.
- vi. *Pedestrian and vehicular routes.* Vehicles may be used on land with the utmost care, avoiding areas of vegetation, patterned ground and streams whenever possible. Pedestrians should avoid, as far as possible, areas of oasis vegetation, patterned ground, streams and lake margins.
- vii. *Other kinds of scientific investigations which would not cause harmful interference.* None specified.
- viii. *Scientific sampling.* Scientific sampling within the Site should be minimal and restricted to that which can be accomplished as far as possible without introducing new organisms, including micro-organisms, and without disturbing the environment.
- ix. *Other restraints.* All materials, including combustibles, introduced into the Site should be removed after each visit. Solid human waste should be disposed of into the sea through tide cracks.

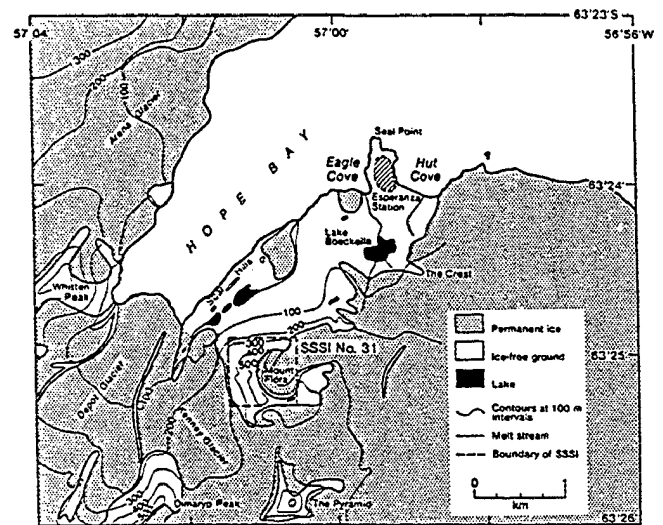
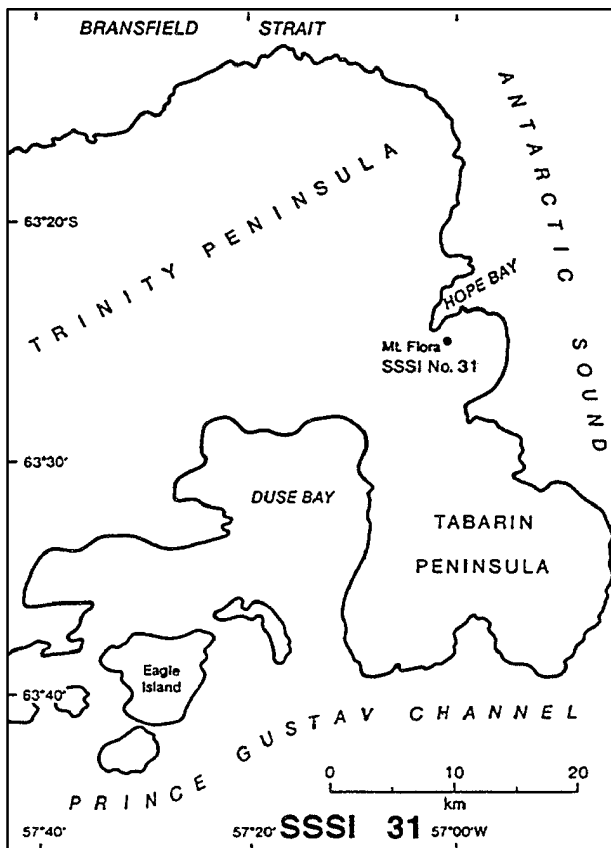
Antarctic Specially Protected Area No. 148 (Site of Special Scientific Interest No. 31)

Mount Flora, Hope Bay, Antarctic Peninsula

1. *Geographical location.* Mount Flora (63°25'S, 57°01'W) is situated about 1 km south of Hope Bay and about 1 km south-east of the Argentine station Esperanza, at the northern tip of Trinity Peninsula.

2. *Management Plan.*

i. *Description of Site.* The Site comprises the upper slopes of Mount Flora above 250 m altitude where the plant-beds of sandstone and siltstone outcrops as a distinct black band between the lower band of conglomerates and light coloured volcanic rocks which cap the mountain.



ASPA 148
Maps A and B*

ii. *Reason for designation.* The Site is of exceptional scientific importance for its rich fossil flora. It was one of the first fossil floras discovered in Antarctica and has played a significant stratigraphic role in deducing the geological history of the Antarctic Peninsula. Its long history as an easily accessible site and the large amount of fossiliferous debris occurring in scree has made it vulnerable to souvenir collectors, and the amount of material available for serious research has been considerably depleted. For this reason the Site merits urgent protection.

- iii. *Outline of research.* None specified. Designation as an SSSI is justified by the exceptional scientific interest of the site and the vulnerability of its fossils to over collecting.
- iv. *Date of expiry of designation.* 31 December 1999.
- v. *Access points.* None specified.
- vi. *Pedestrian and vehicular routes.* None specified.
- vii. *Other kinds of scientific investigations which would not cause harmful interference.* None specified.
- viii. *Scientific sampling.* The collection of fossiliferous rocks should be restricted to the minimum required for the proposed research studies. Unnecessary destruction of in situ rock and boulders should be avoided.
- ix. *Other restraints.* None specified.

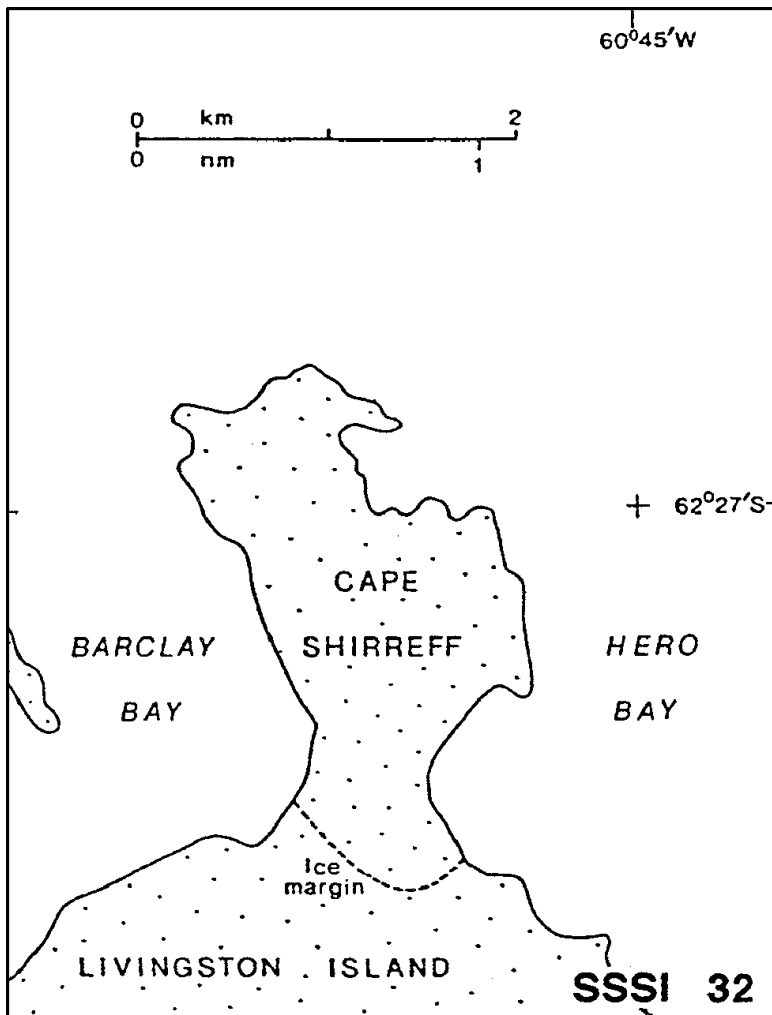
Antarctic Specially Protected Area No. 149 (Site of Special Scientific Interest No. 32)

Cape Shirreff, Livingston Island, South Shetland Islands

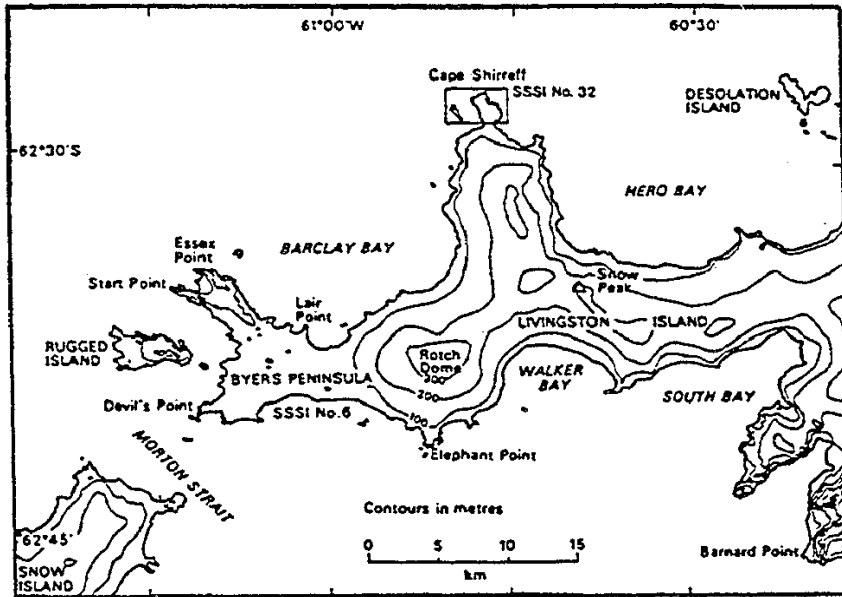
1. *Geographical location.* Cape Shirreff is a low, ice-free peninsula towards the western end of the north coast of Livingston Island, situated at latitude $62^{\circ}27'S$, longitude $60^{\circ}47'W$, between Barclay Bay and Hero Bay. Telmo Island is the largest of a small group of ice-free rock islets, approximately 2 km west of Cape Shirreff.

2. *Management plan*

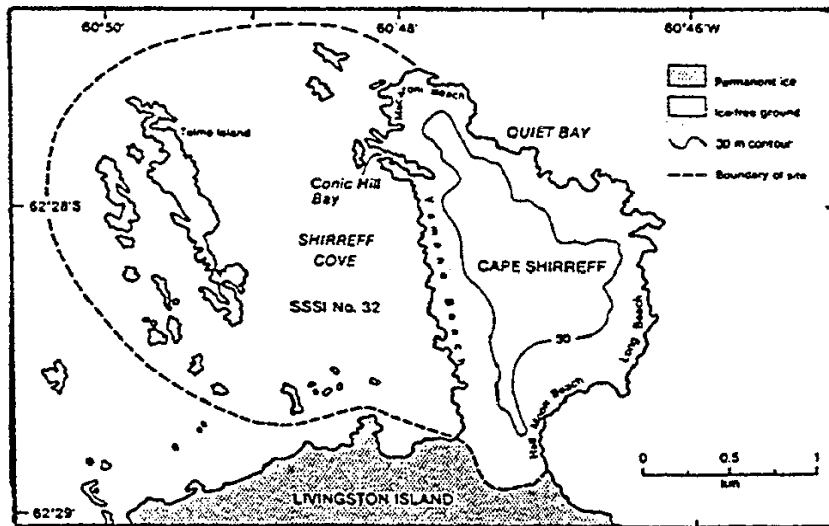
i. *Description of site.* The Site includes the entire area of the Cape Shirreff peninsula north of the glacier ice tongue margin, and most of the Telmo Island group (see map).



ASPA 149
Map A*



ASP A 149
Map B*



ASP A 149
Map C*

ii. *Reason for designation.* The presence of both Antarctic fur seal and penguin breeding colonies, and of krill fisheries within the foraging range of these species, make this a critical site for inclusion in the ecosystem monitoring network being established to help meet the objectives of the Convention on the Conservation of Antarctic Marine Living Resources. The purpose of the designation is to allow planned research and monitoring to proceed, while avoiding or reducing, to the greatest extent possible, other activities which could interfere with or affect the results of the research and monitoring programme or alter the natural features of the Site.

iii. *Outline of research.* Long-term studies are being planned better to assess and monitor the feeding ecology, growth and condition, reproductive success, behaviour,

vital rates, and abundance of pinnipeds and seabirds that breed in the area. The results of these studies will be compared with environmental data, offshore sampling data, and fishery statistics to identify possible cause-effect relationships.

iv. *Date of expiry of designation.* 31 December 1999.

v. *Access points.* The Cape Shirreff part of the Site may be entered at any point where pinniped or seabird rookeries are not present on or near the beach. Access to the islands in the Telmo group is unrestricted but should be at the least densely populated areas and cause minimal disturbance to the fauna. Access for other than the aforementioned types of research should avoid disturbing pinnipeds and seabirds.

vi. *Pedestrian and vehicular routes.* Boats, helicopters, fixed-wing aircraft and land vehicles should avoid the Site except for operations directly supporting authorized scientific activities. During these operations, boats and aircraft should travel routes that avoid or minimize disturbance of pinnipeds and seabirds. Land vehicles should not be used except to transport needed equipment and supplies to and from the field camp to be established. As far as possible, establishment and resupply of the field camp should be done before or after the pinniped and seabird breeding seasons. Pedestrians should not walk through wildlife population areas, especially during the breeding season, or disturb other fauna or flora except as necessary to conduct authorized research.

vii. *Other kinds of scientific investigations which would not cause harmful interference* Geological, glaciological, and other studies which can be done outside of the pinniped and seabird breeding seasons, and which will not damage or destroy pinniped or seabird breeding areas, or access to those areas, would not adversely affect the planned assessment and monitoring studies. Likewise, the planned assessment and monitoring studies would not be affected adversely by periodic biological surveys or studies of other species which do not result in killing, injuring or disturbing pinnipeds or seabirds, or damage or destroy pinnipeds or seabird breeding areas or access to those areas.

viii. *Scientific sampling.* Killing, capturing, handling, photographing, and taking eggs, blood, or other biological samples from pinnipeds and seabirds should be limited to that necessary to characterize and monitor individual and population parameters that may change in detectable ways in response to changes in food availability or other environmental factors. Sampling should be done and reported in accordance with: 1) the Agreed Measures for the Conservation of Antarctic Fauna and Flora, and 2) the Convention for the Conservation of Antarctic Seals.

ix. *Other restraints.*

- a. Only structures directly supporting authorized scientific research and monitoring programmes may be built within the Site to house research personnel and their equipment, and shall be occupied only within the period 1 September to 1 June.
- b. All non-burnable or non-biodegradable materials brought to the Site should be removed when no longer in use. Landfill disposal of non-biodegradable materials, and the burning of non-organic materials, is not permitted.

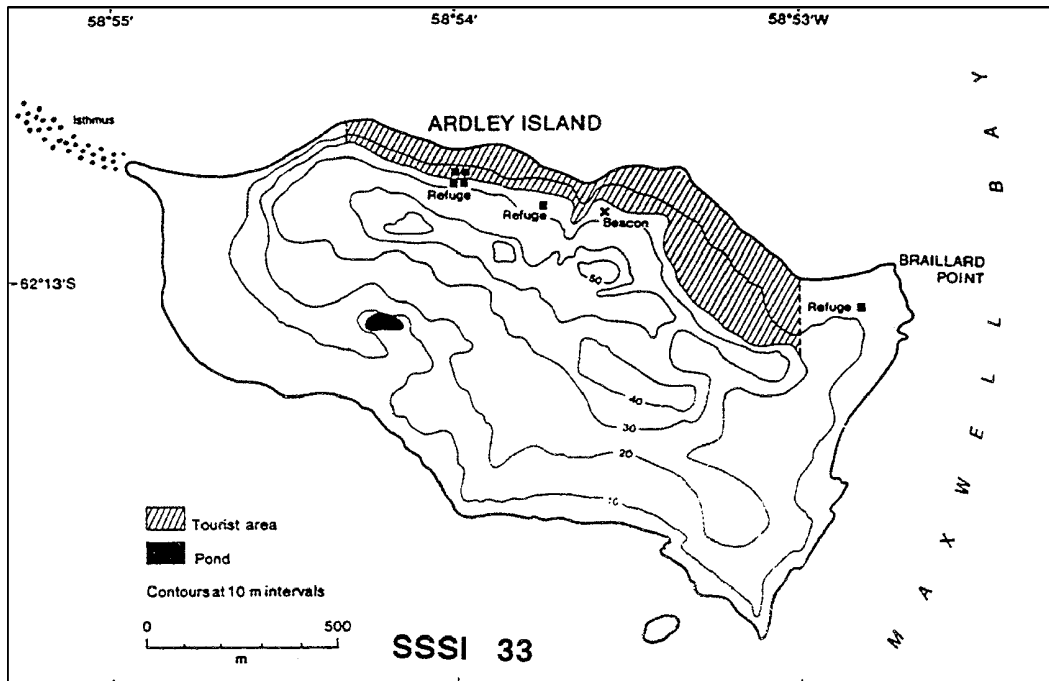
Antarctic Specially Protected Area No. 150 (Site of Special Scientific Interest No. 33)

Ardley Island, Maxwell Bay, King George Island

1. *Geographical location:* Ardley Island (62°13'S, 58°54'W) is situated about 500 m east of the coast of Fildes Peninsula, Maxwell Bay, King George Island. It is about 1 km south-east of the Soviet station Bellingshausen and the Chilean station Teniente Marsh, and about 0.5 km east of the Chinese station Great Wall.

2. *Management Plan*

i. *Description of Site.* The Site comprises the entire island and its associated littoral zone, including the isthmus between the island and Fildes Peninsula to the west. The island is about 2.0 km long and 1.5 km at its widest, and rises to about 50 m altitude. It comprises mainly Tertiary andesitic-basaltic lavas and tuffs, and there are some raised beach terraces. It is snow- and ice-free in summer. There is a small (about 100 m long) freshwater pond on the south-west of the island. There is a refuge hut (FRG) near Brailard Point, and two more refuge huts (Argentina, Chile) are situated near the middle of the northern coast of the island, the latter comprising several huts.



ASP A 150
Map A*

ii. *Reason for Designation.* The Site is of exceptional biological interest. It has a diverse avifauna with 12 breeding species, and is of particular importance for its breeding colonies of Gentoo penguins (*Pygoscelis papua*); the average number of breeding pairs is about 4,000 which is the largest concentration of Gentoos within the South Shetland Islands and probably in the Antarctic. There are also about 1,200 pairs of breeding Adélie penguins (*Pygoscelis adeliae*) and a small number of Chinstrap penguins (*P. antarctica*). Other breeding species of particular importance are Southern

Giant petrels (*Macronectes giganteus*), Wilson's storm petrels (*Oceanites oceanicus*) and Black-bellied storm petrels (*Fregatta tropica*).

The island possesses some of the best-developed and most extensive plant communities in the South Shetland Islands, notably the climax fellfield ecosystem dominated by macro lichens (*Himantormia lugubris*, *Usnea* spp.). Such vegetation is extremely sensitive to human intervention and is very easily damaged.

iii. *Outline of Research.* Detailed ornithological and botanical research has been undertaken on Ardley Island for many years by Chilean, FRG and GDR scientists, with brief studies made also by scientists from other national stations in the area.

Results of a 10-year census and breeding study, commencing in 1979, of pygoscelid penguins have revealed large between-season fluctuations in numbers and the breeding success of each species. Also, the Giant petrel breeding population has declined by about 80% in recent years. There is strong evidence that these population fluctuations are a direct response to disturbance by large numbers of visitors and to vehicles and low-flying aircraft. The effects of these impacts will continue to be monitored as an integral part of the long-term ornithological research being undertaken at this site.

Detailed investigations of the phytosociology of the island's vegetation and of the physiology of selected lichen species have been undertaken. Further terrestrial botanical, zoological and littoral research is planned. Because of the extreme importance of this area to biological research it is imperative that it is protected from the severe threat of human intervention so as to minimise its impact on this exceptional ecosystem.

iv. *Date of expiry of designation.* 31 December 2001

v. *Access points.* None specified, although not more than five persons should enter the site from the sea anywhere east of a north-south line running through the beacon on the mid-north coast of the island.

vi. *Pedestrian and vehicular routes.* Pedestrian activity should be restricted whenever possible to areas with minimal vegetation, and should avoid any bird breeding sites, except as required for approved research studies. Tourists and non-scientific station and ship personnel should visit only the area designated for this purpose (see (ix)) in order to minimise disturbance of biota. The use of any type of vehicle, including amphibious craft on land, is not permitted. Helicopters should not land on or overfly the island below 300 m altitude. Aircraft landing at and taking off from Teniente Marsh airfield should avoid overflying the island.

vii. *Other kinds of scientific investigations which would not cause harmful interference* Other scientific investigations may be permitted as long as they cause minimum impact on the biota and ecosystems. All markers and structures associated with field experiments must be removed as soon as the research is completed.

viii. *Scientific sampling.* All activities involving banding, capture, killing, etc of any bird must conform with the Agreed Measures for the Conservation of Antarctic Fauna and Flora. Any other sampling should be restricted to the minimum required for the purpose of the respective studies.

ix. *Other restraints.* Large groups of visitors to the Site should be limited to a maximum of 20 persons at any time. Such groups of persons should have access only to the 'tourist area' marked on the map, i.e. the north coast of the island as far as 300 m west of Braillard Point and 300 m west of the Chilean refuge, up to an altitude of 20 m

above sea level. Groups should be accompanied by a guide, provided from the national station approving the visit, who will be responsible for their conduct and who is fully conversant with the Site Management Plan, the Agreed Measures for the Conservation of Antarctic Fauna and Flora, and the current research programmes. There should be no access for dogs whether or not they are required for sledging purposes. All human waste materials should be removed from the Site and returned to the Station of origin; no combustible materials should be incinerated within the site.

Antarctic Specially Protected Area No. 151 (Site of Special Scientific Interest No. 34)

Lions Rump, King George Island, South Shetland Islands

1. Description of Values to be Protected

The Area was originally designated as a Site of Special Scientific Interest in Recommendation XVI-2 (1991, SSSI No. 34) after a proposal by Poland on the grounds that it contains diverse biota and geological features and is a representative example of the terrestrial, limnological, and littoral habitats of the maritime Antarctic. The Area is designated primarily to protect the site's ecological values. It is also valuable as a reference site with its diverse avian and mammalian Antarctic fauna, against which disturbance at other site can be measured.

The grounds are still relevant. There is rich lichen flora and frequent stands of *Colobanthus quitensis* and *Deschampsia antarctica*. There are colonies of Adélie Penguin (*Pygoscelis adeliae*), Gentoo Penguin (*Pygoscelis papua*) and Chinstrap Penguin (*Pygoscelis antarctica*) and breeding areas of nine other birds: Giant Petrel (*Macronectes giganteus*), Cape Pigeon (*Daption capense*), Wilson's Storm Petrel (*Oceanites oceanicus*), Black-bellied Storm Petrel (*Fregatea tropica*), Sheathbill (*Chionis alba*), McCormick's Skua (*Catharacta maccormicki*), Antarctic Skua (*Catharacta antarctica*), Dominican Gull (*Larus dominicanus*), and Antarctic Tern (*Sterna vittata*). Furthermore, Elephant Seals (*Mirounga leonina*), Weddell Seals (*Leptonychotes weddelli*), and Fur Seals (*Arctocephalus gazella*) breed on the beaches.

In the littoral zone of the Area approximately 13 taxa of benthic macroalgae are represented. The *Rhodophyta* are represented by 5 species, *Chlorophyta* by 5 species and *Phaeophyta* by 3 species. Macroalgae colonize King George Bay to depths of 90-100 m. Both considerable abundance and biomass values of benthic fauna were noted. Bivalve molluscs are clearly dominant. Both *Amphipoda* and *Polychaeta* contribute significantly to benthic fauna abundance. The species composition and proportion of endemics indicate that King George Bay is transitional between Subantarctic and coastal zone of the Antarctic continent.

The Area includes several features of geological interest, such as raised beaches, Tertiary lavas and tuffs with brown coal intercalations, and silicified wood fragments.

The Area takes its name from the distinctive rocky hill lying between the southern extremity of King George Bay and Lions Cove.

The values to be protected are those associated with an example of a site which has been subjected to minimal disturbance by human activity, except for occasional monitoring studies of the mammal and bird populations, and geological and geomorphological studies.

2. Aims and Objectives

Management of the Area aims to:

- protect all bird colonies and seal breeding areas against unnecessary and potentially damaging human activities
- ensure that sites of geological and geomorphological interest be protected from oversampling and fragile vegetation cover be protected against pedestrian activity;
- undertake essential management activities necessary to protect the values of the site;
- avoid degradation of, or substantial risk to, the littoral and limnological values of the Area.

3. *Management Activities*

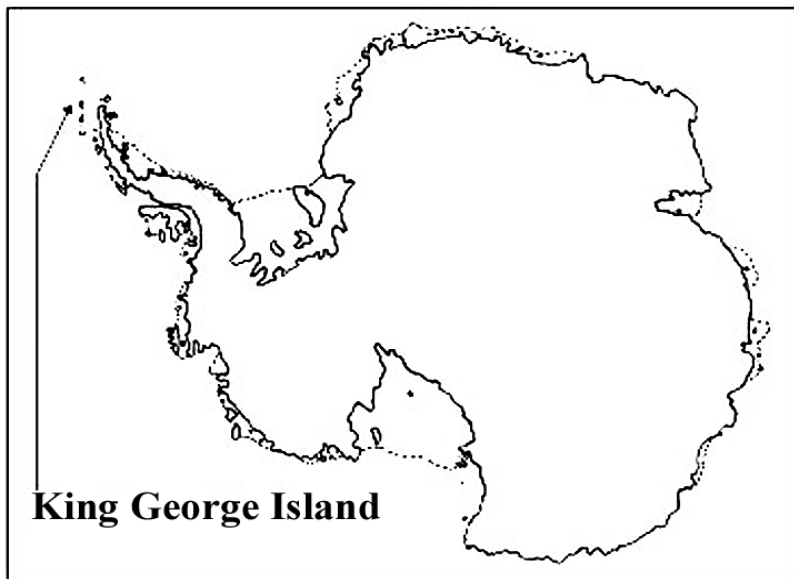
Ensure that the biological condition of the Area is adequately monitored, preferably by non-invasive methods, and that any sign-boards and boundary markers are serviced.

4. *Period of Designation*

The Area is designated for an indefinite period.

5. *Maps*

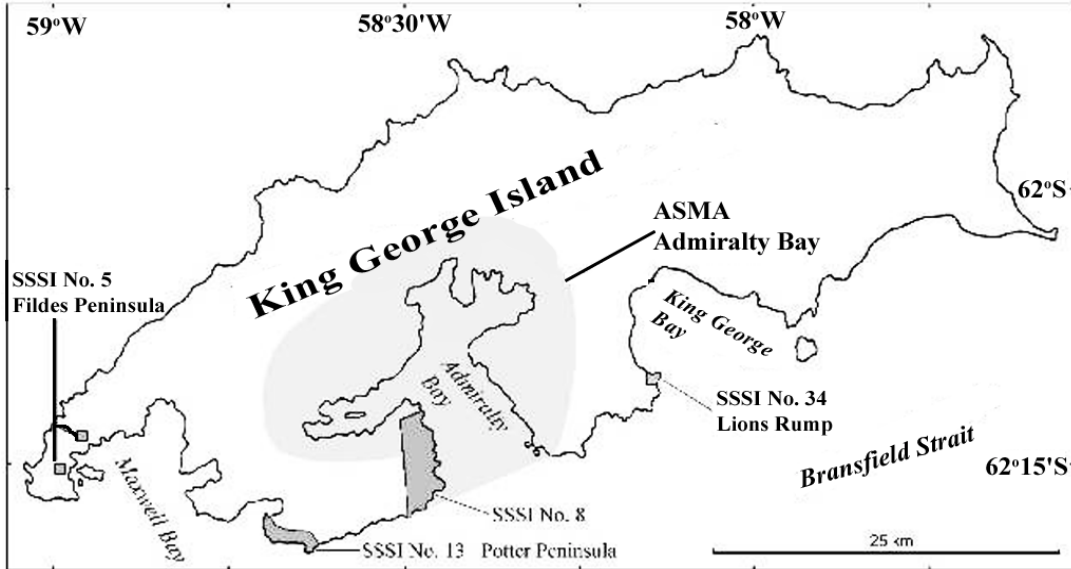
Map A shows the location of King George Island in Antarctica.



ASPA 151

Map A*

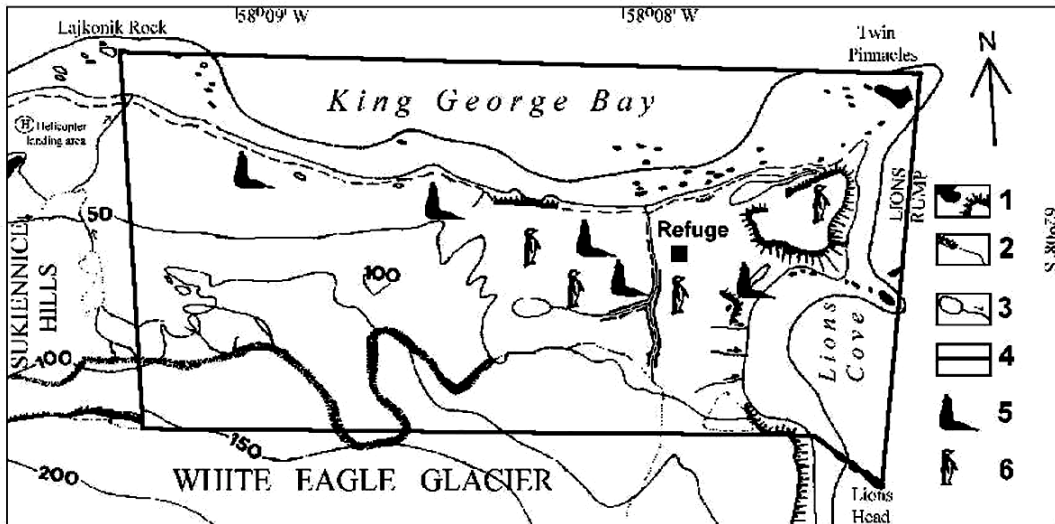
Map B shows the Lions Rump, Site of Special Scientific Interest (SSSI) No. 34, in relation to King George Island.



ASP A 151
Map B*

Map C shows the Area in greater detail

- | | |
|---------------------------------|--------------------------------|
| 1. cliffs and rocks | 4. boundary of the SSSI No. 34 |
| 2. recent moraines and glaciers | 5. seal colony |
| 3. lakes and streams | 6. penguin rookery |



ASP A 151
Map C*

6. Description of the Area

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

The site is located on the southern coast of King George Bay, King George Island, in

the South Shetlands Islands. It is described as all the land and sea falling within the area bounded by the following co-ordinates:

62°07'48"S, 58°09'17"W;

62°07'49"S, 58°07'14"W;

62°08'19"S, 58°07'19"W;

62°08'16"S, 58°09'15"W.

The Area includes the littoral and sublittoral zones extending from the eastern end of Lajkonik Rock to the most northerly point of Twin Pinnacles. From this point the boundary extends to the easternmost end of the columnar plug of Lions Head to the east of White Eagle Glacier. On land, the Area includes the coast of raised beaches, freshwater pools and streams on the south side of King George Bay, around Lions Cove, and the moraines and slopes which lead to the lower ice tongue of White Eagle Glacier, then westward to a small moraine which protrudes through the ice cap south-east of Sukiennice Hills.

The ice-free area exhibits a range of geomorphological features, including beaches of various width and length, moraines, hills and inland rocks. The highest point rises to an altitude c. 190 m.

Geologically, Lions Rump consists of Tertiary lavas and tuff containing thin brown coal intercalations and petrified wood fragments. The front of White Eagle Glacier is marked by large, dome-shaped moraine ridges belonging to several Holocene stages of glacier advance and retreat.

Large numbers of penguins breed throughout the Area. There were: 7825 pairs of Adelie penguin (*Pygoscelis adeliae*) in 1995/96, 7 pairs of Chinstrap penguin (*Pygoscelis antarctica*) in 1995/96, and 2207 pairs of Gentoo Penguin (*Pygoscelis papua*) in 1995/96.

There are at least 9 other breeding species of bird.

Approximately 13 taxa of macroalgae were found in the littoral zone of the Area. The most common among them were: green alga (*Monostroma hariotti*), red algae (*Georgiella confluens*, *Iridaea cordata* and *Leptosarca simplex*), and brown algae (*Adenocystis utricularis* and *Ascoseira mirabilis*).

The lichen flora of the Area consists of 104 taxa. The most diverse genera are *Caloplaca* (16 species) and *Buellia* (7 species). The highest species richness was found in places with diversified habitats, e.g. with rocks, near penguin colonies or in places of bird perching. The lowest species richness was found in recently deglaciated terrain (young moraines) or in snowbeds. Liverworts have little

importance in local plant communities. They most frequently occur in moss banks. Fungi are rare or uncommon. Knowledge of the Area freshwater algae is poor.

6 (ii) Restricted zones within the Area

None.

6 (iii) Location of structures within the Area

Removable caravan (belonging to Poland) functioning as a summer field laboratory for two persons.

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

Fildes Peninsula, SSSI No. 5 and SSSI No. 33, Ardley Island lie about 50 km west of Lions Rump. Potter Peninsula, SSSI No. 13 lies about 35 km to the west and Antarctic Specially Managed Area (ASMA), Admiralty Bay, King George Island (South Shetland Islands) containing the western shore of Admiralty Bay, SSSI No. 8, lies about 20 km to the west.

7. Permit Conditions

Permits may be issued only by appropriate national authorities as designated under Annex V Article 7 of the Protocol on Environmental Protection to the Antarctic Treaty.

Conditions for issuing a permit for the Area are that:

- it is issued only for a scientific purpose which cannot be served elsewhere,
- the actions permitted will not jeopardize the natural ecological system or scientific values of the Area,
- any management activities are in support of the objectives of the Management Plan,
- the action permitted are in accordance with this Management Plan,
- the permit, or a copy, must be carried within the Area,
- a report is supplied to the authority named in the Permit, and
- a permit is issued for a stated period only.

7 (i) Access to and movement within the Area

No helicopters or terrestrial vehicles are allowed within the Area. Overflights of the Area, either by helicopters or fixed wings aeroplanes must be offshore 250m. Helicopters should land only outside the Area.

Access to the Area from the sea must be to the west of the Area. No pedestrian routes are designated within the Area, but persons on foot should avoid walking on vegetated areas or disturbing wildlife whenever possible.

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

- Scientific research which cannot be conducted outside the Area, and which will not damage or interfere with any aspect of the Area's biological, geological, or aesthetic values.

- Essential management activities, including monitoring.

7 (iii) Installation, modification or removal of structures

No further structures are to be erected in the Area, or scientific equipment installed, except for essential scientific or management activities, as specified in the Permit. The temporary refuge will be removed when appropriate.

7 (iv) Location of the field camp

If camping in the Area, is necessary it should be close to the caravan. The caravan is normally available to two persons.

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

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

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

Any chemical which may be introduced for compelling scientific 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, food and other materials are not to be stored in the Area except in support of activities for which the Permit has been granted. All such materials should be kept to a minimum, made secure against the elements and removed when no longer required.

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

This is prohibited, except in accordance with a Permit. Any animal sampling or interference involved should be in accordance with the SCAR Code of Conduct for Use of Animal for Scientific Purpose in Antarctica, as a minimum standard.

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

Material may be collected or removed from the Area only in accordance with a Permit. Marine debris may be removed from the beaches of the Area. Exceptionally, dead specimens of fauna or flora may be removed for laboratory examination without a Permit.

7 (viii) Disposal of waste

All waste shall be removed from the Area, with the exception that human waste should be deposited in the sea.

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

The Permit, or a copy, must be carried within the Area.

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 audit, or to erect or maintain signpost, or protective measures.

Access to and movement within the Area shall, in any case, be limited in order to avoid disturbance to birds, and damage to vegetation and geological features.

7 (x) Requirements for reports

The principal Permit Holder for each issued Permit shall submit a report of activities conducted in the Area. The Visit Report form suggested by SCAR provides a suitable model. This report shall be submitted to the authority named in the Permit as soon as practicable, but no later than 6 months after the visit has taken place. Such reports should be stored indefinitely and made accessible to interested Parties, SCAR, CCAMLR and COMNAP if requested, to provide the documentation of human activities within the Area, which could be utilized for good management.

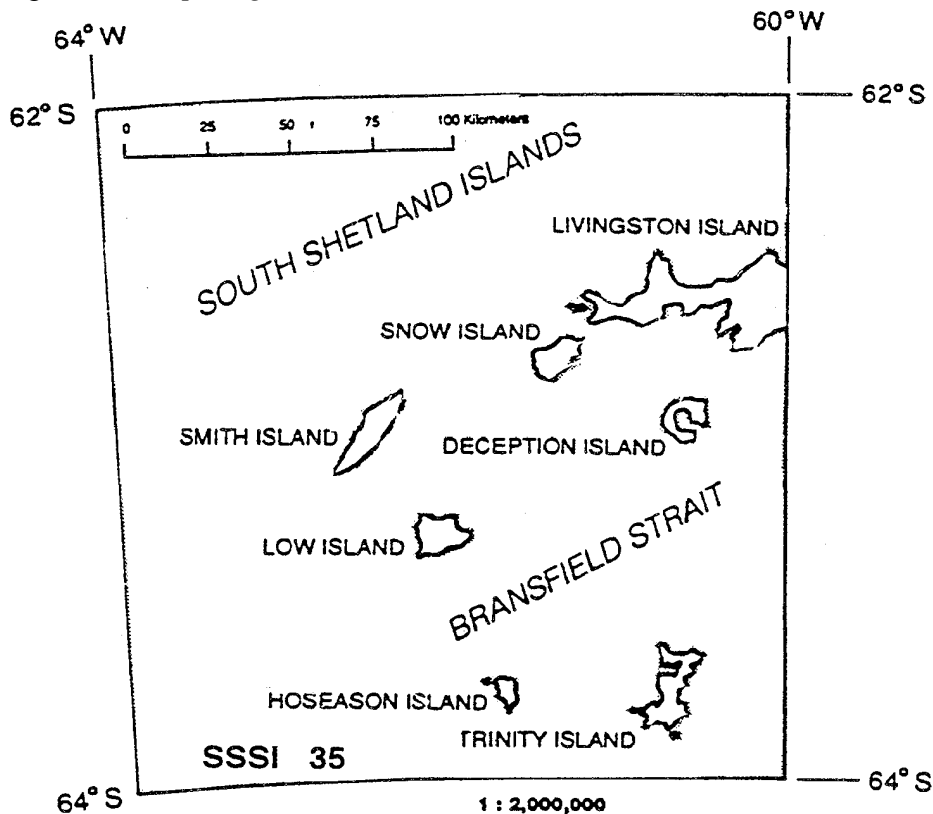
Antarctic Specially Protected Area No. 152 (Site of Special Scientific Interest No. 35)

Western Bransfield Strait, off Low Island, South Shetland Islands

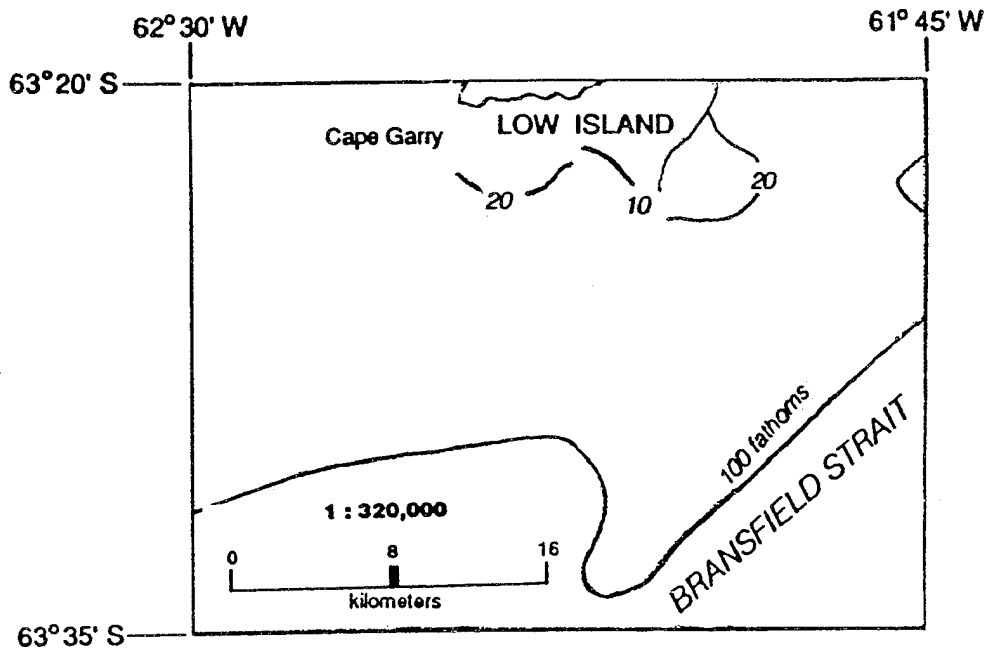
1. *Geographical location.* The Site is located off the southern shore of Low Island, western South Shetland Islands, between latitudes 63°20'S and 63°35'S and between longitudes 61°45'W and 62°30'W (with reference to U.S. Defense Mapping Agency Hydrographic/Topographic Center Chart No. 29121). A small portion of the Low Island landmass/snowmass projects into the northern boundary of this domain; here the northern limit of the Site will be the associated intertidal zone. East, west, and south of the island the bottom slopes gently from the intertidal zone to depths of approximately 200 m and then drops off rapidly near the boundary limits of the Site.

2. *Management Plan*

i. *Description of site.* The bottom consists of a sand/mud/cobbled-rock matrix and supports a rich benthos, e.g. numerous fish species, invertebrates (sponges, anemones, annelids, molluscs, crustaceans, asteroids, ophiuroids, echinoids, holothurioids, brachiopods, tunicates), and marine plants, in several distinct communities. Fish species commonly collected near Low Island include *Notothenia gibberifrons*, *Chaenocephalus aceratus*, *Harpagifer bispinis*, *Parachaenichthys charcoti*, *Trematomus newnesi*, and *N. corriceps neglecta*. Species rarely found at Low Island include *Pseudochaenichthys georgianus*, *Champocephalus gunnari*, and *Chionodraco rastrispinosus*. In addition, the Low Island shelf appears to be a major spawning ground for several fish species (e.g. *N. corriceps neglecta* and the ice fish *C. aceratus*).



ASPA 152
Map A*



ASPA 152
Map B*

- ii. *Reason for designation.* The shallow shelf south of Low Island is one of only two known sites in the vicinity of Palmer Station that are suitable for bottom trawling for fish and other benthic organisms. From an ecological standpoint, the Low Island site offers unique opportunities to study the composition, structure, and dynamics of several accessible marine communities. The Site, and in particular, its benthic fauna, is of exceptional scientific interest and requires long-term protection from potential harmful interference.
- iii. *Outline of research.* Studies of this area by scientists from Palmer Station began in the early 1970s. The current research programme uses fish from Low Island to study the biochemical adaptations that enable proteins to function at low temperatures and physiological adaptation of muscle and energy metabolism to low temperatures. These studies are conducted each year during the austral summer.
- iv. *Date of expiry of designation.* 31 December 2001.
- v. *Access points.* Any boundary point may be used for entry. Free passage of ships through this Site is permitted.
- vi. *Pedestrian and vehicular routes.* Not applicable.
- vii. *Other kinds of scientific investigations that would not cause harmful interference* Ecological studies of the sea floor and its benthos by any method should be restricted to the minimum necessary for research activities and should be carried out with minimal disturbance of the Site.
- viii. *Scientific sampling.* Sampling of the sea floor and its benthos by any method should be restricted to the minimum necessary for research activities and should be carried out with minimal disturbance of the Site.
- ix. *Other restraints.* Ships should, where possible, avoid anchoring within the boundaries of the Site.

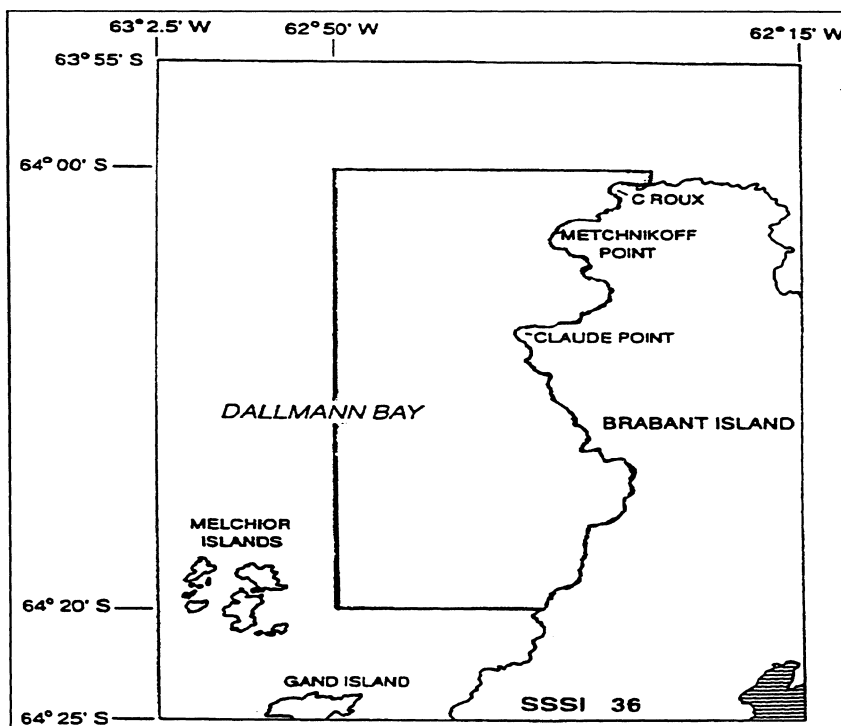
Antarctic Specially Protected Area No. 153 (Site of Special Scientific Interest No. 36)

East Dallmann Bay, off Brabant Island

1. *Geographical location.* The Site is located in East Dallmann Bay off the western shore of Brabant Island, Palmer Archipelago, between latitudes 64°00'S and 64°20'S and from longitude 62°50'W east to the intertidal zone of the island's western shore (with reference to U.S. Defense Mapping Agency Hydrographic/Topographic Center, Chart No. 29121). West of Brabant Island the bottom forms a gently sloping shelf from the intertidal zone to depths of approximately 200 m and then drops off rapidly near the western boundary of the Site.

2. *Management Plan*

i. *Description of the Site.* The bottom consists of a sand/mud/cobbled-rock matrix. The benthic community includes numerous fish species, invertebrates (sponges, anemones, annelids, molluscs, crustaceans, asteroids, ophiuroids, echinoids, holothurioids, tunicates), and marine plants. Fish species commonly collected at East Dallmann Bay include *Notothenia gibberifrons*, *Chaenocephalus aceratus*, *Champscephalus gunnari*, *Pseudochaenichthys georgianus*, and *Chionodraco rastrospinosus*. Specimens of *Trematomus newnesi* and *Notothenia coriiceps neglecta* are rare in this area.



ASPA 153
Map A*

- ii. *Reason for designation.* The shallow shelf west of East Dallmann Bay is one of only two known sites near Palmer Station that are suitable for bottom trawling for fish and other benthic organisms. The Site and, in particular, its benthic fauna are of exceptional scientific interest and require long-term protection from harmful interference.
- iii. *Outline of research.* Studies of this area by scientists from Palmer Station began in the early 1970s. The current research programme uses fish from East Dallmann Bay to study the biochemical adaptations that enable proteins to function at low temperatures and the physiological adaptation of muscle and energy metabolism to low temperatures.
- iv. *Date of expiry of designation.* 31 December 2001.
- v. *Access points.* Any boundary point may be used for entry. Free passage of ships through this Site is permitted.
- vi. *Pedestrian and vehicular routes.* Not applicable.
- vii. *Other kinds of scientific investigations that would not cause harmful interference*
Ecological studies of the composition, structure, and dynamics of the marine communities would not be harmful.
- viii. *Scientific sampling.* Sampling of the sea floor and its benthos by any method should be restricted to the minimum necessary for research activities and should be carried out with minimal disturbance of the Site.
- ix. *Other restraints.* Ships should where possible, avoid anchoring within the boundaries of the Site.

Antarctic Specially Protected Area No. 154 (Specially Protected Area No. 25, Historic Sites No. 16 and 17)

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

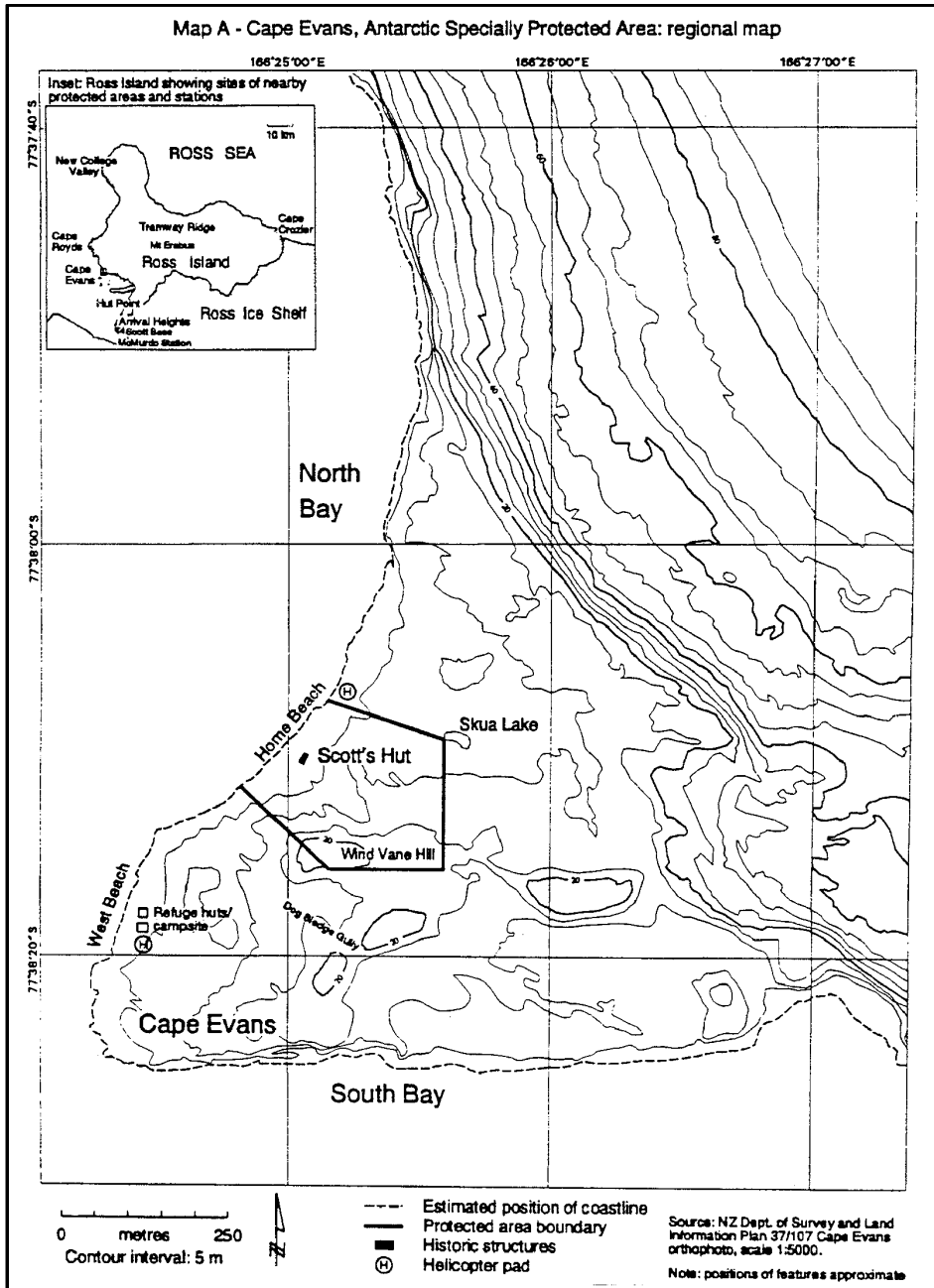
- a regular programme of restoration and preservation work shall be undertaken on the Terra Nova hut and associated artefacts in the Area;
- visits shall be made as necessary for management purposes;
- National Antarctic Programmes operating in, or those with an interest in, the region shall consult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

4. Period of Designation

Designated for an indefinite period.

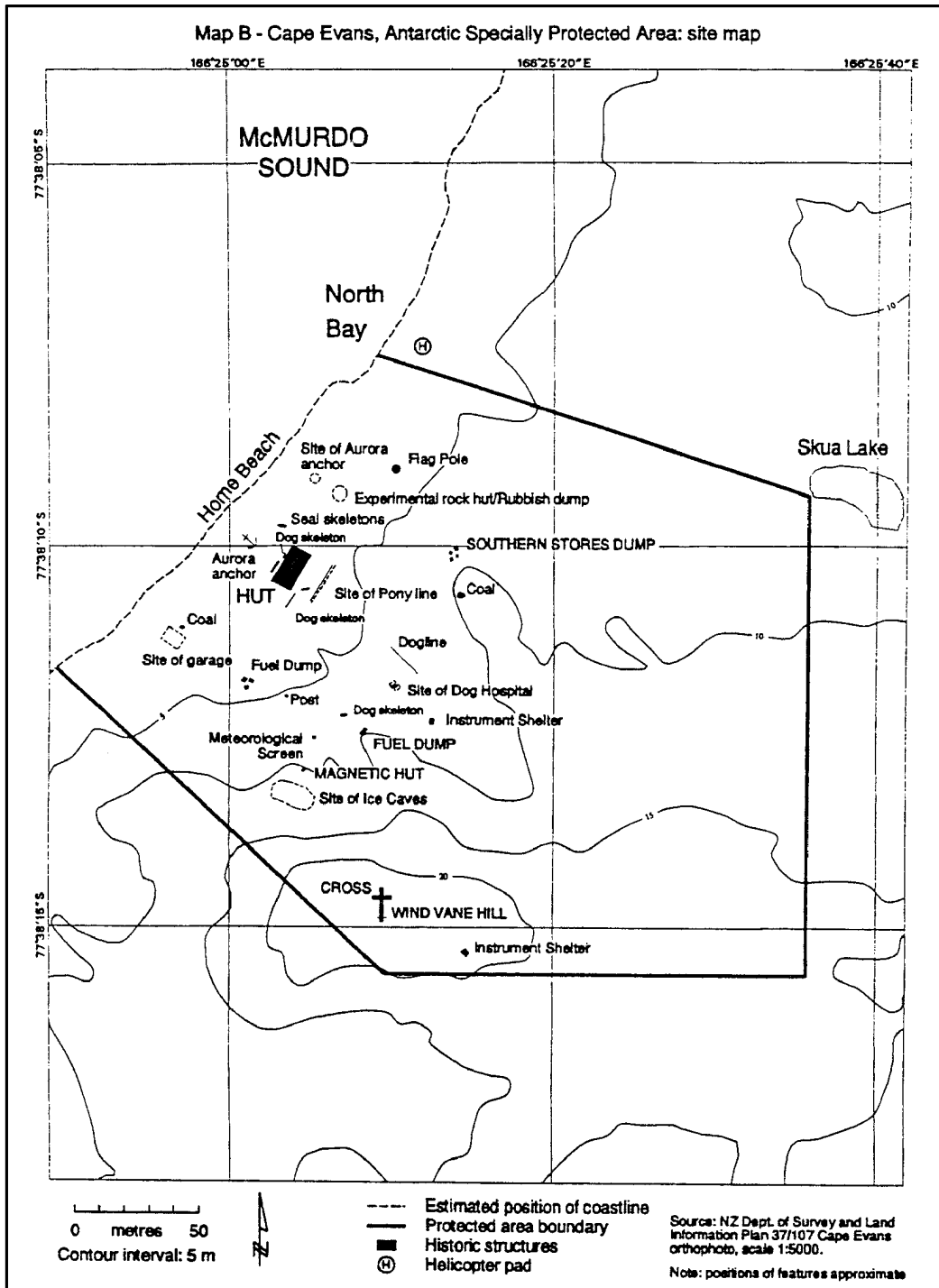
5. Maps

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.



ASPA 154
Map A*

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



ASPA 154
Map B*

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 Lake 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, archaeologists, 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.

**Antarctic Specially Protected Area No. 155 (Specially Protected Area 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 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.

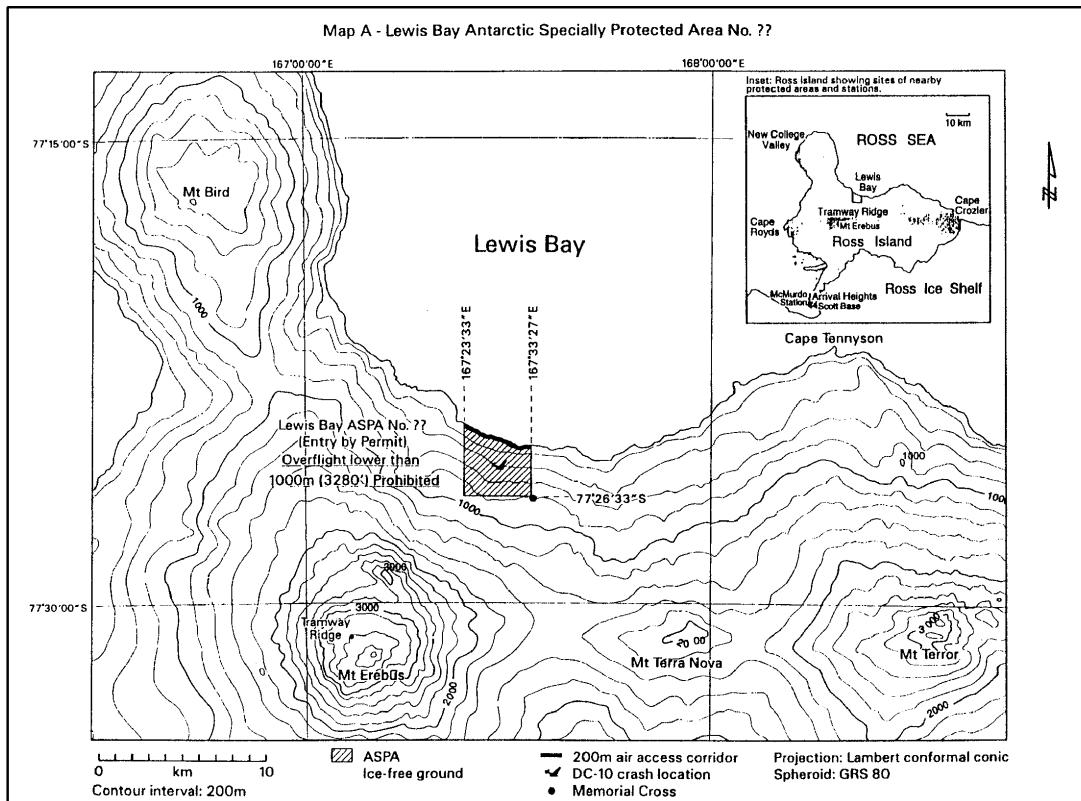
5. Maps and Photographs

Map A:155 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; Spheroid: GRS80.



ASPA 155
Map A*

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 recognising 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. 156 (Specially Protected Area No. 27, Historic Site No. 15)

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 1 908 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 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:
 - 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 programme of restoration and preservation work shall be undertaken on

the Nimrod hut and associated artefacts in the Area.

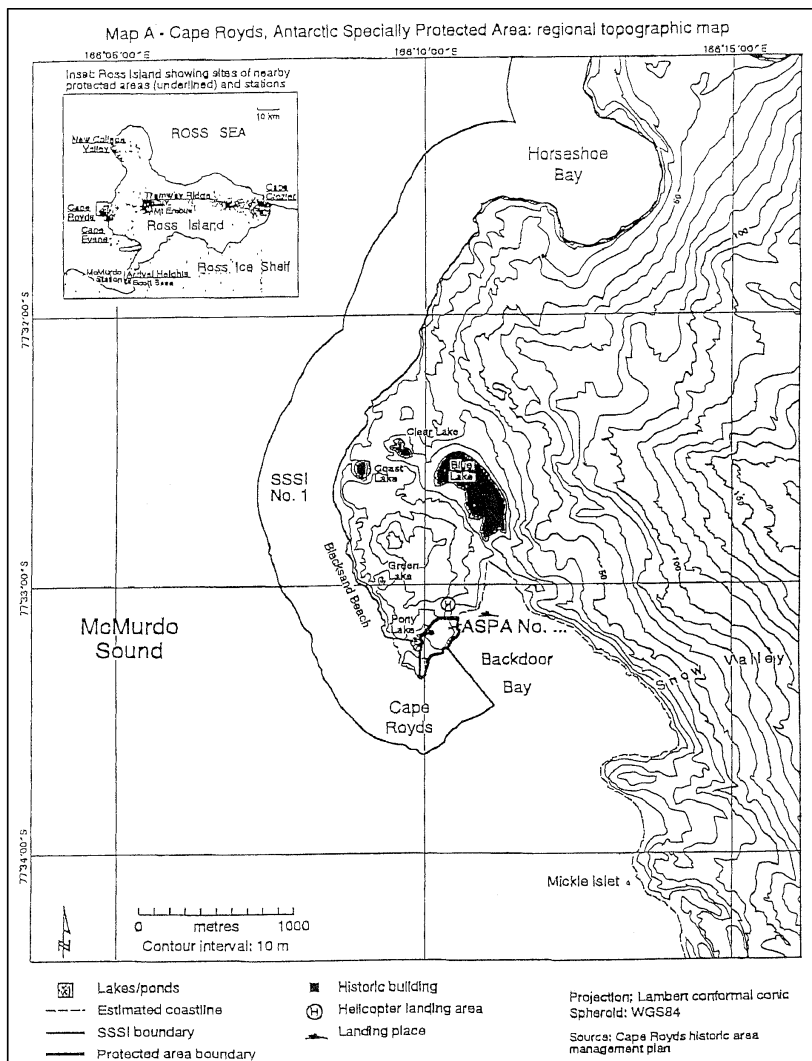
- Visits shall be made as necessary for management purposes.
- Control of the number of visitors.
- National Antarctic Programmes operating in, or those with an interest in, the region shall consult together with a view to ensuring the above provisions are implemented.

4. Period of designation

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

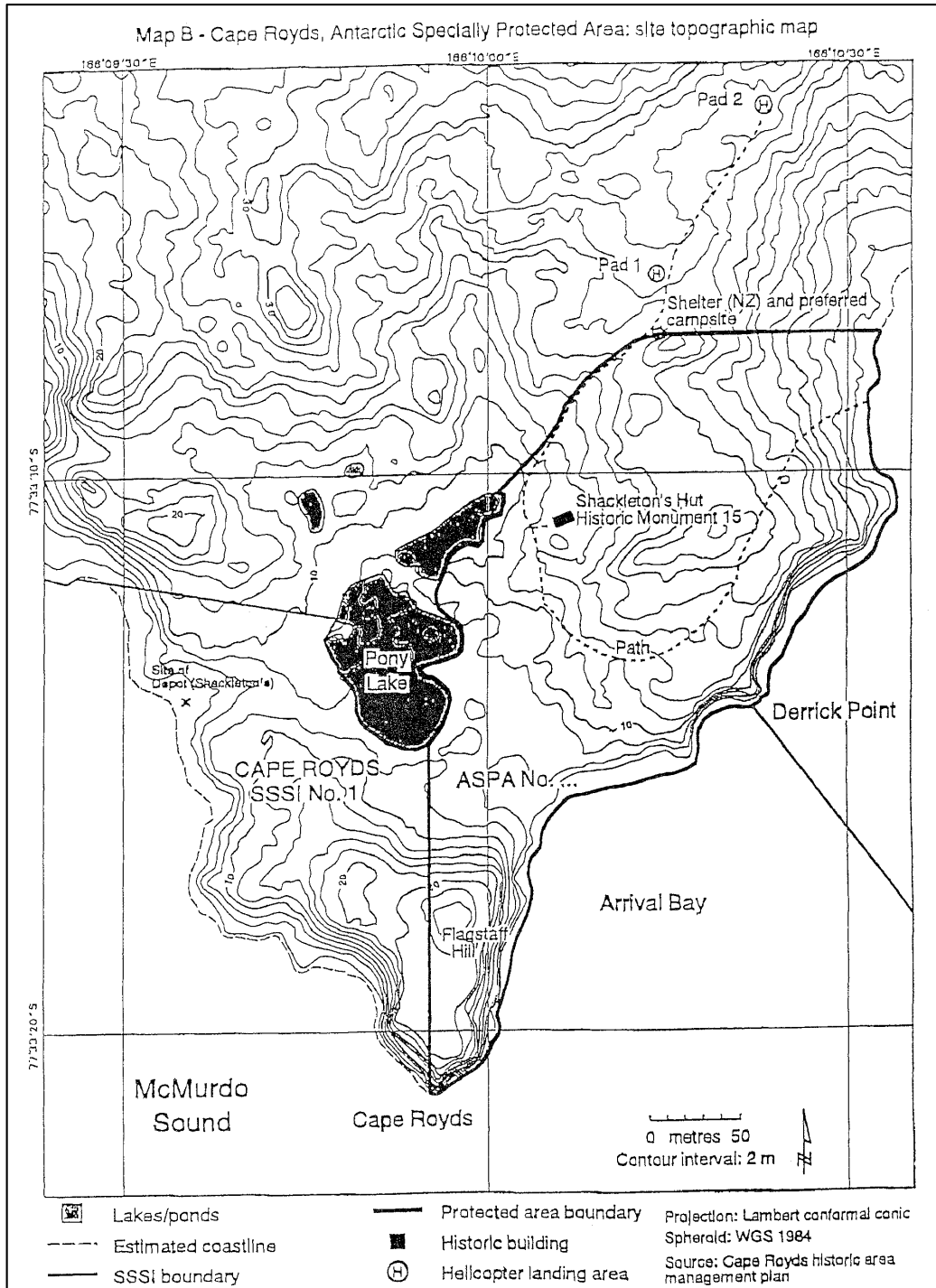
5 Maps

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.



ASP A 156
Map A*

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.



ASP A 156
Map B*

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.

Adélie 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

SSI 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 programme 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.

Antarctic Specially Protected Area No. 157 (Specially Protected Area No. 28, for Historic Site No. 18

Discovery Hut, 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

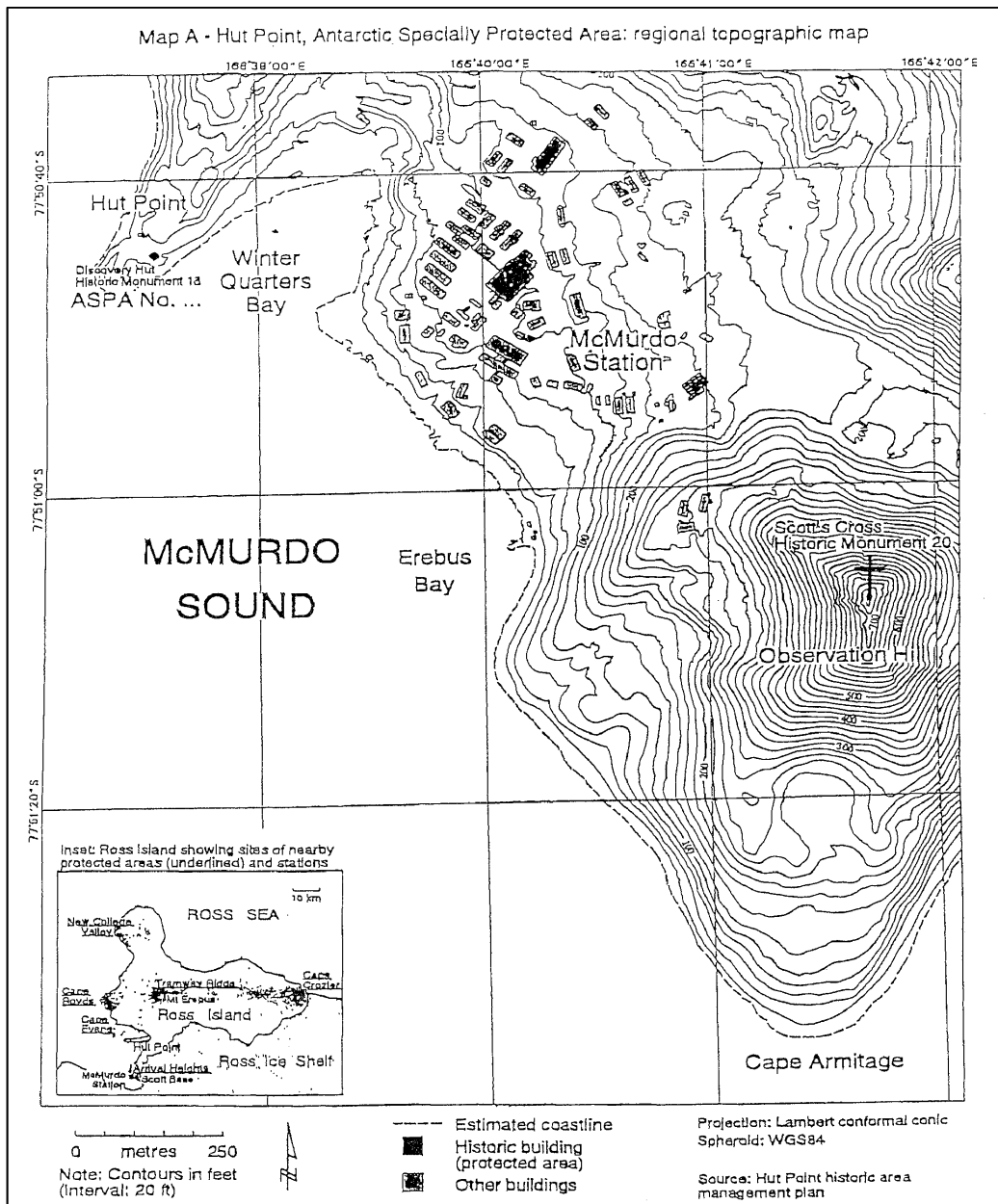
- A regular programme of restoration and preservation work shall be undertaken on the *Discovery* hut and associated artefacts in the Area;
- Visits shall be made as necessary for management purposes;
- Control of the number of visitors.
- National Antarctic Programmes operating in, or those with an 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.

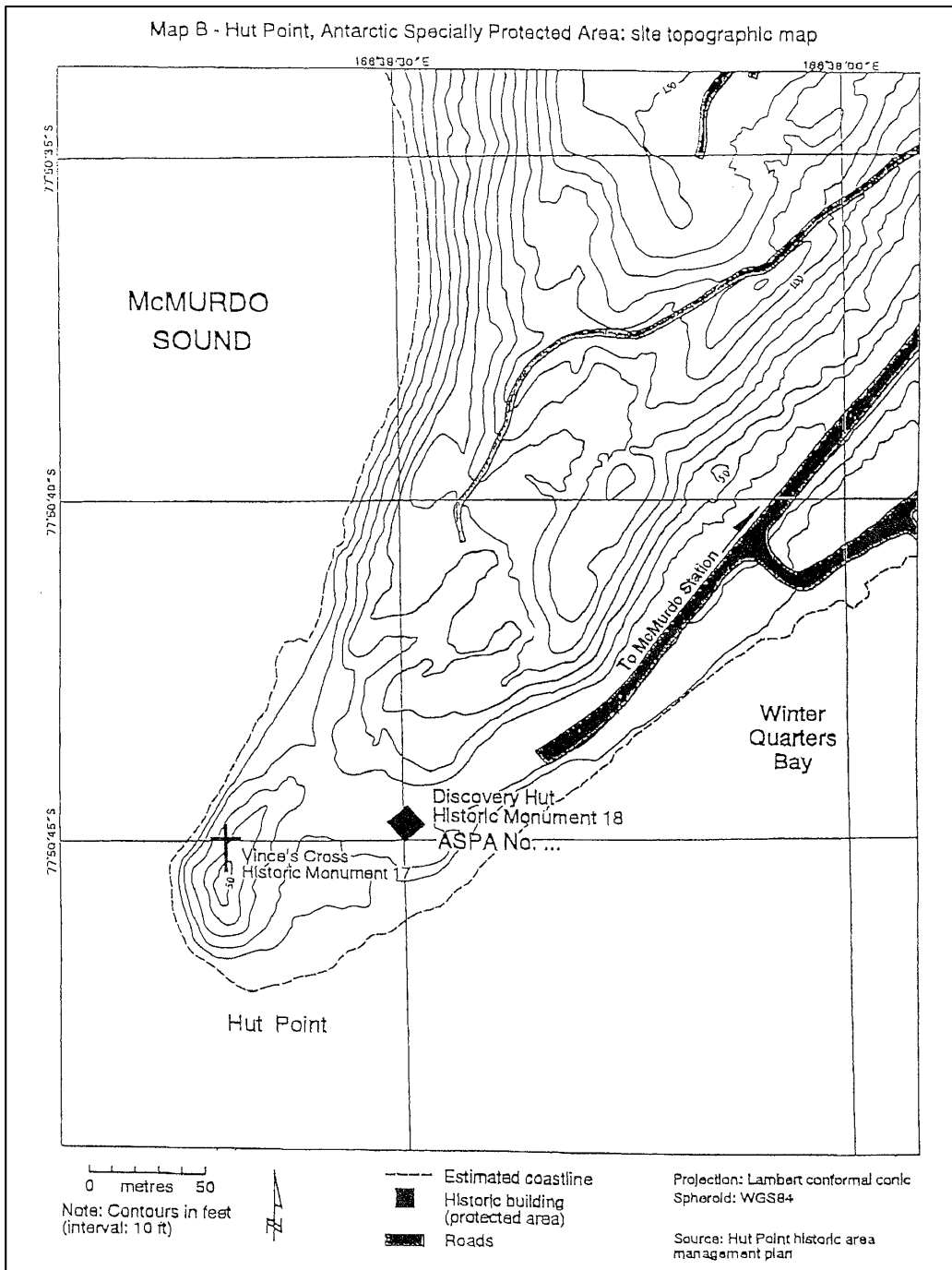
5 Maps

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.



ASPA 157
Map A*

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.



ASPA 157
Map B*

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. 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.

Antarctic Specially Protected Area No. 158 (Specially Protected Area No. 29, Historic Site No. 22)

Huts and associated artifacts, 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 Cross) 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 metres 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

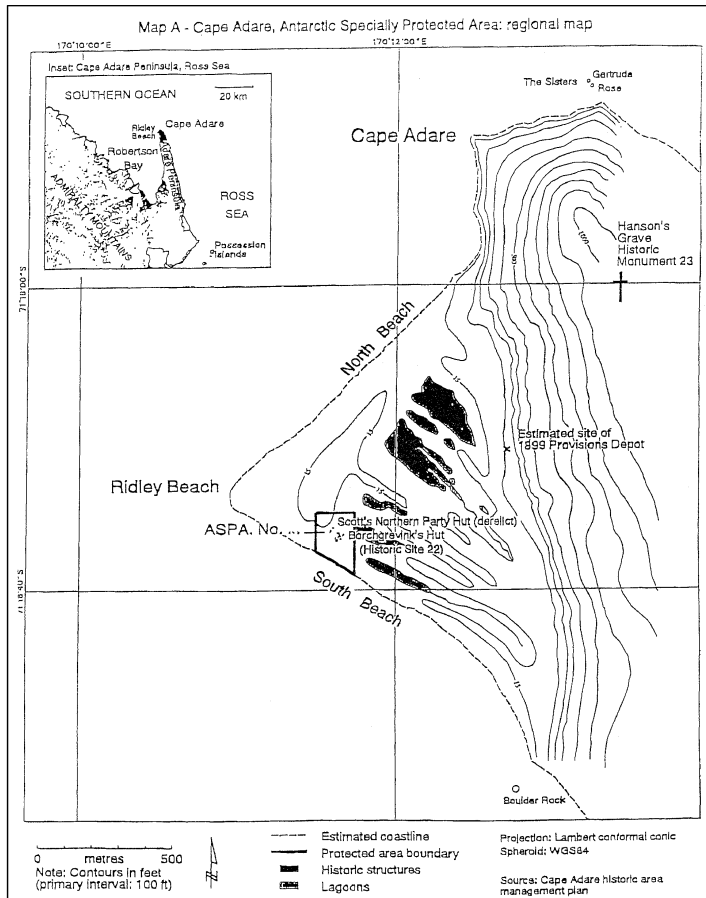
- A programme of restoration and preservation work shall be undertaken on the *Southern Cross* hut and associated structures and artefacts in the Area.
- Visits shall be made as necessary for management purposes.
- Control of the number of visitors.
- National Antarctic Programmes operating in, or those 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.

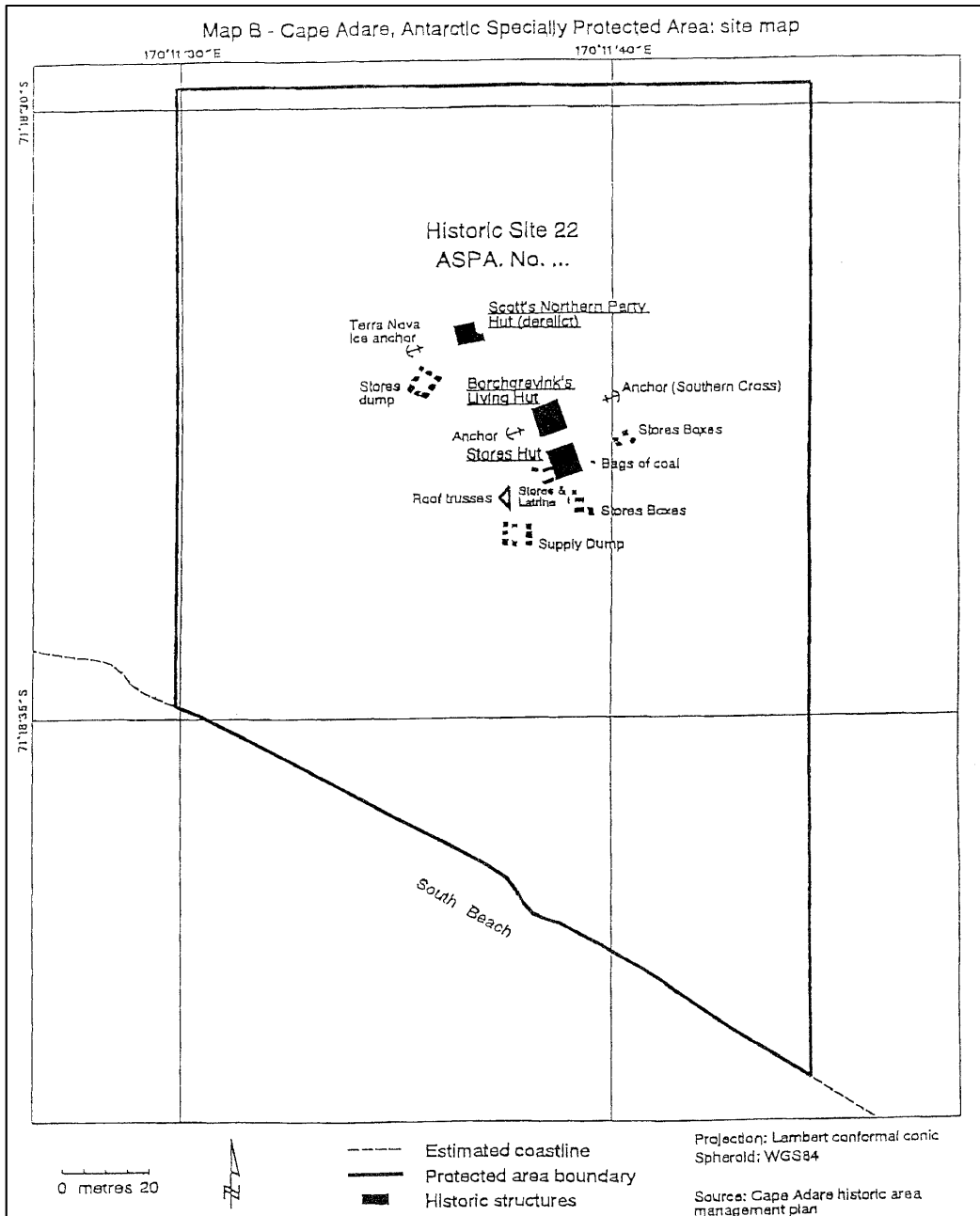
5. Maps

Map A: Cape 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.



ASP A 158
Map A*

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



ASPA 158
Map B*

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 metres 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 within 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 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.

Antarctic Specially Protected Area No. 159 (Site of Special Scientific Interest No 24)

Summit of Mt Melbourne, North Victoria Land

i. Description of Site

Physical Features. Mt Melbourne, North Victoria Land (lat 74°21'S, long 164°42'E) is situated between Wood Bay and Terra Nova Bay, on the west side of Ross Sea, and Campbell Glacier, about 10 km to the west. The site comprises all terrain above the 2200 m contour surrounding the main crater of Mt Melbourne. The location of the site and its main features are shown in the attached maps.

Topography. In profile, Mt Melbourne is an almost perfect low-angle volcanic cone rising to 2732 m a.s.l., showing only slight dissection and little or no glacial erosion. Many smaller basaltic cones and mounds occur near the base and on the flanks of the mountain. The summit caldera is about 1 km in diameter and forms a neve for a glacier flowing westward. The two areas of ice-free steaming ground (at A, 'Cryptogam Ridge' and B on the accompanying map) are on the edge of the caldera, with a third area (C) 250 m lower on the northern slopes. 'Cryptogam Ridge', on the southern side of the main crater, is an area of geothermal activity. About 300-400 m of this ridge is ice-free with the remainder covered by numerous ice hummocks. These hummocks are hollow, contain fumaroles and are 1-6 m in diameter and up to 4 m high.

Geology and soils. Mt Melbourne is part of the McMurdo Volcanics which are a line of dormant and extinct volcanoes running along the coast of Victoria Land. The Mt Melbourne area is more likely to be late Quaternary than late Tertiary in age, and the most recent eruption may have been only about 150 years ago. The mountain is a large low-angle strato-volcano containing basalt, trachyandesite and trachyte flows and including pyroclastics. Small basalt scoria cones are scattered around the base, some of which appear to be very recent as they are undissected. Several older slightly dissected cones occur on the summit caldera. Surface ground temperatures vary markedly over distances of centimetres on ice-free warm ground, up to a recorded maximum of 47°C. Random probing to depths of 1 m and detailed temperature transects to depths of 15 cm indicate substrate temperatures of up to 60°C. Within the ice pinnacles soil surface temperatures range from 10°C to over 40°C. Frost heave occurs at some warm areas. Although the substratum is classified as azonal, there are two distinct soil zones within some areas of hot ground probably caused by heat, moisture and gases from below. A typical profile comprises an upper 0-5 cm layer of dark sandy soil with a lower 6-30 cm horizon consisting of large lighter coloured scoria gravels. The upper layer contains organic matter in which there is microbiological activity, including cyanophaecean nitrogen fixation. No clay minerals have been detected.

Meteorology. No detailed data are available for the site. Field party records, during one week in late November 1984, indicate summer air temperatures in the caldera area of -6°C to -20°C, with an absolute minimum of -32°C.

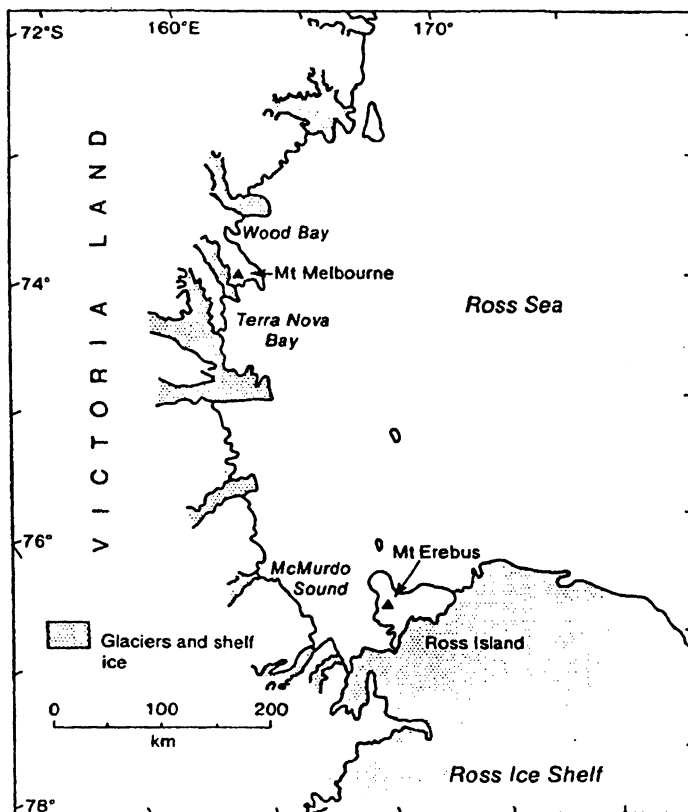
Biological Features. Terrestrial. The warmest areas of ground support patches of yellow-green moss, liverwort and brownish crusts of algae. The site contains an unique bryophyte community comprising the moss *Campylopus pyriformis* and the liverwort *Cephalozia exiliflora*. *C. pyriformis* is not known elsewhere in the Antarctic biome, and *C. exiliflora* is known from only three other (low altitude) areas of continental Antarctica. Other than at a similar geothermal site at the summit of Mt Erebus

(protonemata only) this is the highest altitude at which bryophytes have been found in Antarctica. A single unidentified lichen has been observed as a component of black crusts over small areas of warm soil. The unusual occurrence of shallow peat is evidence of bryophyte growth having taken place over at least several decades.

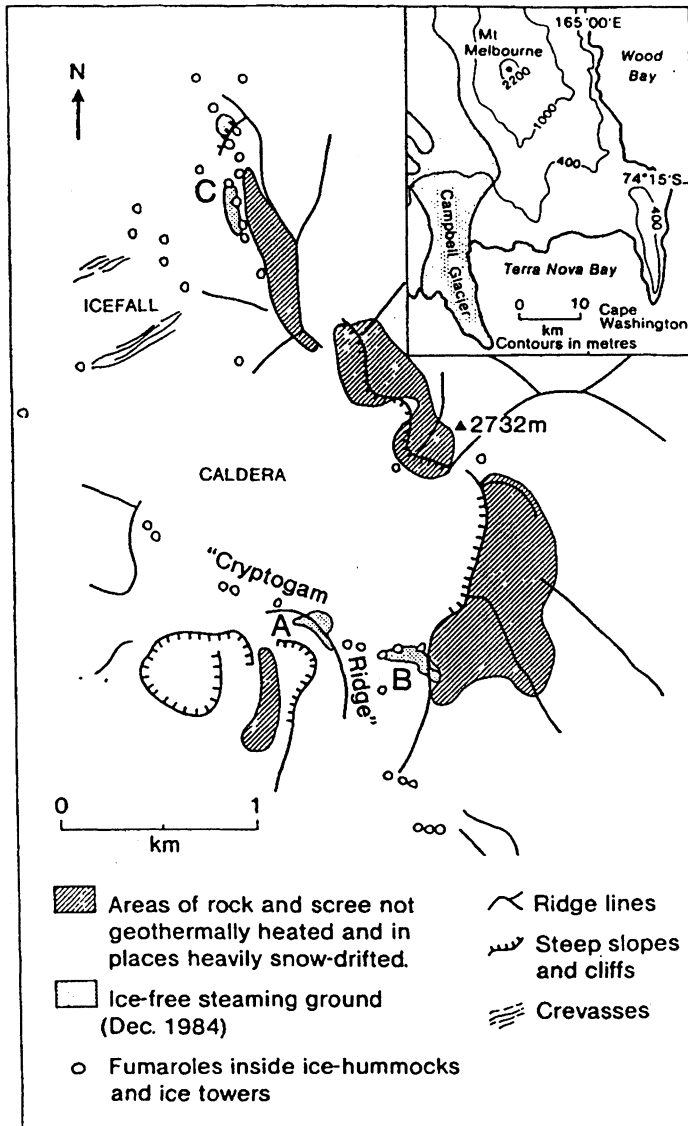
Algae grow over wide areas of the warm ground and on the surface of warm rocks in some fumaroles. The microflora comprises a range of unicellular and filamentous algae, including the green *Chroococcus* sp., *Tolypothrix* sp. and *Stigonema* sp. and the cyanobacteria *Mastigocladus laminosus* and *Pseudococcomyxa simplex*.

Thermotolerant and thermophilic micro-organisms have been isolated from the soil. The only invertebrate reported is a testate amoeba, *Corythion dubium*, amongst the vegetation. The occurrence of plant life is made possible only the water droplets formed by the condensation of steam. Very small 'pools' up to c. 50 cm² and about 1 cm deep have been observed on occasions where dripping condensate gathered in small depressions.

Birds. No observations of birds have been made near the summit of the volcano.



ASPA 159
Map A*



ASPA 159
Map B*

ii. *Reason for designation.* The site is of exceptional scientific interest because of its extensive ice-free geothermal areas, at high altitude, supporting a unique cryptogamic flora and microbiota and accumulations of organic matter. The closest documented, high altitude fumarolic ground is 400 km to the south of the summit of Mt Erebus (see SSSI No 11, Tramway Ridge Mt Erebus), but there the organisms differ significantly from those on Mt Melbourne. Elsewhere in Antarctica vegetation on steam-warmed ground is known only in low altitude maritime areas of the Antarctic Peninsula region where, again, the vegetation differs significantly for botanists, microbiologists, volcanologists and geophysicists. Uncontrolled human activity within this area could cause severe damage by trampling of plants, compacting soil and altering soil temperature gradients, changing rates of steam release and possibly causing the introduction of alien micro-organisms and cryptogamic plants.

iii. Outline of research. There has been little previous research activity in the site. The studies that have been undertaken have involved investigations of geothermal and volcanic activity and a survey of the plant and microbial communities. Future research is likely to include studies of soil microbiology and microfauna, vegetation, volcanology and the geophysics of the area. Mt Melbourne was first sighted in 1841 by James Ross and first climbed in January 1967 by a New Zealand party. Since then the summit area has been visited by New Zealand parties in December 1972 and November 1984. The 1984 party surveyed the biota on 'Cryptogam Ridge'. Brief visits were also made in January 1983 by a United States party and more recently by West German (1984/85) and Italian (1985/86) parties.

iv. Date of expiry of designation. 31 December 1997.

v. Access points. Access to the site is normally by helicopter and landings should be made only on the glacier ice in the caldera, thereby avoiding any of the vegetated or other sensitive areas.

vi. Pedestrian and vehicular routes. No vehicle should be used within the site. Pedestrians should avoid, whenever possible, walking on any obvious areas of warm ground or disturbing any vegetation. Entry to the 'Cryptogam Ridge' area of the site should be made only from either end of the ridge. Entering the ridge directly up its slopes should be avoided.

vii. Other kinds of scientific investigations which would not cause harmful interference. Low impact studies having a minimal effect on the environment of the site.

viii. Scientific sampling. Samples should be taken only for compelling scientific reasons.

ix. Other restraints. To prevent the introduction of foreign organisms sterile protective overclothing should be worn and footwear should be sterilized before entering the site. Sterilized sampling equipment should also be used. All wastes should be removed from the site.

Antarctic Specially Protected Area No. 160 (Site of Special Scientific Interest No. 37)

Botany Bay, Cape Geology, Victoria Land

1. Description of Values to be Protected

The Area at Botany Bay and Cape Geology (Granite Harbour, Victoria Land) has been proposed by New Zealand on the grounds that it is an extremely rich botanical refuge for such a high latitude location (162°34' 00"E, 77°00' 30"S), with a lichen and moss species diversity and abundance that is unique for Southern Victoria Land. In addition to a high diversity and abundance of lichens and mosses there are abundant growths of algae, large populations of invertebrates (collembola, mites, nematodes, rotifers) and a colony (in excess of 40 pairs) of South polar skua (*Catharacta maccormicki*). The area is the type locality for the collembolan *Gomphiocephalus hodgsoni* Carpenter.

The structure and development of the moss and lichen communities is similar to that found more than 10° of latitude further north, with several species at their known southern limit. The Area contains the most southerly record of an hepatic (*Cephaloziella exiliflora*). Of great significance is the size (up to 15cm diameter) of some lichen thalli (eg, *Umbilicaria aprina*). The boulder beach has rich populations of both epilithic and endolithic lichens.

In addition to the biological values described, the Area contains the remains of a rock shelter and associated artefacts of historical importance, known as 'Granite House', designated as Historic Site No. 67 in Measure 4(1995). Constructed by members of the 1910-1913 British Antarctic Expedition, the shelter and associated artefacts are vulnerable to disturbance and are therefore managed as a Managed Zone within the Area, which is subject to access restrictions.

The limited geographical extent of the ecosystem, its unusual ecological features and importance, its exceptional scientific and historical value and the vulnerability of the Area to disturbance through trampling, sampling, pollution or alien introductions, are such that the Area requires long-term special protection.

2. Aims and Objectives

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- allow scientific research on the ecosystem and elements of the ecosystem in particular on lichen and moss species, algae, invertebrates and skuas while ensuring protection from over-sampling;
- allow other scientific research provided it is for compelling reasons which cannot be served elsewhere;
- preserve a part of the natural ecosystem as a reference area for the purpose of future comparative studies;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- allow visits to 'Granite House', but under strict control by Permits;

- 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 within 25 km of the Area;
- Signs illustrating the location, boundaries and clearly stating entry restrictions shall be placed at appropriate locations at the boundaries of the Area and Zones 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 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: Botany Bay and Cape Geology, protected area topographic map.

Map specifications:

Projection: Lambert conformal conic;

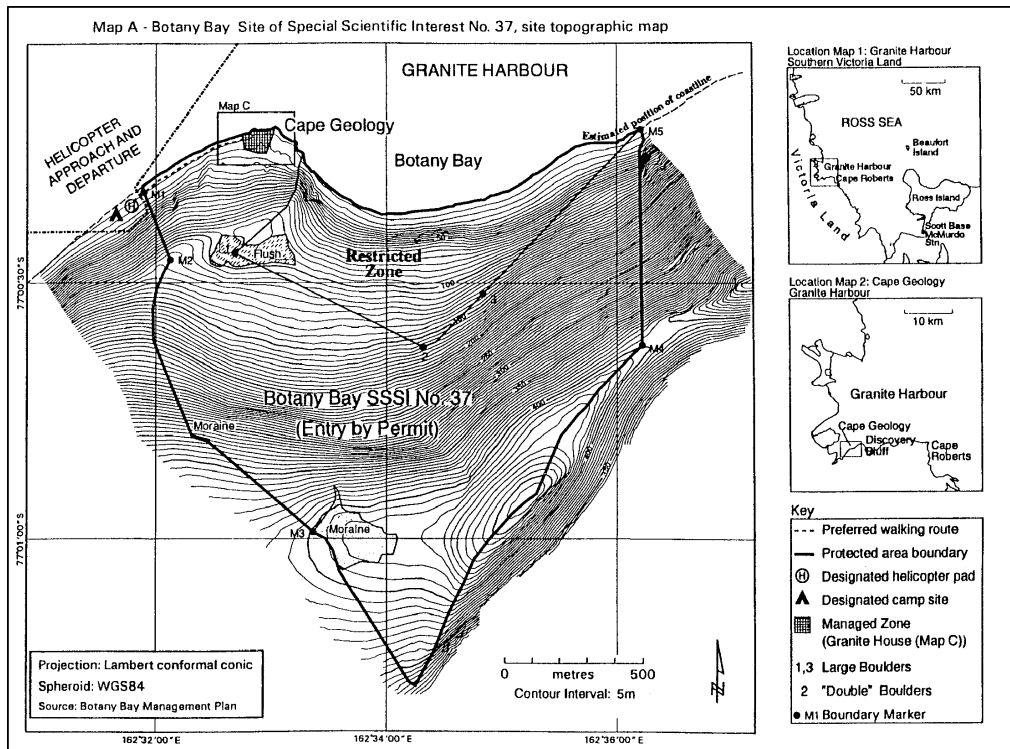
Standard parallels: 1st 79°20'00"S, 2nd 76°40'00"S

Central Meridian: 162°30'00"E Latitude of Origin: 78°01'16.211"S;

Spheroid: WGS84

Insert 1: Southern Victoria Land, Ross Sea and Ross Island, showing location of Granite Harbour

Insert 2: Cape Geology location map, and Granite Harbour region.



ASPA 160

Map A*

6. Description of the Area

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

Cape Geology is situated in the south-western corner of Granite Harbour, southern Victoria Land, at 162°32'52"E, 77°00'14"S, approximately 100 km north-west of Ross Island (Map A, Insets). The Area encompasses much of the catchment above Botany Bay and consists of raised boulder beach terraces, weathered rocky steppes and irregular rock platforms around Cape Geology, extending south to include a well-defined elevated cirque containing a small ice field. The bedrock geology at Cape Geology has been described as a porphyritic grey biotite-granite, with phenocrysts of orthoclase of reddish colour, casting the weathered rock with a reddish tinge.

The northwest corner of the Area is marked by a brass plaque in a boulder (M1, 2 m: Maps A and B) 400 m SW of Cape Geology. The west boundary is defined by a line extending first 260 m SSE from M1 to a large boulder (marked by a cairn) with terrier bolt (M2) at an elevation of 118 m on the ridge above the campsite; thence the boundary extends 250 m up this ridge to a point at 162 m elevation marked by an iron tube with bamboo pole. The west boundary extends a further 300 m up this ridge to a large pointed rock at 255 m elevation near the edge of the permanent ice field. The boundary then extends 150 m south across the ice field to the west edge of a prominent line of exposed rock and moraine in the SW corner of the Area at 325 m elevation. The south boundary follows this line of rock east until the exposure is buried by the ice-field, thence SE across the ice field for 500 m to the edge of a second and more prominent exposure at an elevation of just over 400 m (M3). The boundary follows the upper edge of this exposure and then crosses the ice field SE to an elevation of approximately 325 m where the ice-free eastern boundary ridge and the ice field converge. The east boundary follows the ridge crest for 1550 m in a NE direction to a large pointed rock on the ridge (M4, 392 m) where the east boundary turns to descend due north to the coast at the eastern extremity of the boulder beach of Botany Bay (M5, 5 m). The mean high water mark of the coastline of Botany Bay and Cape Geology forms the northern boundary of the Area.

The Area is extremely rich botanically for such a high-latitude location - it is also one of the richest sites in the whole of continental Antarctica. There is a high diversity and abundance of lichens (more than 30 species) and mosses (eight species), and the structure and development of these communities are similar to those found 10° of latitude further north. Some lichen thalli (e.g. *Umbilicaria aprina*) measure up to 15 cm diameter. The boulder beach has rich populations of both epilithic and endolithic lichens. The Area contains by far the most southerly record of an hepatic (*Cephaloziella exiliflora*) and the mosses *Brycertyrophyllum recurvirostre* and possibly *Ceratodon purpureus*. There are abundant growths of algae (at least 85 taxa), although the algal flora is not considered particularly unusual for the locality. There are large populations of invertebrates (collembola, mites, nematodes, rotifers) and the area is the type locality for the collembolan *Gomphiocephalus hodgsoni* Carpenter. There is a colony of between 40 – 50 breeding pairs (and numerous non-breeders) of the south polar skua (*Catharacta maccormicki*), which is approximately the same number present in 1911-12. No other bird species are known to breed in the Cape Geology area.

6(ii) Restricted and managed zones within the Area

Restricted Zone: An area directly above Botany Bay 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 west boundary of the Restricted Zone is defined by a line from a marker (Iron tube in rock, 20 metres from mean high water mark, elevation 8 m) at the west side of Botany Bay (Map A), extending SW for 170 m up to a second iron tube marker on the crest of the

adjacent ridge (87 m). This boundary extends 100 m to a third iron tube and a cairn (98 m), thence 50 m to a large flat rock in the centre of the main flush (marked '1' on Maps A and B). The south boundary of the Restricted one extends from the flat rock in the flush in a straight line 820 m to the first of two prominent boulders closely adjacent to each other, approximately in the middle of the ice-free slopes above Botany Bay (marked '2' on Maps A and B at 165 m). The east boundary extends 300 m from there to a large rock at 135 m elevation, thence NE downslope to the NE boundary point (M5, 5 m). The north boundary of the Restricted Zone is the mean high water mark of Botany Bay and is coincident with the north boundary of the Area. Access to the Restricted Zone is allowed only for compelling scientific or management (such as inspection or review) purposes which cannot be served elsewhere in the Area.

Managed Zone: Situated at the coast at the northernmost tip of Cape Geology, a Managed Zone is designated to protect historic artifacts and plant communities within this vicinity, yet also to allow access to the rock shelter known as 'Granite House',. Which was designated as Historic Site No. 67 in Measure 4(1995). The Managed Zone is an enclave of approximately 100 m by 80 m that surrounds a rock ridge leading from the coast at Cape Geology to the old shelter. The boundaries are marked on Map C, with the southern-most corner marked by a cairn on a prominent boulder overlooking the rock shelter. The shelter was constructed by members of the 1910-1913 British Antarctic Expedition, and used between December 1911 and January 1912 while the party carried out geological and biological exploration in the vicinity. The structure was build using a natural hollow in the rocks, with walls build up from granite bounders and a roof of seal skins: in December 1993 parts of the walls remained, but while several of the skins were present the roof had collapsed. Access to the Managed Zone may be allowed by Permit, subject to the conditions of this management plan.

6(iii) Structures within and near the Area

The only structures known to exist in the Area are 'Granite House', the boundary survey markers and signposts in appropriate locations.

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

The nearest protected area to Cape Geology is SSSI-3 at Barwick Valley, 50 km distant in a SW direction in the Victoria Land Dry Valleys.

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 and Managed Zones, 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;
- access to the Managed Zone may be permitted for scientific, management, historical, educational or recreational purposes;
- the actions permitted will not jeopardise the ecological, scientific or historic values of the Area;
- 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 an authorized 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

Vehicles are prohibited within the Area and access should be by foot. Helicopters are normally prohibited from landing within the Area: there is a designated site 60 m outside of the Area (162°31' 55"E, 77°00' 19"S: Map A). Access to the landing site should be from the open water / sea ice to the north of the Area. Overflight of the Area lower than 300 m (~1000 ft) above ground level is normally prohibited. When required for essential scientific or management purposes, transient overflight or landing may be allowed: conduct of such anticipated overflights or landings must be specifically authorised by Permit. Use of helicopter smoke grenades within the Area is prohibited unless necessary for safety, and all grenades should be retrieved. All helicopter landing or overflight lower than 300 m AGL is prohibited within the Restricted Zone.

Access into the Area should preferably be from the recommended camping area along a preferred walking route 10-20 m from the coast, which is relatively devoid of vegetation. Visitors should avoid walking on visible vegetation, or unnecessary disturbance to bird populations. Care should be exercised walking in areas of moist ground, 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 the Managed Zone should preferably be from the coast, following the ridge leading up to 'Granite House' (Map C). An alternative route may be used from the west of the Managed Zone if sea-ice travel is unsafe (Maps A-C). Unless specifically authorised by Permit, visitors are prohibited from entering the historic shelter, and are limited to access and viewing from the rock ridge designated for access from the coast in order to prevent damage to the rich vegetation within the Managed Zone. Visitors shall not venture south of 'Granite House', unless specifically authorised by Permit. A maximum of 10 people is permitted to enter the Managed Zone at any one time, and a maximum of 5 people is allowed in the viewing area overlooking 'Granite House' at any one time (Map C).

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;
- limited visits to the Managed Zone for reasons other than science or management subject to the conditions described in this plan;
- activities with the aim of preserving or protecting the historic resources within the Area.

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 a condition of the Permit.

7(iv) Location of field camps

Camping within the Area is prohibited and should be at a site outside of the Area, 100 m from the NW corner (Map A), adjacent to the designated helicopter landing site. This camping site has been disturbed by previous activities and visitors should reoccupy these disturbed positions for tents and other facilities.

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 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 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.

Unless specifically authorised by Permit, visitors are prohibited from interfering with or attempting restoration of 'Granite House' in any way, or from handling, taking or damaging any artifacts found within the Managed Zone. Evidence of recent changes, damage or new artifacts observed should be notified to the appropriate national authority. Relocation or removal of artifacts for the purposes of preservation, protection or to re-establish historical accuracy is allowable by Permit.

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

1. 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, especially those associated with the Historic Site.
2. Any specific sites of long-term monitoring shall be appropriately marked.
3. 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 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, 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.

SECTION THREE: Historic Sites and Monuments in Antarctica

The need to protect historic sites and monuments became apparent as the number of expeditions to the Antarctic increased. At the Seventh Antarctic Treaty Consultative Meeting it was agreed that a list of historic sites and monuments be created. So far 74 sites have been identified. All of them are monuments – human artifacts rather than areas – and many of them are in close proximity to scientific stations. Provision for protection of these sites is contained in Annex V, Article 8. Listed Historic Sites and Monuments may not be damaged, removed, or destroyed.

List of Historic Sites and Monuments Identified and Described by the Proposing Government or Governments

1. Flag mast erected in December 1965 at the South Geographical Pole by the First Argentine Overland Polar Expedition.
2. Rock cairn and plaques at Syowa Station (Lat 69°00'S, Long 39°35'E) in memory of Shin Fukushima, a member of the 4th Japanese Antarctic Research Expedition, who died in October 1960 while performing official duties. The cairn was erected on 11 January 1961, by his colleagues. Some of his ashes repose in the cairn.
3. Rock cairn and plaque on Proclamation Island, Enderby Land, erected in January 1930 by Sir Douglas Mawson (Lat 65°51'S, Long 53°41'E) The cairn and plaque commemorate the landing on Proclamation Island of Sir Douglas Mawson with a party from the British, Australian and New Zealand Antarctic Research Expedition of 1929-31.
4. Station building to which a bust of V. I. Lenin is fixed, together with a plaque in memory of the conquest of the Pole of Inaccessibility by Soviet Antarctic explorers in 1958 (Lat 83°06'S, Long 54°58'E).
5. Rock cairn and plaque at Cape Bruce, Mac.Robertson Land, erected in February 1931 by Sir Douglas Mawson (Lat 67°25'S, Long 60°47'E). The cairn and plaque commemorate the landing on Cape Bruce of Sir Douglas Mawson with a party from the British, Australian and New Zealand Antarctic Research Expedition of 1929-31.
6. Rock cairn at Walkabout Rocks, Vestfold Hills, Princess Elizabeth Land, erected in 1939 by Sir Hubert Wilkins (Lat 68°22'S, Long 78°33'E). The cairn houses a canister containing a record of his visit.
7. Stone with inscribed plaque, erected at Mirny Observatory, Mabus Point, in memory of driver-mechanic Ivan Kharma who perished on fast ice in the performance of official duties in 1956 (Lat 66°33'S, Long 93°01'E).
8. Metal monument-sledge at Mirny Observatory, Mabus Point, with plaque in memory of driver-mechanic Anatoly Shcheglov who perished in the performance of official duties (Lat 66°33'S, Long 93°01'E).
9. Cemetery on Buromskiy Island, near Mirny Observatory, in which are buried Soviet, Czechoslovakian and GDR citizens, members of Soviet Antarctic Expeditions, who perished in the performance of official duties on 3 August, 1960 (Lat 66°32'S, Long 93°01'E).
10. Building (magnetic observatory) at Dobrowolsky Station, Bunger Hills, with plaque in memory of the opening of Oasis Station in 1956 (Lat 66°16'S, Long 100°45'E).

11. Heavy tractor at Vostok Station with plaque in memory of the opening of the Station in 1957 (Lat 78°28'S, Long 106°48'E).
12. Cross and plaque at Cape Denison, George V Land, erected in 1913 by Sir Douglas Mawson on a hill situated 300 metres west by south from the main hut of the Australasian Antarctic Expedition of 1911-14 (Lat 67°00'S, Long 142°42'E). The cross and plaque commemorate Lieutenant B. E. S. Ninnis and Dr. X. Mertz, members of the expedition, who died in 1913 while engaged in the work of the expedition.
13. Hut at Cape Denison, George V Land, built in January 1912 by Sir Douglas Mawson for the Australasian Antarctic Expedition of 1911-14 (Lat 67°00'S, Long 142°42'E). This was the main base of the expedition.
14. Inexpressible Island, Terra Nova Bay, Scott Coast, Site of ice cave at Inexpressible Bay, Terra Nova Bay, constructed in March 1912 by Victor Campbell's Northern Party, British Antarctic Expedition, 1910-13 (Lat 70°54'S, Long 163°43'E). The Party spent the winter of 1912 in this ice cave.
15. Hut at Cape Royds, Ross Island, built in February 1908 by Ernest Shackleton (Lat 77°38'S, Long 166°07'E). Restored in January 1961 by Antarctic Division of New Zealand Department of Scientific and Industrial Research.
16. Hut at Cape Evans, Ross Island, built in January 1911 by Captain Robert Falcon Scott (Lat 77°38'S, Long 166°24'E). Restored in January 1961 by Antarctic Division of New Zealand Department of Scientific and Industrial Research.
17. Cross on Wind Vane Hill, Cape Evans, Ross Island, erected by the Ross Sea Party of Ernest Shackleton's Trans-Antarctic Expedition, 1914-16, in memory of three members of the party who died in the vicinity in 1916 (Lat 77°38'S, Long 166°24'E).
18. Hut at Hut Point, Ross Island, built in February 1902 by Captain Robert Falcon Scott (Lat 77°51'S, Long 166°37'E). Partially restored in January 1964 by the New Zealand Antarctic Society, with assistance from the United States Government.
19. Cross at Hut Point, Ross Island, erected in February 1904 by the British Antarctic Expedition, 1901-04, in memory of T. Vince, a member of that expedition who died in the vicinity. (Lat 77°51'S, Long 166°37'E.)
20. Cross on Observation Hill, Ross Island, erected in January 1913 by the British Antarctic Expedition, 1910-13, in memory of Captain Robert Falcon Scott's party which perished on the return journey from the South Pole, March 1912. (Lat 77°51'S, Long 166°40'E).
21. Stone hut at Cape Crozier, Ross Island, constructed in July 1911 by Edward Wilson's party (British Antarctic Expedition, 1910-13) during the winter journey to collect Emperor penguin eggs. (Lat 77°32'S, Long 169°18'E).

22. Hut at Cape Adare built in February 1899 during *Southern Cross* Expedition led by C. E. Borchgrevink (Lat 71°17'S, Long 170°15'E). There are three huts at Cape Adare; two date from Borchgrevink's expedition, and one from Scott's Northern Party, 1910-11. Only the southernmost Borchgrevink hut survives in a reasonable state of repair.
23. Grave at Cape Adare of Norwegian biologist, Nicolai Hanson, a member of C. E. Borchgrevink's 'Southern Cross' Expedition, 1899-1900 (Lat 71°17'S, Long 170°15'E). This is the first known grave in the Antarctic.
24. Rock cairn, known as 'Amundsen's Cairn', on Mount Betty, Queen Maud Range (Lat 85°11'S, Long 163°45'W) erected by Roald Amundsen on 6 January 1912, on his way back to 'Framheim' from the South Pole.
25. Hut and plaque on Peter I Øy, built by the Norwegian Captain Nils Larsen in February 1929 at Framnaesodden (Lat 68°47'S, Long 90°42'W). The plaque is inscribed 'Norvegia-ekspedisjonen 2/2 1929'.
26. Abandoned installations of Argentine Station 'General San Martin' on Barry Island, Debenham Islands, Marguerite Bay, with cross, flag mast, and monolith built in 1951. (Lat 68°08'S, Long 67°08'W)
27. Cairn with plaque on Megalestris Hill, Petermann Island, erected in 1909 by the second French expedition led by J.-B. Charcot. (Lat 65°10'S, Long 64°10'W). Restored by the British Antarctic Survey in 1958.
28. Rock cairn at Port Charcot, Booth Island, with wooden pillar and plaque inscribed with the names of the first French expedition led by J.-B. Charcot which wintered here in 1904 aboard *Le Français* (Lat 65°03'S, Long 64°01'W).
29. Lighthouse named 'Primero de Mayo' erected on Lambda Island, Melchior Islands, by Argentina in 1942. (Lat 64°18'S, Long 62°59'W). This was the first Argentine light-house in the Antarctic.
30. Shelter at Paradise Harbour erected in 1950 near the Chilean Base 'Gabriel Gonzales Videla' to honour Gabriel Gonzales Videla, the first Head of State to visit the Antarctic. (Lat 64°49'S, Long 62°51'W).
31. Memorial plaque marking the position of a cemetery on Deception Island (Lat 62°59'S, Long 60°34'W) where some 40 Norwegian whalers were buried in the first half of the twentieth century. The cemetery was swept away by a volcanic eruption in February 1969.
32. Concrete monolith erected in 1947, near Arturo Prat Base on Greenwich Island. Point of reference for Chilean Antarctic hydrographic work. (Lat 62°29'S, Long 59°40'W).

33. Shelter and cross with plaque near Arturo Prat Base, Greenwich Island (Lat 62°30'S, Long 59°41'W). Named in memory of Lieutenant-Commander Gonzalez Pacheco, who died tragically while in charge of the station in 1960.
34. Bust of the Chilean naval hero Arturo Prat erected in 1947 at the base of the same name on Greenwich Island. (Lat 62°30'S, Long 59°41'W).
35. Wooden cross and statue of the Virgin of Carmen erected in 1947 near Arturo Prat Base on Greenwich Island (Lat 62°30'S, Long 59°41'W). There is also nearby a metal plaque of Lions International Club.
36. Metal plaque at Potter Cove, King George Island, erected by Eduard Dallmann to commemorate the visit of his German expedition on 1 March, 1874. (Lat 62°13'S, Long 58°42'W).
37. Statue of Bernardo O'Higgins, erected in 1948 in front of the station of the same name (Lat 63°19'S, Long 57°54'W). To honour the first ruler of Chile to envisage the importance of Antarctica.
38. Hut on Snow Hill Island built in February 1902 by the main party of the Swedish South Polar Expedition, led by Otto Nordenskjold. (Lat 64°24'S, Long 57°00'W).
39. Stone hut at Hope Bay built in January 1903 by a party of the Swedish South Polar Expedition. (Lat 63°24'S, Long 56°59'W).
40. Bust of General San Martin, grotto with a statue of the Virgin of Lujan, and a flag mast at Base 'Esperanza', Hope Bay, erected by Argentina in 1955; together with a graveyard with stele in memory of members of Argentine expeditions who died in the area. (Lat 63°24'S, Long 56°59'W).
41. Stone hut on Paulet Island built in February 1903 by C. A. Larsen, Norwegian captain of the wrecked vessel 'Antarctic' of the Swedish South Polar Expedition led by Otto Nordenskjold, together with the grave of a member of that expedition (Lat 63°35'S, Long 55°47'W) and the rock cairn built by the survivors of the wreck at the highest point of the island to draw the attention of rescue expeditions.
42. Area at Scotia Bay, Laurie Island, South Orkney Island, in which are found: stone hut built in 1903 by the Scottish Expedition led by W. S. Bruce; the Argentine Meteorological and magnetic Observatory, built in 1905; and a graveyard with seven tombs (dating from 1903). (Lat 60°46'S, Long 44°40'W).
43. Cross erected in 1955, at a distance of 1,300 metres north-east of the Argentine Base 'General Belgrano' at Piedrabuena Bay, Filchner Ice Shelf (Lat 77°49'S, Long 38°02'W).

44. Plaque erected at the temporary Indian station 'Dakshin Gangotri', Princess Astrid Kyst, Dronning Maud Land, listing the names of the members of the First Indian Antarctic Expedition which landed nearby on 9 January 1982 (Lat 70°45'S, Long 11°38'E).
45. Plaque on Brabant Island, on Metchnikoff Point, Lat 64°02'S, Long 62°34'W, mounted at a height of 70 m on the crest of the moraine separating this point from the glacier and bearing the following inscription: 'This monument was built by François de Gerlache and other members of the Joint Services Expedition 1983-85 to commemorate the first landing on Brabant Island by the Belgian Antarctic expedition 1897-99: Adrien de Gerlache (Belgium) leader, Roald Amundsen (Norway), Henryk Arctowski (Poland), Frederick Cook (USA) and Emile Danco (Belgium) camped nearby from 30 January to 6 February 1898'.
46. All the buildings and installations of Port Martin base, Terre Adélie (Lat 66°49'S, Long 141°24'E) constructed in 1950 by the 3rd French expedition in Terre Adélie and partly destroyed by fire during the night of 23 to 24 January 1952.
47. Wooden building called 'Base Marret' on the Ile des Pétrels, Terre Adélie (Lat 66°40'S, Long 140°01'E) where seven men under the command of Mario Marret overwintered in 1952 following the fire at Port Martin base.
48. Cross erected on the North-East headland of the Ile des Pétrels, Terre Adélie (Lat 66°40'S, Long 140°01'E) in memory of André Prudhomme, head meteorologist in the 3rd International Geophysical Year expedition who disappeared during a storm on 7 January 1959.
49. The concrete pillar erected by the First Polish Antarctic Expedition at Dobrolowski station on the Bunger Hill to measure acceleration due to gravity $g = 982,439.4 \text{ mgal} \pm 0.4 \text{ mgal}$ in relation to Warsaw, according to the Potsdam system, in January 1959 (Lat 66°16.3'S, Long 100°45'E, h = 35.4m).
50. A brass plaque bearing the Polish eagle, the national emblem of Poland, the dates 1975 and 1976, and the following text in Polish, English and Russian: "In memory of the landing of members of the first Polish Antarctic marine research expedition on the vessels 'Profesor Siedlecki' and 'Tazar' in February 1976". This plaque, south-west of the Chilean and Soviet stations, is mounted on a cliff facing Maxwell Bay, Fildes Peninsula, King George Island.
51. The grave of Włodzimierz Puchalski, surmounted by an iron cross, on a hill to the south of Arctowski station on King George Island. W. Puchalski, was an artist, a producer of documentary nature films, who died on 19 January 1979 whilst working at the station.
52. Monolith erected to commemorate the establishment on 20 February 1985 by the People's Republic of China of the 'Great Wall Station' (Lat 62°13'S, Long 58°58'W)

on Fildes Peninsula, King George Island, in the South Shetland Islands. Engraved on the monolith is the following inscription in Chinese: ‘Great Wall Station, First Chinese Antarctic Research Expedition, 20 February 1985’.

53. Monoliths and Commemorative Plaques celebrating the rescue of survivors of the British ship ‘Endurance’ by the Chilean Navy cutter ‘Yelcho’ displaying the following words:

“Here, on August 30th., 1916, the Chilean Navy cutter ‘Yelcho’ commanded by Pilot Luis Pardo Villalón rescued the 22 men from the Shackleton Expedition who survived the wreck of the ‘Endurance’ living for four and one half months in this Island”

The Monolith and the plaques have been placed on Elephant Island (61°03' Lat.S., 54°50' Long.W.) and their replicas on the Chilean bases ‘Arturo Prat’ (62°30' Lat.S., 59°49' Long.W.) and ‘Rodolfo Marsh’ (62°12' Lat.S., 62°12' Long.W.). Bronze busts of the pilot Luis Pardo Villalón were placed on the three above-mentioned monoliths during the XXIVth Chilean Antarctic Scientific Expedition in 1987–88.

54. Richard E. Byrd Historic Monument, McMurdo Station, Antarctica (77°51'S, 166°40'E). Bronze bust on black marble, 5ft high x 2ft square, on wood platform, bearing inscriptions describing the polar achievements of Richard Evelyn Byrd. Erected at McMurdo Station (77°51'S, 166°40'E) in 1965.

55. East Base, Antarctica, Stonington Island (68°11'S, 67°00'W). Buildings and artefacts at East Base, Stonington Island and their immediate environs. These structures were erected and used during two U.S. wintering expeditions: the Antarctic Service Expedition (1939-1941) and the Ronne Antarctic Research Expedition (1947–1948)). The size of the historic area is approximately 1,000 meters in the north-south direction (from the beach to Northeast Glacier adjacent to Back Bay) and approximately 500 metres in the east-west direction.

56. Waterboat Point, Danco Coast, Antarctic Peninsula (64°49'S, 62°52'W). The remains and immediate environs of the Waterboat Point hut, situated close to the unoccupied Chilean station, ‘President Gabriel González Videla’. The Waterboat Point hut, of which only the base of the boat, roots of door posts and an outline of the hut and extension still exist, was occupied by the UK two-man expedition of Bagshawe and Lester in 1921–22. This was, and indeed remains, the smallest expedition ever to overwinter in Antarctica.

57. Commemorative plaque at Yankee Bay, MacFarlane Strait, Greenwich Island, South Shetland Islands, near the Chilean refuge located at latitude 62°32'S, and longitude 59°45'W, to the Memory of Captain Robert MacFarlane, who in 1820 explored the Antarctic Peninsula area in the brigantine *Dragón*.

58. Cairn with memorial plaque erected at Whalers’ Bay, Deception Island, South Shetland Islands, in the vicinity of the whalers’ cemetery (Historic Monument No. 31)

62°59'S, 60°34'W, to honour Captain Adolfus Amandus Andresen, Antarctic pioneer who was first to establish a whaling operation at Deception Island in 1906.

59. A cairn on Half Moon beach, Cape Shirreff, Livingston Island, South Shetland Islands, commemorating the officers, soldiers and seamen on board the San Telmo, which sank in September 1819; possibly the first people to live and die in the wastes of Antarctica.

60. Wooden plaque and rock cairn located at Penguins Bay, southern coast of Seymour Island (Marambio), James Ross Archipelago (64°16'00"S, 56°39'10"W). This plaque was placed on 10 November 1903 by the crew of a rescue mission of the Argentinian Corvette 'Uruguay' in the site where they met members of the Swedish expedition led by Dr Otto Nordenskjöld. The text of the wooden plaque reads as follows:

“10.XI.1903 'Uruguay' (Argentine Navy) in its journey to give assistance to the Swedish Antarctic expedition.”

In January 1990, a rock cairn was erected by Argentina in memory of this event in the place where the plaque is located.

61. Port Lockroy, Base A, on Goudier Island, off Wiencke Island, Antarctic Peninsula (Lat 64°49' S. Long 63°31' W). Of historic importance as an Operation Tabarin base and for scientific research.

62. Argentine Islands, Base F (Wordie House), South-west corner of Winter Island, one of the group known as the Argentine Islands (Lat 65°15' S. Long 64°16' W). Of historic interest as an example of an early British scientific base.

63. Horseshoe Island, Base Y. Marguerite Bay, West Graham Land (Lat 67°49' S. Long 67°18' W). Noteworthy as a relatively unaltered and completely equipped base of a later period. Blaiklock, the refuge hut nearby, is taken to be an integral part of the base.

64. Stonington Island, Base E, Northern end of Stonington Island, Marguerite Bay, West Graham Land (Long 68°11' S. 67°00' W). Of historical importance in the early period of exploration and later British Antarctic Survey (BAS) history of the 1960s and 70s.

65. Message Post, Svend Foyn Island. A pole with a box attached was placed on 16 January 1895 during the whaling expedition of Henryk Bull and Captain Leonard Kristensen of the ship "Antarctica." It was examined and found intact by the British Antarctic Expedition of 1898-1900 and then sighted from the beach by the USS Edisto in 1956 and USCGS Glacier in 1965 (latitude approximately 71°52'S, longitude 171°10'E).

66. Prestrud's Cairn, at the foot of main bluff Scott Nunataks, Queen Alexandra Mountains. A small rock cairn at the foot of the main bluff on the north side of the Aunataks by Lieutenant K. Prestrud on 3 December 1911 during the Norwegian Antarctic Expedition of 1910- 1912 (latitude 77°12' S. longitude 154°30' W).

67. Rock Shelter "Granite House", Cape Geology, Granite Harbour. This shelter was constructed in December 1911 for use as a field kitchen by Taylor's second geological excursion during the British Antarctic Expedition of 1910-1913. It was enclosed on three sides with granite boulder walls and used as a sledge to form a roof tree which supported seal skins anchored by heavy rocks (latitude 77°00'E, longitude 162°32'E). A 1981 inspection of the "house" found it in good condition although the sledge had begun to disintegrate. The most recent visit to the site in 1990 reported that this deterioration was accelerating.

68. Depot, Hells Gate Moraine, Inexpressible Island, Terra Nova Bay. An emergency depot, consisting of a sledge loaded with supplies and equipment, was placed on 25 January 1913 by the British Antarctic Expedition at the close of the 1910-1913 expedition. The depot was established by the crew of the Terra Nova to provide security in the event the ship was unable to return and pick them up (latitude 74°56'S, longitude 163°48'E). In 1994, the sledge and supplies were removed in order to stabilise their condition as wind and scoria particles had started to cause rapid deterioration.

69. Message Post, Cape Crozier. Erected on 22 January 1902 by Captain Robert F Scott's Discovery Expedition (the National Antarctic Expedition of 1901-1904) and consists of a post to which a metal cylinder was attached containing an account of the Expedition's movements. It was intended to provide information for the expedition relief ships (latitude 77°27'S, longitude 169°16'E). The message post, although weathered, still stands, its grain blasted into high relief by countless storms. The record cylinder no longer exists.

70. Message Post, Cape Wadsworth Coulman Island. A metal cylinder nailed to a red pole 8 meters above sea level placed by Captain R. F. Scott on 15 January 1902. He also painted the rocks behind the post red and white to make it more conspicuous (latitude 73°19'S, longitude 169°47'E).

71. Whalers Bay Whaling Station, Whalers Bay, Deception Island. Established in 1906 by Captain Adolfo Andresen. Of historical importance as an example of an Antarctic whaling station.

72. Mikkelsen Cairn, Tryne Islands, Vestfold Hills. A rock cairn and a wooden mast erected by the landing party led by Captain Klarius Mikkelsen of the Norwegian whaling ship Thorshavn and including Caroline Mikkelsen, Captain Mikkelsen's wife, the first woman to set foot on East Antarctica. The cairn, at latitude 68°22'34"S longitude 78°24'33"E was discovered by Australian National Antarctic Research Expedition field parties in 1957 and again in 1995.

73. Memorial Cross for the 1979 Mount Erebus Crash Victims, Lewis Bay, Ross Island. A cross of stainless steel which was erected in January 1987 on a rocky promontory three kilometres from the Mount Erebus crash site in memory of the 257

people of different nationalities who lost their lives when the aircraft in which they were travelling crashed into the lower slopes of Mount Erebus, Ross Island. The Cross was erected as a mark of respect and in remembrance of those who died in this tragedy.

74. The south-west coast of Elephant Island between the southern side of Mensa Bay (61°10'S, 55°24'W) and Cape Lookout (61°17'S, 55°13'W), including all of the fore-shore and intertidal areas, in which the wreckage of a large wooden sailing ship has been found.

**SECTION FOUR:
Permit Application Form
(NSF Form 1078)**

According to the regulations pursuant to the Antarctic Conservation Act as amended by the Antarctic Science, Tourism, and Conservation Act, a permit is required to “take” native animals or birds, engage in harmful interference, enter Antarctic Specially Protected Areas, introduce nonindigenous species, or export any antarctic fauna and flora into the United States.

Applicants should note that processing a permit application takes a minimum of 65 days due to the required 30-day public comment period [Section 670.9(g)]. Questions on the Antarctic Conservation Act and requests for application forms should be directed to:

Nadene Kennedy, Permit Officer
Office of Polar Programs, Room 755
National Science Foundation
4201 Wilson Boulevard
Arlington, Virginia 22230

Tel: (703) 292-7405
Fax: (703) 292-9081
E-mail: nkennedy@nsf.gov

A copy of the Antarctic Conservation Act Application and Permit Form follows. Permits also are discussed in the summary section of this book.

NATIONAL SCIENCE FOUNDATION ARLINGTON, VIRGINIA 22230		ANTARCTIC CONSERVATION ACT APPLICATION AND PERMIT FORM			PROPOSAL NO.		
1. TYPE OF PERMIT REQUESTED <input type="checkbox"/> TAKE <input type="checkbox"/> IMPORT INTO USA—PORT OF ENTRY _____ <input type="checkbox"/> HARMFUL INTERFERENCE <input type="checkbox"/> ENTER ANTARCTIC SPECIALLY PROTECTED AREA <input type="checkbox"/> EXPORT FROM USA <input type="checkbox"/> INTRODUCE NON-INDIGENOUS SPECIES INTO ANTARCTICA							
2. NAME, ADDRESS, PHONE/FAX NO. AND E-MAIL ADDRESS OF APPLICANT (IF A CORPORATION, FIRM, PARTNERSHIP, INSTITUTION, OR AGENCY, EITHER PUBLIC OR PRIVATE, COMPLETE BLOCK 3).							
3. NAME AND ADDRESS OF PRESIDENT OR PRINCIPAL OFFICER				4. IF APPLICANT IS AN INDIVIDUAL, INCLUDE BUSINESS OR INSTITUTIONAL AFFILIATION			
5. NAME OF APPLICANT'S AGENTS (FIELD PARTY MEMBERS), IF ANY (USE "TBA" IF NAMES UNKNOWN)					6. DESIRED EFFECTIVE DATES		
7. LOCATION(S)—INCLUDE MANNER OF TAKING OR HARMFUL INTERFERENCE AND PROPOSED ACCESS TO THE LOCATION							
8. SPECIMEN INFORMATION							
SPECIES	NUMBER	AGE	SEX	SIZE	CONDITION	IMPORT TO USA	ULTIMATE DISPOSITION
CERTIFICATION							
I certify that the information submitted in this application for a permit is complete and accurate to the best of my knowledge and belief. Any false statement will subject me to the criminal penalties of 18 U.S.C. 1001.							
SIGNATURE					DATE		
FOR NSF USE ONLY							
This application for a permit under the Antarctic Conservation Act, P.L. 95-541, as amended, and NSF regulations contained in Title 45 Part 670 of the Code of Federal Regulations is approved subject to the following conditions:							
THIS PERMIT EXPIRES ON: _____ (Date)							
TYPED NAME AND TITLE AND SIGNATURE OF NSF AUTHORIZING OFFICIAL					DATE		

9. DESCRIPTION OF ACTIVITY FOR WHICH PERMIT IS NEEDED AND JUSTIFICATION FOR PROJECT. ALSO INCLUDE HERE ADDITIONAL INFORMATION RELATING TO THE SPECIFIC ACTION FOR WHICH THE PERMIT IS BEING SOUGHT.

PRIVACY ACT AND PUBLIC BURDEN STATEMENTS

The information requested in this application is solicited under the authority of the Antarctic Conservation Act (ACA), as amended, the National Science Foundation Act of 1950, as amended, and NSF regulations at 45 CFR Part 670. The information will be used in administration of the ACA, particularly to make a determination on eligibility for an ACA permit. The information requested may be disclosed to other Federal agencies or a court, administrative, or adjudicative body involved in implementing or enforcing the ACA; to Federal, state, or local agencies, or foreign governments, where necessary to obtain records in connection with an investigation, or to persons, including witnesses, who may have information, documents, or knowledge relevant to an ACA investigation or enforcement proceeding; to other Federal agencies when relevant to a decision by that agency on a security clearance, on the award of a contract or grant, on the issuance of a license or other benefit, or on a disciplinary or other administrative action concerning its employee; to government contractors, experts, volunteers and researchers as necessary to complete assigned work; to a grantee institution or contractor in connection with an investigation or enforcement proceeding where an ACA violation is alleged against it or one of its employees, researchers, or subcontractors; and to another Federal agency, court or party in a court or Federal administrative proceeding if the government is a party. See Systems of Records, NSF-56, "Antarctic Conservation Act Files," 59 Federal Register 5784 (February 8, 1994). Submission of this information is voluntary. However, failure to provide full and complete information necessary for an eligibility determination may reduce the possibility of receiving a permit.

Public reporting burden for this collection of information is estimated to average one half hour per response, including the time for reviewing instructions. Send comments regarding this burden estimate and any other aspect of this collection of information, including suggestions to reduce this burden, to the NSF Reports Clearance Officer at c/o the address directly below.

MAIL THIS
APPLICATION
TO:

OFFICE OF POLAR PROGRAMS (PERMIT OFFICE)
NATIONAL SCIENCE FOUNDATION, ROOM 755
ARLINGTON, VIRGINIA 22230

Appendix A:
Antarctic Conservation Act of 1978 as amended by the
Antarctic Science, Tourism, and Conservation Act of 1996
(Public Law 95-541 as amended by Public Law 104-227)

§ 2401. Congressional findings and declaration of purpose.

(a) Findings

The Congress finds that –

- (1) for well over a quarter of a century, scientific investigation has been the principal activity of the Federal Government and United States nationals in Antarctica;
- (2) more recently, interest of American tourists in Antarctica has increased;
- (3) as the lead civilian agency in Antarctica, the National Science Foundation has long had responsibility for ensuring that United States scientific activities and tourism, and their supporting logistics operations, are conducted with an eye to preserving the unique values of the Antarctic region;
- (4) the Antarctic Treaty and the Protocol establish a firm foundation for the conservation of Antarctic resources, for the continuation of international cooperation and the freedom of scientific investigation in Antarctica; and
- (5) the Antarctic Treaty and the Protocol establish international mechanisms and create legal obligations necessary for the maintenance of Antarctica as a natural reserve devoted to peace and science.

(b) Purpose

The purpose of this chapter is to provide for the conservation and protection of the fauna and flora of Antarctica, and of the ecosystem upon which such fauna and flora depend, consistent with the Antarctic Treaty and the Protocol.

§ 2402. Definitions

For purposes of this chapter -

- (1) the term "Administrator" means the Administrator of the Environmental Protection Agency;
- (2) the term "Antarctica" means the area south of 60 degrees south latitude;

- (3) the term "Antarctic Specially Protected Area" means an area identified as such pursuant to Annex V to the Protocol;
- (4) the term "Director" means the Director of the National Science Foundation;
- (5) the term "harmful interference" means -
 - (A) flying or landing helicopters or other aircraft in a manner that disturbs concentrations of birds or seals;
 - (B) using vehicles or vessels, including hovercraft and small boats, in a manner that disturbs concentrations of birds or seals;
 - (C) using explosives or firearms in a manner that disturbs concentrations of birds or seals;
 - (D) willfully disturbing breeding or molting birds or concentrations of birds or seals by persons on foot;
 - (E) significantly damaging concentrations of native terrestrial plants by landing aircraft, driving vehicles, or walking on them, or by other means; and
 - (F) any activity that results in the significant adverse modification of habitats of any species or population of native mammal, native bird, native plant, or native invertebrate;
- (6) the term "historic site or monument" means any site or monument listed as an historic site or monument pursuant to Annex V to the Protocol;
- (7) the term "impact" means impact on the Antarctic environment and dependent and associated ecosystems;
- (8) the term "import" means to land on, bring into, or introduce into, or attempt to land on, bring into or introduce into, any place subject to the jurisdiction of the United States, including the 12-mile territorial sea of the United States, whether or not such act constitutes an importation within the meaning of the customs laws of the United States;
- (9) the term "native bird" means any member, at any stage of its life cycle (including eggs), of any species of the class Aves which is indigenous to Antarctica or occurs there seasonally through natural migrations, and includes any part of such member;
- (10) the term "native invertebrate" means any terrestrial or freshwater invertebrate, at any stage of its life cycle, which is indigenous to Antarctica, and includes any part of such invertebrate;
- (11) the term "native mammal" means any member, at any stage of its life cycle, of any species of the class Mammalia, which is indigenous to Antarctica or occurs there seasonally through natural migrations, and includes any part of such member;
- (12) the term "native plant" means any terrestrial or freshwater vegetation, including bryophytes, lichens, fungi, and algae, at any stage of its life cycle (including seeds and other propagules), which is indigenous to Antarctica, and includes any part of such vegetation;
- (13) the term "non-native species" means any species of animal or plant which is not indigenous to Antarctica and does not occur there seasonally through natural migrations;

- (14) the term "person" has the meaning given that term in section 1 of Title 1 and includes any person subject to the jurisdiction of the United States and any department, agency, or other instrumentality of the Federal Government or of any State or local government;
- (15) the term "prohibited product" means any substance banned from introduction onto land or ice shelves or into water in Antarctica pursuant to Annex III to the Protocol;
- (16) the term "prohibited waste" means any substance which must be removed from Antarctica pursuant to Annex III to the Protocol, but does not include materials used for balloon envelopes required for scientific research and weather forecasting;
- (17) the term "Protocol" means the Protocol on Environmental Protection to the Antarctic Treaty, signed October 4, 1991, in Madrid, and all annexes thereto, including any future amendments thereto to which the United States is a party;
- (18) the term "Secretary" means the Secretary of Commerce;
- (19) the term "Specially Protected Species" means any native species designated as a Specially Protected Species pursuant to Annex II to the Protocol;
- (20) the term "take" means to kill, injure, capture, handle, or molest a native mammal or bird, or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected;
- (21) the term "Treaty" means the Antarctic Treaty signed in Washington, DC, on December 1, 1959;
- (22) the term "United States" means the several States of the Union, the District of Columbia, the Commonwealth of Puerto Rico, American Samoa, the Virgin Islands, Guam, the Commonwealth of the Northern Mariana Islands, and any other commonwealth, territory, or possession of the United States; and
- (23) the term "vessel subject to the jurisdiction of the United States" includes any "vessel of the United States" and any "vessel subject to the jurisdiction of the United States" as those terms are defined in section 2432 of this title.

§ 2403. Prohibited acts

(a) In general

It is unlawful for any person -

- (1) to introduce any prohibited product onto land or ice shelves or into water in Antarctica;
- (2) to dispose of any waste onto ice-free land areas or into fresh water systems in Antarctica;
- (3) to dispose of any prohibited waste in Antarctica;
- (4) to engage in open burning of waste;
- (5) to transport passengers to, from, or within Antarctica by any seagoing vessel not required to comply with the Act to Prevent Pollution from Ships (33 U.S.C. 1901 et seq.), unless the person has an agreement with the vessel owner or operator under which the owner or operator is required to comply with Annex IV to the Protocol;

- (6) who organizes, sponsors, operates, or promotes a nongovernmental expedition to Antarctica, and who does business in the United States, to fail to notify all members of the expedition of the environmental protection obligations of this chapter, and of actions which members must take, or not take, in order to comply with those obligations;
- (7) to damage, remove, or destroy a historic site or monument;
- (8) to refuse permission to any authorized officer or employee of the United States to board a vessel, vehicle, or aircraft of the United States, or subject to the jurisdiction of the United States, for the purpose of conducting any search or inspection in connection with the enforcement of this chapter or any regulation promulgated or permit issued under this chapter;
- (9) to forcibly assault, resist, oppose, impede, intimidate, or interfere with any authorized officer or employee of the United States in the conduct of any search or inspection described in paragraph (8);
- (10) to resist a lawful arrest or detention for any act prohibited by this section;
- (11) to interfere with, delay, or prevent, by any means, the apprehension, arrest, or detention of another person, knowing that such other person has committed any act prohibited by this section;
- (12) to violate any regulation issued under this chapter, or any term or condition of any permit issued to that person under this chapter; or
- (13) to attempt to commit or cause to be committed any act prohibited by this section.

(b) Acts prohibited unless authorized by permit

It is unlawful for any person, unless authorized by a permit issued under this chapter -

- (1) to dispose of any waste in Antarctica (except as otherwise authorized by the Act to Prevent Pollution from Ships (33 U.S.C. 1901 et seq.)) including -
 - (A) disposing of any waste from land into the sea in Antarctica; and
 - (B) incinerating any waste on land or ice shelves in Antarctica, or on board vessels at points of embarkation or disembarkation, other than through the use at remote field sites of incinerator toilets for human waste;
- (2) to introduce into Antarctica any member of a nonnative species;
- (3) to enter or engage in activities within any Antarctic Specially Protected Area;
- (4) to engage in any taking or harmful interference in Antarctica; or
- (5) to receive, acquire, transport, offer for sale, sell, purchase, import, export, or have custody, control, or possession of, any native bird, native mammal, or native plant which the person knows, or in the exercise of due care should have known, was taken in violation of this chapter.

(c) Exception for emergencies

No act described in subsection (a)(1), (2), (3), (4), (5), (7), (12), or (13) of this section or in subsection (b) of this section shall be unlawful if the person committing the act reasonably believed that the act was committed under emergency circumstances involving the safety of human life or of ships, aircraft, or equipment or facilities of high value, or the protection of the environment.

§ 2403a. Environmental impact assessment

(a) Federal activities

- (1)(A) The obligations of the United States under Article 8 of and Annex I to the Protocol shall be implemented by applying the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.) to proposals for Federal agency activities in Antarctica, as specified in this section.
- (B) The obligations contained in section 102(2)(C) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)) shall apply to all proposals for Federal agency activities occurring in Antarctica and affecting the quality of the human environment in Antarctica or dependent or associated ecosystems, only as specified in this section. For purposes of the application of such section 102(2)(C) under this subsection, the term “significantly affecting the quality of the human environment” shall have the same meaning as the term “more than a minor or transitory impact”.
- 2(A) Unless an agency which proposes to conduct a Federal activity in Antarctica determines that the activity will have less than a minor or transitory impact, or unless a comprehensive environmental evaluation is being prepared in accordance with subparagraph (C), the agency shall prepare an initial environmental evaluation in accordance with Article 2 of Annex I to the Protocol.
- (B) If the agency determines, through the preparation of the initial environmental evaluation, that the proposed Federal activity is likely to have no more than a minor or transitory impact, the activity may proceed if appropriate procedures are put in place to assess and verify the impact of the activity.
- (C) If the agency determines, through the preparation of the initial environmental evaluation or otherwise, that a proposed Federal activity is likely to have more than a minor or transitory impact, the agency shall prepare and circulate a comprehensive environmental evaluation in accordance with Article 3 of Annex I to the Protocol, and shall make such comprehensive environmental evaluation publicly available for comment.
- (3) Any agency decision under this section on whether a proposed Federal activity, to which paragraph (2)(C) applies, should proceed, and, if so, whether in its original or in a modified form, shall be based on the comprehensive environmental evaluation as well as other considerations which the agency, in the exercise of its discretion, considers relevant.
- (4) For the purposes of this section, the term “Federal activity” includes all activities conducted under a Federal agency research program in Antarctica, whether or not conducted by a Federal agency.

(b) Federal activities carried out jointly with foreign governments

- (1) For the purposes of this subsection, the term “Antarctic joint activity” means any Federal activity in Antarctica which is proposed to be conducted, or which is conducted jointly or in cooperation with one or more foreign governments. Such term shall be defined in regulations promulgated by such agencies as the President may designate.
- (2) Where the Secretary of State, in cooperation with the lead United States agency planning an Antarctic joint activity, determines that –
 - (A) the major part of the joint activity is being contributed by a government or governments other than the United States;
 - (B) one such government is coordinating the implementation of environmental impact assessment procedures for that activity; and
 - (C) such government has signed, ratified, or acceded to the Protocol, the requirements of subsection (a) of this section shall not apply with respect to that activity.
- (3) In all cases of Antarctic joint activity other than those described in paragraph (2),
- (4) Determinations described in paragraph (2), and agency actions and decisions in connection with assessments of impacts of Antarctic joint activities, shall not be subject to judicial review.

(c) Nongovernmental activities

- (1) The Administrator shall, within 2 years after October 2, 1996, promulgate regulations to provide for –
 - (A) the environmental impact assessment of nongovernmental activities, including tourism, for which the United States is required to give advance notice under paragraph 5 of Article VII of the Treaty; and
 - (B) coordination of the review of information regarding environmental impact assessment received from other Parties under the Protocol.
- (2) Such regulation shall be consistent with Annex I to the Protocol,

(d) Decision to proceed

- (1) No decision shall be taken to proceed with an activity for which a comprehensive environmental evaluation is prepared under this section unless there has been an opportunity for consideration of the draft comprehensive environmental evaluation at an Antarctic Treaty Consultative Meeting, except that no decision to proceed with a proposed activity shall be delayed through the operation of this paragraph for more than 15 months from the date of circulation of the draft comprehensive environmental evaluation pursuant to Article 3(3) of Annex I to the Protocol.
- (2) The Secretary of State shall circulate the final comprehensive environmental evaluation, in accordance with Article 3(6) of Annex I to the Protocol, at least 60 days before the commencement of the activity in Antarctica.

(e) Cases of emergency

The requirements of this section, and of regulations promulgated under this section, shall not apply in cases of emergency relating to the safety of human life or of ships, aircraft, or equipment and facilities of high value, or the protection of the environment, which require an activity to be undertaken without fulfilling those requirements.

(f) Exclusive mechanism

Notwithstanding any other provision of law, the requirements of this section shall constitute the sole and exclusive statutory obligations of the Federal agencies with regard to assessing the environmental impacts of proposed Federal activities occurring in Antarctica.

(g) Decisions on permit applications

The provisions of this section requiring environmental impact assessments (including initial environmental evaluations and comprehensive environmental evaluations) shall not apply to Federal actions with respect to issuing permits under section 2404 of this title.

(h) Publication of notices

Whenever the Secretary of State makes a determination under paragraph (2) of subsection (b) of this section, or receives a draft comprehensive environmental evaluation in accordance with Annex I, Article 3(3) to the Protocol, the Secretary of State shall cause timely notice thereof to be published in the Federal Register.

§ 2404. Permits

(a) In general

The Director may issue permits which authorize acts otherwise prohibited by section 2403(b) of this title.

(b) Applications for permits

- (1) Applications for permits under this section shall be made in such manner and form, and shall contain such information, as the Director shall by regulation prescribe.
- (2) The Director shall publish notice in the Federal Register of each application which is made for a permit under this section. The notice shall invite the submission by interested parties, within 30 days after the date of publication of the notice, of written data, comments, or views with respect to the application. Information received by the Director as a part of any application shall be available to the public as a matter of public record.

(c) Action by appropriate Secretaries on certain permit applications

- (1) If the Director receives an application for a permit under this section requesting authority to undertake any action with respect to -

- (A) any native mammal which is a marine mammal within the meaning of section 1362(5) [1] of this title;
 - (B) any native mammal, native bird, or native plant which is an endangered species or threatened species under the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.); or
 - (C) any native bird which is protected under the Migratory Bird Treaty Act (16 U.S.C. 701 et seq.); the Director shall submit a copy of the application to the Secretary of Commerce or to the Secretary of the Interior, as appropriate (hereinafter in this subsection referred to respectively as the "appropriate Secretary").
- (2) After receiving a copy of any application from the Director under paragraph (1) the appropriate Secretary shall promptly determine, and notify the Director, whether or not any action proposed in the application also requires a permit or other authorization under any law administered by the appropriate Secretary.
- (3) If the appropriate Secretary notifies the Director that any action proposed in the application requires a permit or other authorization under any law administered by the appropriate Secretary, the Director may not issue a permit under this section with respect to such action unless such other required permit or authorization is issued by the appropriate Secretary and a copy thereof is submitted to the Director. The issuance of any permit or other authorization by the appropriate Secretary for the carrying out of any action with respect to any native mammal, native bird, or native plant shall not be deemed to entitle the applicant concerned to the issuance by the Director of a permit under this section.

(d) Issuance of permits

As soon as practicable after receiving any application for a permit under this section, or, in the case of any application to which subsection (c) of this section applies, as soon as practicable after the applicable requirements of such subsection are complied with, the Director shall issue, or deny the issuance of, the permit. Within 10 days after the date of the issuance or denial of a permit under this subsection, the Director shall publish notice of the issuance or denial in the Federal Register.

(e)¹ Terms and conditions of permits

- (1) Each permit issued under this section shall –
- (A) if applicable, specify –
 - (i) the number and species of native mammals, native birds, native plants, or native invertebrates to which the permit applies, and
 - (ii) the manner in which the taking or harmful interference shall be conducted (which manner shall be determined by the Director to be humane) and the area in which it will be conducted;
 - (B) the period during which the permit is valid; and

¹ Two subsections (e) have been designated by Pub.L.95-541, § 5.

- (C) such other terms and conditions as the Director deems necessary and appropriate to ensure that any act authorized under the permit is carried out in a manner consistent with the purpose of this chapter, the criteria set forth in paragraph (2), if applicable, and the regulations prescribed under this chapter.
- (2) The terms and conditions imposed by the Director in any permit issued under this section that authorizes any of the following acts shall be consistent with the following criteria:
 - (A) Permits authorizing the taking or harmful interference within Antarctica of any native mammal or native bird (other than a Specially Protected Species of any such mammal or bird) –
 - (i) may be issued only for the purpose of providing –
 - (I) specimens for scientific study or scientific information, or
 - (II) specimens for museums, zoological gardens, or other educational or cultural institutions or uses; or
 - (III) for unavoidable consequences of scientific activities or the construction and operation of scientific support facilities; and
 - (ii) shall ensure, as far as possible, that –
 - (I) no more native mammals and native birds are taken in any year than can normally be replaced by net natural reproduction in the following breeding season, and
 - (II) the variety of species and the balance of the natural ecological systems within Antarctica are maintained.
 - (B) Permits authorizing the taking of Specially Protected Species may be issued only if –
 - (i) there is a compelling scientific purpose for such taking; and
 - (ii) the actions allowed under any such permit will not any existing natural ecological system, or the survival, of such species.
 - (C) A permit authorizing the entry into an Antarctic Specially Protected Area shall be issued only –
 - (i) if the entry is consistent with an approved management plan, or
 - (ii) if a management plan relating to the area has not been approved but –
 - (I) there is a compelling purpose for such entry which cannot be served elsewhere, and
 - (II) the actions allowed under the permit will not jeopardize the natural ecological system existing in such area.

(e)² Judicial review

Any applicant for a permit may obtain judicial review of the terms and conditions of any permit issued by the Director under this section or of the

² Two subsections (e) have been designated by Pub.L.95-541, § 5.

refusal of the Director to issue such a permit. Such review, which shall be pursuant to chapter 7 of title 5, may be initiated by filing a petition for review in the United States district court for the district wherein the applicant for a permit resides, or has his principal place of business, or in the United States District Court for the District of Columbia, within 60 days after the date on which such permit is issued or denied.

(f) Modification, suspension, and revocation

- (1) The Director may modify, suspend, or revoke, in whole or part, any permit issued under this section -
 - (A) in order to make the permit consistent with any change made after the date of issuance of the permit, to any regulation prescribed under section 2405 of this title;
 - (B) if there is any change in conditions which makes the permit inconsistent with the purpose of this chapter; or
 - (C) in any case in which there has been any violation of any term or condition of the permit, any regulation prescribed under this chapter, or any provision of this chapter.
- (2) Whenever the Director proposes any modification, suspension, or revocation of a permit under this subsection, the permittee shall be afforded opportunity, after due notice, for a hearing by the Director with respect to such proposed modification, suspension, or revocation. If a hearing is requested, the action proposed by the Director shall not take effect before a decision is issued by him after the hearing, unless the proposed action is taken by the Director to meet an emergency situation. Any action taken by the Director after such a hearing is subject to judicial review on the same basis as is provided for with respect to permit applications under subsection (e) of this section.
- (3) Notice of the modification, suspension, or revocation of any permit by the Director shall be published in the Federal Register within 10 days from the date of the Director's decision.

(g) Permit fees

The Director may establish and charge fees for processing applications for permits under this section. The amount of such fees shall be commensurate with the administrative costs incurred by the Director in undertaking such processing.

§ 2405. Regulations

(a) Regulations to be issued by Director

- (1) The Director shall issue such regulations as are necessary and appropriate to implement Annex II and Annex V to the Protocol and the provisions of this chapter which implement those annexes, including section 2403(b)(2), (3), (4), and (5) of this title. The Director shall designate as native species –
 - (A) each species of the class Aves;
 - (B) each species of the class Mammalia; and

- (C) each species of plant, which is indigenous to Antarctica or which occurs there seasonally through natural migrations.
- (2) The Director, with the concurrence of the Administrator, shall issue such regulations as are necessary and appropriate to implement Annex III to the Protocol and the provisions of this chapter which implement that Annex, including section 2403(a)(1), (2), (3) and (4), of this title, and section 2403(b)(1) of this title.
- (3) The Director shall issue such regulations as are necessary and appropriate to implement Article 15 of the Protocol with respect to land areas and ice shelves in Antarctica.
- (4) The Director shall issue such additional regulations as are necessary and appropriate to implement the Protocol and this chapter, except as provided in subsection (b) of this section.

(b) Regulations to be issued by Secretary of Department in which Coast Guard is operating

The Secretary of the Department in which the Coast Guard is operating shall issue such regulations as are necessary and appropriate, in addition to regulations issued under the Act to Prevent Pollution from Ships (33 U.S.C. 1901 et seq.), to implement Annex IV to the Protocol and the provisions of this chapter which implement that Annex, and, with the concurrence of the Director, such regulations as are necessary and appropriate to implement Article 15 of the Protocol with respect to vessels.

(c) Time period for regulations

The regulations to be issued under subsection (a)(1) and (2) of this section shall be issued within 2 years after October 2, 1996. The regulations to be issued under subsection (a)(3) of this section shall be issued within 3 years after October 2, 1996.

§ 2406. Notification of travel to Antarctica

The Secretary of State shall prescribe such regulations as may be necessary and appropriate to implement, with respect to United States citizens, paragraph 5 of Article VII of the Treaty pertaining to the filing of advance notifications of expeditions to, and within, Antarctica. For purposes of this section, the term "United States citizen" shall include any foreign person who organizes within the United States any expedition which will proceed to Antarctica from the United States.

§ 2407. Civil penalties

(a) Assessment of penalties

Any person who is found by the Director, after notice and opportunity for a hearing in accordance with subsection (b) of this section, to have committed any act prohibited by section 2403(a) of this title or to have violated any regulation prescribed under section 2406 of this title shall be liable to the United States for a civil penalty. The amount of the civil penalty shall not exceed \$ 12,000 for each

violation unless the prohibited act was knowingly committed, in which case the amount of the civil penalty shall not exceed \$ 25,000 foreach violation³. Each day of a continuing violation shall constitute a separate offense. The amount of any civil penalty shall be assessed by the Director by written notice. Any civil penalty assessed under this subsection may be remitted or mitigated by the Director.

(b) Hearings

Hearings for the assessment of civil penalties under subsection (a) shall be conducted in accordance with section 554 of title 5. For the purposes of conducting any such hearing, the Director may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and may administer oaths. Witnesses summoned shall be paid the same fees and mileage that are paid to witnesses in the courts of the United States. In case of contumacy or refusal to obey a subpoena served upon any person pursuant to this subsection, the district court of the United States for any district in which such person is found, resides, or transacts business, upon application by the United States and after notice to such person, shall have jurisdiction to issue an order requiring such person to appear and give testimony before the Director or to appear and produce documents before the Director, or both, and any failure to obey such order of the court may be punished by such court as a contempt thereof.

(c) Review

Upon the failure of any person against whom a civil penalty is assessed under subsection

- (a) of this section to pay such penalty, the Director may request the Attorney General to institute a civil action in a district court of the United States for any district in which such person is found, resides, or transacts business to collect the penalty and such court shall have jurisdiction to hear and decide any such action. The court shall hear such action on the record made before the Director and shall sustain the decision of the Director if it is supported by substantial evidence on the record considered as a whole.

(d) Penalties under other laws

The assessment of a civil penalty under subsection (a) of this section for any act shall not be deemed to preclude the assessment of a civil penalty for such act under any other law, including, but not limited to, the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et seq.), the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), and the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.).

³ Maximum civil monetary penalties for unintentional and intentional violations changed following § 672.24, 63 FR 32762, June 16, 1998.

§ 2408. Criminal offenses

(a) Offenses

A person is guilty of an offense if he willfully commits any act prohibited by section 2403(a) of this title.

(b) Punishment

Any offense described in subsection (a) of this section is punishable by a fine of \$ 25,000⁴, or imprisonment for not more than one year, or both.

(c) Offenses under other laws

A conviction under subsection (a) of this section for any act shall not be deemed to preclude a conviction for such act under any other law, including, but not limited to, the Marine Mammal Protection Act of 1972 (16 U.S.C. 1361 et seq.), the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq.), and the Migratory Bird Treaty Act (16 U.S.C. 703 et seq.).

§ 2409. Enforcement

(a) Responsibility

The provisions of this chapter and of any regulation prescribed, or permit issued, under this chapter shall be enforced by the Director, the Secretary of the Treasury, the Secretary of Commerce, the Secretary of [1] Interior, and the Secretary of the department in which the Coast Guard is operating. The Director and such Secretaries may utilize by agreement, on a reimbursable basis or otherwise, the personnel, services, and facilities of any other Federal agency or any State agency in the performance of such duties.

(b) Powers of authorized officers

Any officer who is authorized (by the Director, the Secretary of the Treasury, the Secretary of Commerce, the Secretary of the Interior, the Secretary of the department in which the Coast Guard is operating, or the head of any Federal or State agency which has entered into an agreement with the Director or any such Secretary under subsection (a) of this section) to enforce the provisions of this chapter and of any regulation or permit issued under this chapter may -

- (1) secure, execute, and serve any order, warrant, subpoena, or other process, which is issued under the authority of the United States;
- (2) search without warrant any person, place, or conveyance there is reasonable grounds to believe that a person has committed or is attempting to commit an act prohibited by section 2403(a) of this title;

⁴ The maximum civil monetary penalty for intentional violations changed following § 672.24 63 FR 32762, June 16, 1998.

- (3) seize without warrant any evidentiary item where there is reasonable grounds to believe that a person has committed or is attempting to commit any such act;
- (4) offer and pay rewards for services or information which may lead to the apprehension of violators of such provisions;
- (5) make inquiries, and administer to, or take from, any person an oath, affirmation, or affidavit, concerning any matter which is related to the enforcement of such provisions;
- (6) detain for inspection and inspect any package, crate, or other container, including its contents, and all accompanying documents, upon importation into, or exportation from, the United States; and
- (7) make an arrest with or without a warrant with respect to any act prohibited by section 2403(a) of this title if such officer has reasonable grounds to believe that the person to be arrested is committing such act in his presence or view, or has committed such act.

(c) Seizure

Any property or item seized pursuant to subsection (b) of this section shall be held by any person authorized by the Director, the Secretary of the Treasury, the Secretary of Commerce, the Secretary of the Interior, or the Secretary of the department in which the Coast Guard is operating pending the disposition of civil or criminal proceedings, or the institution of an action in rem for forfeiture of such property or item; except that such authorized person may, in lieu of holding such property or item, permit the owner or consignee thereof to post a bond or other satisfactory surety.

(d) Forfeiture

- (1) Any animal or plant with respect to which an act prohibited by section 2403(a) of this title is committed shall be subject to forfeiture to the United States.
- (2) All guns, traps, nets, and other equipment, vessels, vehicles, aircraft, and other means of transportation used in the commission of any act prohibited by section 2403(a) of this title shall be subject to forfeiture to the United States.
- (3) Upon the forfeiture to the United States of any property or item described in paragraph (1) or (2), or upon the abandonment or waiver of any claim to any such property or item, it shall be disposed of by the Director, the Secretary of the Treasury, the Secretary of Commerce, the Secretary of the Interior, or the Secretary of the department in which the Coast Guard is operating, as the case may be, in such a manner, consistent with the purposes of the chapter, as may be prescribed by regulation; except that no native mammal, native bird, or native plant may be disposed of by sale to the public.

(e) Application of customs laws

All provisions of law relating to the seizure, forfeiture, and condemnation of a vessel for violation of the customs laws, the disposition of such vessel or the

proceeds from the sale thereof, and the remission or mitigation of such forfeiture, shall apply to the seizures and forfeitures incurred, or alleged to have been incurred, under the provision of this chapter, insofar as such provisions of law are applicable and not inconsistent with the provisions of this chapter; except that all powers, rights, and duties conferred or imposed by the customs laws upon any officer or employee of the Customs Service may, for the purposes of this chapter, also be exercised or performed by the Director, the Secretary of Commerce, the Secretary of the Interior, or the Secretary of the department in which the Coast Guard is operating, or by such persons as each may designate.

(f) Regulations

The Director, the Secretary of the Treasury, the Secretary of Commerce, the Secretary of the Interior, and the Secretary of the department in which the Coast Guard is operating may prescribe such regulations as may be appropriate to enforce the provisions of this chapter and of any regulation prescribed or permit issued under this chapter, and charge reasonable fees for the expenses of the United States incurred in carrying out inspections and in transferring, boarding, handling, or storing native mammals, native birds, native plants, animals and plants not indigenous to Antarctica, and other evidentiary items seized or forfeited under this chapter.

§ 2410. Jurisdiction of district courts

The district courts of the United States shall have exclusive jurisdiction over any case or controversy arising under the provisions of this chapter or of any regulation prescribed, or permit issued, under this chapter.

§ 2411. Federal agency cooperation

Each Federal department or agency whose activities affect Antarctica shall utilize, to the maximum extent practicable, its authorities in furtherance of the purposes of this chapter, and shall cooperate with the Director in carrying out the purposes of this chapter.

§ 2412. Relationship to existing treaties

Nothing in this chapter shall be construed as contravening or superseding the provisions of any international treaty, convention, or agreement, if such treaty, convention, or agreement is in force with respect to the United States on October 28, 1978, or of any statute which implements any such treaty, convention, or agreement.

§ 2413. Savings provision

(a) Regulations

All regulations promulgated under this chapter prior to October 2, 1996, shall remain in effect until superseding regulations are promulgated under section 2405 of this title.

(b) Permits

All permits issued under this chapter shall remain in effect until they expire in accordance with the terms of those permits.

APPENDIX B:
**The Protocol on Environmental Protection
to the Antarctic Treaty**

Recognizing the need for a comprehensive system to protect the Antarctic environment, the parties to the Antarctic Treaty called for a special consultative meeting to discuss and explore proposals for protection of the antarctic environment and its dependent and associated ecosystems. This special consultative meeting was convened and consisted of several sessions held over a year. At the conclusion of the final session in Madrid, Spain in October, 1991, the Protocol on Environmental Protection to the Antarctic Treaty including Annexes I-IV, was adopted. Annex V was adopted by the XVIth Treaty Meeting, also held in October 1991. The Protocol and Annexes I-IV entered into force in January 1998; however, Annex V has not yet been ratified by all parties. In the Protocol, the parties committed themselves to the comprehensive protection of Antarctica's environment and dependent and associated ecosystems, and they designated Antarctica as a natural reserve devoted to peace and science.

The National Science Foundation has adopted procedures consistent with the Protocol and its annexes. In 1996, Congress passed and the President signed into law the Antarctic Science, Tourism, and Conservation Act, providing for the implementation of the Protocol.

Contents

Preamble

Articles

- 1 Definition
- 2 Objective and designation
- 3 Environmental principles
- 4 Relationship with the other components of the Antarctic Treaty System
- 5 Consistency with the other components of the Antarctic Treaty System
- 6 Cooperation
- 7 Prohibition of mineral-resource activities
- 8 Environmental impact assessment
- 9 Annexes
- 10 Antarctic Treaty Consultative Meetings
- 11 Committee for Environmental Protection
- 12 Functions of the Committee
- 13 Compliance with this Protocol
- 14 Inspection
- 15 Emergency response action
- 16 Liability
- 17 Annual report by parties
- 18 Dispute settlement
- 19 Choice of dispute settlement procedure
- 20 Dispute settlement procedure
- 21 Signature
- 22 Ratification, acceptance approval, or accession
- 23 Entry into force
- 24 Reservations
- 25 Modification or amendment
- 26 Notifications by the Depository
- 27 Authentic texts and registration with the United Nations

Schedule to the Protocol: Arbitration

Annexes

- I Environmental Impact Assessment
- II Conservation of Antarctic Fauna and Flora
- III Waste Disposal and Waste Management
- IV Prevention of Marine Pollution
- V Area Protection and Management

Preamble

The States Parties to this Protocol to the Antarctic Treaty, hereinafter referred to as the Parties,

Convinced of the need to enhance the protection of the Antarctic environment and dependent and associated ecosystems;

Convinced of the need to strengthen the Antarctic Treaty system so as to ensure that Antarctica shall continue forever to be used exclusively for peaceful purposes and shall not become the scene or object of international discord;

Bearing in mind the special legal and political status of Antarctica and the special responsibility of the Antarctic Treaty Consultative Parties to ensure that all activities in Antarctica are consistent with the purposes and principles of the Antarctic Treaty;

Recalling the designation of Antarctica as a Special Conservation Area and other measures adopted under the Antarctic Treaty system to protect the Antarctic environment and dependent and associated ecosystems;

Acknowledging further the unique opportunities Antarctica offers for scientific monitoring of and research on processes of global as well as regional importance;

Reaffirming the conservation principles of the Convention on the Conservation of Antarctic Marine Living Resources;

Convinced that the development of a comprehensive regime for the protection of the Antarctic environment and dependent and associated ecosystems is in the interest of mankind as a whole;

Desiring to supplement the Antarctic Treaty to this end;

Have agreed as follows:

ARTICLE 1 Definitions

For the purposes of this Protocol:

- (a) "The Antarctic Treaty" means the Antarctic Treaty done at Washington on 1 December 1959;
- (b) "Antarctic Treaty area" means the area to which the provisions of the Antarctic Treaty apply in accordance with Article VI of that Treaty;
- (c) "Antarctic Treaty Consultative Meetings" means the meetings referred to in Article IX of the Antarctic Treaty;
- (d) "Antarctic Treaty Consultative Parties" means the Contracting Parties to the Antarctic Treaty entitled to appoint representatives to participate in the meetings referred to in Article IX of that Treaty;
- (e) "Antarctic Treaty system" means the Antarctic Treaty, the measures in effect under that Treaty, its associated separate international instruments in force and the measures in effect under those instruments;
- (f) "Arbitral Tribunal" means the Arbitral Tribunal established in accordance with the

Schedule to this Protocol, which forms an integral part thereof;

(g) "Committee" means the Committee for Environmental Protection established in accordance with Article 11.

ARTICLE 2

Objective and Designation

The Parties commit themselves to the comprehensive protection of the Antarctic environment and dependent and associated ecosystems and hereby designate Antarctica as a natural reserve, devoted to peace and science.

ARTICLE 3

Environmental Principles

1. The protection of the Antarctic environment and dependent and associated ecosystems and the intrinsic value of Antarctica, including its wilderness and aesthetic values and its value as an area for the conduct of scientific research, in particular research essential to understanding the global environment, shall be fundamental considerations in the planning and conduct of all activities in the Antarctic Treaty area.

2. To this end:

(a) activities in the Antarctic Treaty area shall be planned and conducted so as to limit adverse impacts on the Antarctic environment and dependent and associated ecosystems;

(b) activities in the Antarctic Treaty area shall be planned and conducted so as to avoid:

(i) adverse effects on climate or weather patterns;

(ii) significant adverse effects on air or water quality;

(iii) significant changes in the atmospheric, terrestrial (including aquatic), glacial or marine environments;

(iv) detrimental changes in the distribution, abundance or productivity of species or populations of species of fauna and flora;

(v) further jeopardy to endangered or threatened species or populations of such species; or

(vi) degradation of, or substantial risk to, areas of biological, scientific, historic, aesthetic or wilderness significance;

(c) activities in the Antarctic Treaty area shall be planned and conducted on the basis of information sufficient to allow prior assessments of, and informed judgments about, their possible impacts on the Antarctic environment and dependent and associated ecosystems and on the value of Antarctica for the conduct of scientific research; such judgments shall take account of:

(i) the scope of the activity, including its area, duration and intensity;

(ii) the cumulative impacts of the activity, both by itself and in combination with other activities in the Antarctic Treaty area;

(iii) whether the activity will detrimentally affect any other activity in the Antarctic Treaty area;

(iv) whether technology and procedures are available to provide for

environmentally safe operations;

(v) whether there exists the capacity to monitor key environmental parameters and ecosystem components so as to identify and provide early warning of any adverse effects of the activity and to provide for such modification of operating procedures as may be necessary in the light of the results of monitoring or increased knowledge of the Antarctic environment and dependent and associated ecosystems; and

(vi) whether there exists the capacity to respond promptly and effectively to accidents, particularly those with potential environmental effects;

(d) regular and effective monitoring shall take place to allow assessment of the impacts of ongoing activities, including the verification of predicted impacts;

(e) regular and effective monitoring shall take place to facilitate early detection of the possible unforeseen effects of activities carried on both within and outside the Antarctic Treaty area on the Antarctic environment and dependent and associated ecosystems.

3. Activities shall be planned and conducted in the Antarctic Treaty area so as to accord priority to scientific research and to preserve the value of Antarctica as an area for the conduct of such research, including research essential to understanding the global environment.

4. Activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required in accordance with Article VII (5) of the Antarctic Treaty, including associated logistic support activities, shall:

(a) take place in a manner consistent with the principles in this Article; and

(b) be modified, suspended or cancelled if they result in or threaten to result in impacts upon the Antarctic environment or dependent or associated ecosystems inconsistent with those principles.

ARTICLE 4

Relationship with the other Components of the Antarctic Treaty system

1. This Protocol shall supplement the Antarctic Treaty and shall neither modify nor amend that Treaty.

2. Nothing in this Protocol shall derogate from the rights and obligations of the Parties to this Protocol under the other international instruments in force within the Antarctic Treaty system.

ARTICLE 5

Consistency with the other Components of the Antarctic Treaty system

The Parties shall consult and co-operate with the Contracting Parties to the other international instruments in force within the Antarctic Treaty system and their respective institutions with a view to ensuring the achievement of the objectives and principles of this Protocol and avoiding any interference with the achievement of the objectives and principles of those instruments or any inconsistency between the implementation of those instruments and of this Protocol.

ARTICLE 6

Co-operation

1. The Parties shall co-operate in the planning and conduct of activities in the Antarctic Treaty area. To this end, each Party shall endeavour to:
 - (a) promote co-operative programmes of scientific, technical and educational value, concerning the protection of the Antarctic environment and dependent and associated ecosystems;
 - (b) provide appropriate assistance to other Parties in the preparation of environmental impact assessments;
 - (c) provide to other Parties upon request information relevant to any potential environmental risk and assistance to minimize the effects of accidents which may damage the Antarctic environment or dependent and associated ecosystems;
 - (d) consult with other Parties with regard to the choice of sites for prospective stations and other facilities so as to avoid the cumulative impacts caused by their excessive concentration in any location;
 - (e) where appropriate, undertake joint expeditions and share the use of stations and other facilities; and
 - (f) carry out such steps as may be agreed upon at Antarctic Treaty Consultative Meetings.

2. Each Party undertakes, to the extent possible, to share information that may be helpful to other Parties in planning and conducting their activities in the Antarctic Treaty area, with a view to the protection of the Antarctic environment and dependent and associated ecosystems.

3. The Parties shall co-operate with those Parties which may exercise jurisdiction in areas adjacent to the Antarctic Treaty area with a view to ensuring that activities in the Antarctic Treaty area do not have adverse environmental impacts on those areas.

ARTICLE 7

Prohibition of Mineral Resource Activities

Any activity relating to mineral resources, other than scientific research, shall be prohibited.

ARTICLE 8

Environmental Impact Assessment

1. Proposed activities referred to in paragraph 2 below shall be subject to the procedures set out in Annex I for prior assessment of the impacts of those activities on the Antarctic environment or on dependent or associated ecosystems according to whether those activities are identified as having:
 - (a) less than a minor or transitory impact;
 - (b) a minor or transitory impact; or
 - (c) more than a minor or transitory impact.

2. Each Party shall ensure that the assessment procedures set out in Annex I are applied in the planning processes leading to decisions about any activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which

advance notice is required under Article VII (5) of the Antarctic Treaty, including associated logistic support activities.

3. The assessment procedures set out in Annex I shall apply to any change in an activity whether the change arises from an increase or decrease in the intensity of an existing activity, from the addition of an activity, the decommissioning of a facility, or otherwise.

4. Where activities are planned jointly by more than one Party, the Parties involved shall nominate one of their number to coordinate the implementation of the environmental impact assessment procedures set out in Annex I.

ARTICLE 9

Annexes

1. The Annexes to this Protocol shall form an integral part thereof.

2. Annexes, additional to Annexes I-IV, may be adopted and become effective in accordance with Article IX of the Antarctic Treaty.

3. Amendments and modifications to Annexes may be adopted and become effective in accordance with Article IX of the Antarctic Treaty, provided that any Annex may itself make provision for amendments and modifications to become effective on an accelerated basis.

4. Annexes and any amendments and modifications thereto which have become effective in accordance with paragraphs 2 and 3 above shall, unless an Annex itself provides otherwise in respect of the entry into effect of any amendment or modification thereto, become effective for a Contracting Party to the Antarctic Treaty which is not an Antarctic Treaty Consultative Party, or which was not an Antarctic Treaty Consultative Party at the time of the adoption, when notice of approval of that Contracting Party has been received by the Depositary.

5. Annexes shall, except to the extent that an Annex provides otherwise, be subject to the procedures for dispute settlement set out in Articles 18 to 20.

ARTICLE 10

Antarctic Treaty Consultative Meetings

1. Antarctic Treaty Consultative Meetings shall, drawing upon the best scientific and technical advice available:

- (a) define, in accordance with the provisions of this Protocol, the general policy for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems; and
- (b) adopt measures under Article IX of the Antarctic Treaty for the implementation of this Protocol.

2. Antarctic Treaty Consultative Meetings shall review the work of the Committee and shall draw fully upon its advice and recommendations in carrying out the tasks referred to in paragraph 1 above, as well as upon the advice of the Scientific Committee on Antarctic Research.

ARTICLE 11
Committee for Environmental Protection

1. There is hereby established the Committee for Environmental Protection.
2. Each Party shall be entitled to be a member of the Committee and to appoint a representative who may be accompanied by experts and advisers.
3. Observer status in the Committee shall be open to any Contracting Party to the Antarctic Treaty which is not a Party to this Protocol.
4. The Committee shall invite the President of the Scientific Committee on Antarctic Research and the Chairman of the Scientific Committee for the Conservation of Antarctic Marine Living Resources to participate as observers at its sessions. The Committee may also, with the approval of the Antarctic Treaty Consultative Meeting, invite such other relevant scientific, environmental and technical organisations which can contribute to its work to participate as observers at its sessions.
5. The Committee shall present a report on each of its sessions to the Antarctic Treaty Consultative Meeting. The report shall cover all matters considered at the session and shall reflect the views expressed. The report shall be circulated to the Parties and to observers attending the session, and shall thereupon be made publicly available.
6. The Committee shall adopt its rules of procedure which shall be subject to approval by the Antarctic Treaty Consultative Meeting.

ARTICLE 12
Functions of the Committee

1. The functions of the Committee shall be to provide advice and formulate recommendations to the Parties in connection with the implementation of this Protocol, including the operation of its Annexes, for consideration at Antarctic Treaty Consultative Meetings, and to perform such other functions as may be referred to it by the Antarctic Treaty Consultative Meetings. In particular, it shall provide advice on:
 - (a) the effectiveness of measures taken pursuant to this Protocol;
 - (b) the need to update, strengthen or otherwise improve such measures;
 - (c) the need for additional measures, including the need for additional Annexes, where appropriate;
 - (d) the application and implementation of the environmental impact assessment procedures set out in Article 8 and Annex I;
 - (e) means of minimising or mitigating environmental impacts of activities in the Antarctic Treaty area;
 - (f) procedures for situations requiring urgent action, including response action in environmental emergencies;
 - (g) the operation and further elaboration of the Antarctic Protected Area system;
 - (h) inspection procedures, including formats for inspection reports and checklists for the conduct of inspections;
 - (i) the collection, archiving, exchange and evaluation of information related to environmental protection;
 - (j) the state of the Antarctic environment; and

(k) the need for scientific research, including environmental monitoring, related to the implementation of this Protocol.

2. In carrying out its functions, the Committee shall, as appropriate, consult with the Scientific Committee on Antarctic Research, the Scientific Committee for the Conservation of Antarctic Marine Living Resources and other relevant scientific, environmental and technical organizations.

ARTICLE 13 **Compliance with this Protocol**

1. Each Party shall take appropriate measures within its competence, including the adoption of laws and regulations, administrative actions and enforcement measures, to ensure compliance with this Protocol.

2. Each Party shall exert appropriate efforts, consistent with the Charter of the United Nations, to the end that no one engages in any activity contrary to this Protocol.

3. Each Party shall notify all other Parties of the measures it takes pursuant to paragraphs 1 and 2 above.

4. Each Party shall draw the attention of all other Parties to any activity which in its opinion affects the implementation of the objectives and principles of this Protocol.

5. The Antarctic Treaty Consultative Meetings shall draw the attention of any State which is not a Party to this Protocol to any activity undertaken by that State, its agencies, instrumentalities, natural or juridical persons, ships, aircraft or other means of transport which affects the implementation of the objectives and principles of this Protocol.

ARTICLE 14 **Inspection**

1. In order to promote the protection of the Antarctic environment and dependent and associated ecosystems, and to ensure compliance with this Protocol, the Antarctic Treaty Consultative Parties shall arrange, individually or collectively, for inspections by observers to be made in accordance with Article VII of the Antarctic Treaty.

2. Observers are:

(a) observers designated by any Antarctic Treaty Consultative Party who shall be nationals of that Party; and

(b) any observers designated at Antarctic Treaty Consultative Meetings to carry out inspections under procedures to be established by an Antarctic Treaty Consultative Meeting.

3. Parties shall co-operate fully with observers undertaking inspections, and shall ensure that during inspections, observers are given access to all parts of stations, installations, equipment, ships and aircraft open to inspection under Article VII (3) of the Antarctic Treaty, as well as to all records maintained thereon which are called for pursuant to this Protocol.

4. Reports of inspections shall be sent to the Parties whose stations, installations, equipment, ships or aircraft are covered by the reports. After those Parties have been given

the opportunity to comment, the reports and any comments thereon shall be circulated to all the Parties and to the Committee, considered at the next Antarctic Treaty Consultative Meeting, and thereafter made publicly available.

ARTICLE 15 **Emergency Response Action**

1. In order to respond to environmental emergencies in the Antarctic Treaty area, each Party agrees to:
 - (a) provide for prompt and effective response action to such emergencies which might arise in the performance of scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII (5) of the Antarctic Treaty, including associated logistic support activities; and
 - (b) establish contingency plans for response to incidents with potential adverse effects on the Antarctic environment or dependent and associated ecosystems.

2. To this end, the Parties shall:
 - (a) co-operate in the formulation and implementation of such contingency plans; and
 - (b) establish procedures for immediate notification of, and co-operative response to, environmental emergencies.

3. In the implementation of this Article, the Parties shall draw upon the advice of the appropriate international organisations.

ARTICLE 16 **Liability**

Consistent with the objectives of this Protocol for the comprehensive protection of the Antarctic environment and dependent and associated ecosystems, the Parties undertake to elaborate rules and procedures relating to liability for damage arising from activities taking place in the Antarctic Treaty area and covered by this Protocol. Those rules and procedures shall be included in one or more Annexes to be adopted in accordance with Article 9 (2).

ARTICLE 17 **Annual Report by Parties**

1. Each Party shall report annually on the steps taken to implement this Protocol. Such reports shall include notifications made in accordance with Article 13 (3), contingency plans established in accordance with Article 15 and any other notifications and information called for pursuant to this Protocol for which there is no other provision concerning the circulation and exchange of information.

2. Reports made in accordance with paragraph 1 above shall be circulated to all Parties and to the Committee, considered at the next Antarctic Treaty Consultative Meeting, and made publicly available.

ARTICLE 18 **Dispute Settlement**

If a dispute arises concerning the interpretation or application of this Protocol, the parties to

the dispute shall, at the request of any one of them, consult among themselves as soon as possible with a view to having the dispute resolved by negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement or other peaceful means to which the parties to the dispute agree.

ARTICLE 19

Choice of Dispute Settlement Procedure

1. Each Party, when signing, ratifying, accepting, approving or acceding to this Protocol, or at any time thereafter, may choose, by written declaration, one or both of the following means for the settlement of disputes concerning the interpretation or application of Articles 7, 8 and 15 and, except to the extent that an Annex provides otherwise, the provisions of any Annex and, insofar as it relates to these Articles and provisions, Article 13:
 - (a) the International Court of Justice;
 - (b) the Arbitral Tribunal.
2. A declaration made under paragraph 1 above shall not affect the operation of Article 18 and Article 20 (2).
3. A Party which has not made a declaration under paragraph 1 above or in respect of which a declaration is no longer in force shall be deemed to have accepted the competence of the Arbitral Tribunal.
4. If the parties to a dispute have accepted the same means for the settlement of a dispute, the dispute may be submitted only to that procedure, unless the parties otherwise agree.
5. If the parties to a dispute have not accepted the same means for the settlement of a dispute, or if they have both accepted both means, the dispute may be submitted only to the Arbitral Tribunal, unless the parties otherwise agree.
6. A declaration made under paragraph 1 above shall remain in force until it expires in accordance with its terms or until three months after written notice of revocation has been deposited with the Depositary.
7. A new declaration, a notice of revocation or the expiry of a declaration shall not in any way affect proceedings pending before the International Court of Justice or the Arbitral Tribunal, unless the parties to the dispute otherwise agree.
8. Declarations and notices referred to in this Article shall be deposited with the Depositary who shall transmit copies thereof to all Parties.

ARTICLE 20

Dispute Settlement Procedure

1. If the parties to a dispute concerning the interpretation or application of Articles 7, 8 or 15 or, except to the extent that an Annex provides otherwise, the provisions of any Annex or, insofar as it relates to these Articles and provisions, Article 13, have not agreed on a means for resolving it within 12 months of the request for consultation pursuant to Article 18, the dispute shall be referred, at the request of any party to the dispute, for

settlement in accordance with the procedure determined by Article 19 (4) and (5).

2. The Arbitral Tribunal shall not be competent to decide or rule upon any matter within the scope of Article IV of the Antarctic Treaty. In addition, nothing in this Protocol shall be interpreted as conferring competence or jurisdiction on the International Court of Justice or any other tribunal established for the purpose of settling disputes between Parties to decide or otherwise rule upon any matter within the scope of Article IV of the Antarctic Treaty.

ARTICLE 21 **Signature**

This Protocol shall be open for signature at Madrid on the 4th of October 1991 and thereafter at Washington until the 3rd of October 1992 by any State which is a Contracting Party to the Antarctic Treaty.

ARTICLE 22 **Ratification, Acceptance, Approval or Accession**

1. This Protocol is subject to ratification, acceptance or approval by signatory States.
2. After the 3rd of October 1992 this Protocol shall be open for accession by any State which is a Contracting Party to the Antarctic Treaty.
3. Instruments of ratification, acceptance, approval or accession shall be deposited with the Government of the United States of America, hereby designated as the Depository.
4. After the date on which this Protocol has entered into force, the Antarctic Treaty Consultative Parties shall not act upon a notification regarding the entitlement of a Contracting Party to the Antarctic Treaty to appoint representatives to participate in Antarctic Treaty Consultative Meetings in accordance with Article IX (2) of the Antarctic Treaty unless that Contracting Party has first ratified, accepted, approved or acceded to this Protocol.

ARTICLE 23 **Entry into Force**

1. This Protocol shall enter into force on the thirtieth day following the date of deposit of instruments of ratification, acceptance, approval or accession by all States which are Antarctic Treaty Consultative Parties at the date on which this Protocol is adopted.
2. For each Contracting Party to the Antarctic Treaty which, subsequent to the date of entry into force of this Protocol, deposits an instrument of ratification, acceptance, approval or accession, this Protocol shall enter into force on the thirtieth day following such deposit.

ARTICLE 24 **Reservations**

Reservations to this Protocol shall not be permitted.

ARTICLE 25
Modification or Amendment

1. Without prejudice to the provisions of Article 9, this Protocol may be modified or amended at any time in accordance with the procedures set forth in Article XII (1) (a) and (b) of the Antarctic Treaty.
2. If, after the expiration of 50 years from the date of entry into force of this Protocol, any of the Antarctic Treaty Consultative Parties so requests by a communication addressed to the Depository, a conference shall be held as soon as practicable to review the operation of this Protocol.
3. A modification or amendment proposed at any Review Conference called pursuant to paragraph 2 above shall be adopted by a majority of the Parties, including 3/4 of the States which are Antarctic Treaty Consultative Parties at the time of adoption of this Protocol.
4. A modification or amendment adopted pursuant to paragraph 3 above shall enter into force upon ratification, acceptance, approval or accession by 3/4 of the Antarctic Treaty Consultative Parties, including ratification, acceptance, approval or accession by all States which are Antarctic Treaty Consultative Parties at the time of adoption of this Protocol.
5. (a) With respect to Article 7, the prohibition on Antarctic mineral resource activities contained therein shall continue unless there is in force a binding legal regime on Antarctic mineral resource activities that includes an agreed means for determining whether, and, if so, under which conditions, any such activities would be acceptable. This regime shall fully safeguard the interests of all States referred to in Article IV of the Antarctic Treaty and apply the principles thereof. Therefore, if a modification or amendment to Article 7 is proposed at a Review Conference referred to in paragraph 2 above, it shall include such a binding legal regime.
(b) If any such modification or amendment has not entered into force within 3 years of the date of its adoption, any Party may at any time thereafter notify to the Depository of its withdrawal from this Protocol, and such withdrawal shall take effect 2 years after receipt of the notification by the Depository.

ARTICLE 26
Notifications by the Depository

The Depository shall notify all Contracting Parties to the Antarctic Treaty of the following:

- (a) signatures of this Protocol and the deposit of instruments of ratification, acceptance, approval or accession;
- (b) the date of entry into force of this Protocol and any additional Annex thereto;
- (c) the date of entry into force of any amendment or modification to this Protocol;
- (d) the deposit of declarations and notices pursuant to Article 19; and
- (e) any notification received pursuant to Article 25 (5) (b).

ARTICLE 27
Authentic Texts and Registration with the United Nations

1. This Protocol, done in the English, French, Russian and Spanish languages, each version being equally authentic, shall be deposited in the archives of the Government of the United States of America, which shall transmit duly certified copies thereof to all

Contracting Parties to the Antarctic Treaty.

2. This Protocol shall be registered by the Depository pursuant to Article 102 of the Charter of the United Nations.

ARBITRATION

Article 1

1. The Arbitral Tribunal shall be constituted and shall function in accordance with the Protocol, including this Schedule.
2. The Secretary referred to in this Schedule is the Secretary General of the Permanent Court of Arbitration.

Article 2

1. Each Party shall be entitled to designate up to three Arbitrators, at least one of whom shall be designated within three months of the entry into force of the Protocol for that Party. Each Arbitrator shall be experienced in Antarctic affairs, have thorough knowledge of international law and enjoy the highest reputation for fairness, competence and integrity. The names of the persons so designated shall constitute the list of Arbitrators. Each Party shall at all times maintain the name of at least one Arbitrator on the list.
2. Subject to paragraph 3 below, an Arbitrator designated by a Party shall remain on the list for a period of five years and shall be eligible for redesignation by that Party for additional five year periods.
3. A Party which designated an Arbitrator may withdraw the name of that Arbitrator from the list. If an Arbitrator dies or if a Party for any reason withdraws from the list the name of an Arbitrator designated by it, the Party which designated the Arbitrator in question shall notify the Secretary promptly. An Arbitrator whose name is withdrawn from the list shall continue to serve on any Arbitral Tribunal to which that Arbitrator has been appointed until the completion of proceedings before the Arbitral Tribunal.
4. The Secretary shall ensure that an up-to-date list is maintained of the Arbitrators designated pursuant to this Article.

Article 3

1. The Arbitral Tribunal shall be composed of three Arbitrators who shall be appointed as follows:
 - (a) The party to the dispute commencing the proceedings shall appoint one Arbitrator, who may be its national, from the list referred to in Article 2. This appointment shall be included in the notification referred to in Article 4.
 - (b) Within 40 days of the receipt of that notification, the other party to the dispute shall appoint the second Arbitrator, who may be its national, from the list referred to in Article 2.

(c) Within 60 days of the appointment of the second Arbitrator, the parties to the dispute shall appoint by agreement the third Arbitrator from the list referred to in Article 2. The third Arbitrator shall not be either a national of a party to the dispute, or a person designated for the list referred to in Article 2 by a party to the dispute, or of the same nationality as either of the first two Arbitrators. The third Arbitrator shall be the Chairperson of the Arbitral Tribunal.

(d) If the second Arbitrator has not been appointed within the prescribed period, or if the parties to the dispute have not reached agreement within the prescribed period on the appointment of the third Arbitrator, the Arbitrator or Arbitrators shall be appointed, at the request of any party to the dispute and within 30 days of the receipt of such request, by the President of the International Court of Justice from the list referred to in Article 2 and subject to the conditions prescribed in subparagraphs (b) and (c) above. In performing the functions accorded him or her in this subparagraph, the President of the Court shall consult the parties to the dispute.

(e) If the President of the International Court of Justice is unable to perform the functions accorded him or her in subparagraph (d) above or is a national of a party to the dispute, the functions shall be performed by the Vice-President of the Court, except that if the Vice-President is unable to perform the functions or is a national of a party to the dispute the functions shall be performed by the next most senior member of the Court who is available and is not a national of a party to the dispute.

2. Any vacancy shall be filled in the manner prescribed for the initial appointment.

3. In any dispute involving more than two Parties, those Parties having the same interest shall appoint one Arbitrator by agreement within the period specified in paragraph 1 (b) above.

Article 4

The party to the dispute commencing proceedings shall so notify the other party or parties to the dispute and the Secretary in writing. Such notification shall include a statement of the claim and the grounds on which it is based. The notification shall be transmitted by the Secretary to all Parties.

Article 5

1. Unless the parties to the dispute agree otherwise, arbitration shall take place at The Hague, where the records of the Arbitral Tribunal shall be kept. The Arbitral Tribunal shall adopt its own rules of procedure. Such rules shall ensure that each party to the dispute has a full opportunity to be heard and to present its case and shall also ensure that the proceedings are conducted expeditiously.

2. The Arbitral Tribunal may hear and decide counterclaims arising out of the dispute.

Article 6

1. The Arbitral Tribunal, where it considers that *prima facie* it has jurisdiction under the Protocol, may:

(a) at the request of any party to a dispute, indicate such provisional measures as it considers necessary to preserve the respective rights of the parties to the dispute;

(b) prescribe any provisional measures which it considers appropriate under the

circumstances to prevent serious harm to the Antarctic environment or dependent or associated ecosystems.

2. The parties to the dispute shall comply promptly with any provisional measures prescribed under paragraph 1 (b) above pending an award under Article 10.

3. Notwithstanding the time period in Article 20 of the Protocol, a party to a dispute may at any time, by notification to the other party or parties to the dispute and to the Secretary in accordance with Article 4, request that the Arbitral Tribunal be constituted as a matter of exceptional urgency to indicate or prescribe emergency provisional measures in accordance with this Article. In such case, the Arbitral Tribunal shall be constituted as soon as possible in accordance with Article 3, except that the time periods in Article 3 (1) (b), (c) and (d) shall be reduced to 14 days in each case. The Arbitral Tribunal shall decide upon the request for emergency provisional measures within two months of the appointment of its Chairperson.

4. Following a decision by the Arbitral Tribunal upon a request for emergency provisional measures in accordance with paragraph 3 above, settlement of the dispute shall proceed in accordance with Articles 18, 19 and 20 of the Protocol.

Article 7

Any Party which believes it has a legal interest, whether general or individual, which may be substantially affected by the award of an Arbitral Tribunal, may, unless the Arbitral Tribunal decides otherwise, intervene in the proceedings.

Article 8

The parties to the dispute shall facilitate the work of the Arbitral Tribunal and, in particular, in accordance with their law and using all means at their disposal, shall provide it with all relevant documents and information, and enable it, when necessary, to call witnesses or experts and receive their evidence.

Article 9

If one of the parties to the dispute does not appear before the Arbitral Tribunal or fails to defend its case, any other party to the dispute may request the Arbitral Tribunal to continue the proceedings and make its award.

Article 10

1. The Arbitral Tribunal shall, on the basis of the provisions of the Protocol and other applicable rules and principles of international law that are not incompatible with such provisions, decide such disputes as are submitted to it.

2. The Arbitral Tribunal may decide, *ex aequo et bono*, a dispute submitted to it, if the parties to the dispute so agree.

Article 11

1. Before making its award, the Arbitral Tribunal shall satisfy itself that it has competence in respect of the dispute and that the claim or counterclaim is well founded in fact and law.
2. The award shall be accompanied by a statement of reasons for the decision and shall be communicated to the Secretary who shall transmit it to all Parties.
3. The award shall be final and binding on the parties to the dispute and on any Party which intervened in the proceedings and shall be complied with without delay. The Arbitral Tribunal shall interpret the award at the request of a party to the dispute or of any intervening Party.
4. The award shall have no binding force except in respect of that particular case.
5. Unless the Arbitral Tribunal decides otherwise, the expenses of the Arbitral Tribunal, including the remuneration of the Arbitrators, shall be borne by the parties to the dispute in equal shares.

Article 12

All decisions of the Arbitral Tribunal, including those referred to in Articles 5, 6 and 11, shall be made by a majority of the Arbitrators who may not abstain from voting.

Article 13

1. This Schedule may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or that it is unable to approve the measure.
2. Any amendment or modification of this Schedule which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

ANNEX I TO THE PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE ANTARCTIC TREATY

ENVIRONMENTAL IMPACT ASSESSMENT

ARTICLE 1 *PRELIMINARY STAGE*

1. The environmental impacts of proposed activities referred to in Article 8 of the Protocol shall, before their commencement, be considered in accordance with appropriate national procedures.
2. If an activity is determined as having less than a minor or transitory impact, the activity may proceed forthwith.

ARTICLE 2
INITIAL ENVIRONMENTAL EVALUATION

1. Unless it has been determined that an activity will have less than a minor or transitory impact, or unless a Comprehensive Environmental Evaluation is being prepared in accordance with Article 3, an Initial Environmental Evaluation shall be prepared. It shall contain sufficient detail to assess whether a proposed activity may have more than a minor or transitory impact and shall include:
 - (a) a description of the proposed activity, including its purpose, location, duration and intensity; and
 - (b) consideration of alternatives to the proposed activity and any impacts that the activity may have, including consideration of cumulative impacts in the light of existing and known planned activities.

2. If an Initial Environmental Evaluation indicates that a proposed activity is likely to have no more than a minor or transitory impact, the activity may proceed, provided that appropriate procedures, which may include monitoring, are put in place to assess and verify the impact of the activity.

ARTICLE 3
COMPREHENSIVE ENVIRONMENTAL EVALUATION

1. If an Initial Environmental Evaluation indicates or if it is otherwise determined that a proposed activity is likely to have more than a minor or transitory impact, a Comprehensive Environmental Evaluation shall be prepared.

2. A Comprehensive Environmental Evaluation shall include:
 - (a) a description of the proposed activity including its purpose, location, duration and intensity, and possible alternatives to the activity, including the alternative of not proceeding, and the consequences of those alternatives;
 - (b) a description of the initial environmental reference state with which predicted changes are to be compared and a prediction of the future environmental reference state in the absence of the proposed activity;
 - (c) a description of the methods and data used to forecast the impacts of the proposed activity;
 - (d) estimation of the nature, extent, duration, and intensity of the likely direct impacts of the proposed activity;
 - (e) consideration of possible indirect or second order impacts of the proposed activity;
 - (f) consideration of cumulative impacts of the proposed activity in the light of existing activities and other known planned activities;
 - (g) identification of measures, including monitoring programmes, that could be taken to minimise or mitigate impacts of the proposed activity and to detect unforeseen impacts and that could provide early warning of any adverse effects of the activity as well as to deal promptly and effectively with accidents;
 - (h) identification of unavoidable impacts of the proposed activity;
 - (i) consideration of the effects of the proposed activity on the conduct of scientific research and on other existing uses and values;
 - (j) an identification of gaps in knowledge and uncertainties encountered in compiling the information required under this paragraph;
 - (k) a non-technical summary of the information provided under this paragraph; and
 - (l) the name and address of the person or organization which prepared the Comprehensive Environmental Evaluation and the address to which comments thereon should be directed.

3. The draft Comprehensive Environmental Evaluation shall be made publicly available and shall be circulated to all Parties, which shall also make it publicly available, for comment. A period of 90 days shall be allowed for the receipt of comments.
4. The draft Comprehensive Environmental Evaluation shall be forwarded to the Committee at the same time as it is circulated to the Parties, and at least 120 days before the next Antarctic Treaty Consultative Meeting, for consideration as appropriate.
5. No final decision shall be taken to proceed with the proposed activity in the Antarctic Treaty area unless there has been an opportunity for consideration of the draft Comprehensive Environmental Evaluation by the Antarctic Treaty Consultative Meeting on the advice of the Committee, provided that no decision to proceed with a proposed activity shall be delayed through the operation of this paragraph for longer than 15 months from the date of circulation of the draft Comprehensive Environmental Evaluation.
6. A final Comprehensive Environmental Evaluation shall address and shall include or summarise comments received on the draft Comprehensive Environmental Evaluation. The final Comprehensive Environmental Evaluation, notice of any decisions relating thereto, and any evaluation of the significance of the predicted impacts in relation to the advantages of the proposed activity, shall be circulated to all Parties, which shall also make them publicly available, at least 60 days before the commencement of the proposed activity in the Antarctic Treaty area.

ARTICLE 4

DECISIONS TO BE BASED ON COMPREHENSIVE ENVIRONMENTAL EVALUATIONS

Any decision on whether a proposed activity, to which Article 3 applies, should proceed, and, if so, whether in its original or in a modified form, shall be based on the Comprehensive Environmental Evaluation as well as other relevant considerations.

ARTICLE 5

MONITORING

1. Procedures shall be put in place, including appropriate monitoring of key environmental indicators, to assess and verify the impact of any activity that proceeds following the completion of a Comprehensive Environmental Evaluation.
2. The procedures referred to in paragraph 1 above and in Article 2 (2) shall be designed to provide a regular and verifiable record of the impacts of the activity in order, *inter alia*, to:
 - (a) enable assessments to be made of the extent to which such impacts are consistent with the Protocol; and
 - (b) provide information useful for minimising or mitigating impacts, and, where appropriate, information on the need for suspension, cancellation or modification of the activity.

ARTICLE 6
CIRCULATION OF INFORMATION

1. The following information shall be circulated to the Parties, forwarded to the Committee and made publicly available:
 - (a) a description of the procedures referred to in Article 1;
 - (b) an annual list of any Initial Environmental Evaluations prepared in accordance with Article 2 and any decisions taken in consequence thereof;
 - (c) significant information obtained, and any action taken in consequence thereof, from procedures put in place in accordance with Articles 2 (2) and 5; and
 - (d) information referred to in Article 3 (6).

2. Any Initial Environmental Evaluation prepared in accordance with Article 2 shall be made available on request.

ARTICLE 7
CASES OF EMERGENCY

1. This Annex shall not apply in cases of emergency relating to the safety of human life or of ships, aircraft or equipment and facilities of high value, or the protection of the environment, which require an activity to be undertaken without completion of the procedures set out in this Annex.

2. Notice of activities undertaken in cases of emergency, which would otherwise have required preparation of a Comprehensive Environmental Evaluation, shall be circulated immediately to all Parties and to the Committee and a full explanation of the activities carried out shall be provided within 90 days of those activities.

ARTICLE 8
AMENDMENT OR MODIFICATION

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that period, that it wishes an extension of that period or that it is unable to approve the measure.

2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

ANNEX II
TO THE PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE
ANTARCTIC TREATY
CONSERVATION OF ANTARCTIC FAUNA AND FLORA

ARTICLE 1
DEFINITIONS

For the purposes of this Annex:

- (a) "native mammal" means any member of any species belonging to the Class Mammalia, indigenous to the Antarctic Treaty area or occurring there seasonally through natural migrations;
- (b) "native bird" means any member, at any stage of its life cycle (including eggs), of any species of the Class Aves indigenous to the Antarctic Treaty area or occurring there seasonally through natural migrations;
- (c) "native plant" means any terrestrial or freshwater vegetation, including bryophytes, lichens, fungi and algae, at any stage of its life cycle (including seeds, and other propagules), indigenous to the Antarctic Treaty area;
- (d) "native invertebrate" means any terrestrial or freshwater invertebrate, at any stage of its life cycle, indigenous to the Antarctic Treaty area;
- (e) "appropriate authority" means any person or agency authorized by a Party to issue permits under this Annex;
- (f) "permit" means a formal permission in writing issued by an appropriate authority;
- (g) "take" or "taking" means to kill, injure, capture, handle or molest, a native mammal or bird, or to remove or damage such quantities of native plants that their local distribution or abundance would be significantly affected;
- (h) "harmful interference" means:
 - (i) flying or landing helicopters or other aircraft in a manner that disturbs concentrations of birds and seals;
 - (ii) using vehicles or vessels, including hovercraft and small boats, in a manner that disturbs concentrations of birds and seals;
 - (iii) using explosives or firearms in a manner that disturbs concentrations of birds and seals;
 - (iv) wilfully disturbing breeding or moulting birds or concentrations of birds and seals by persons on foot;
 - (v) significantly damaging concentrations of native terrestrial plants by landing aircraft, driving vehicles, or walking on them, or by other means; and
 - (vi) any activity that results in the significant adverse modification of habitats of any species or population of native mammal, bird, plant or invertebrate.
- (i) "International Convention for the Regulation of Whaling" means the Convention done at Washington on 2 December 1946.

ARTICLE 2
CASES OF EMERGENCY

1. This Annex shall not apply in cases of emergency relating to the safety of human life or of ships, aircraft, or equipment and facilities of high value, or the protection of the environment.
2. Notice of activities undertaken in cases of emergency shall be circulated immediately to all Parties and to the Committee.

ARTICLE 3
PROTECTION OF NATIVE FAUNA AND FLORA

1. Taking or harmful interference shall be prohibited, except in accordance with a permit.
2. Such permits shall specify the authorized activity, including when, where and by whom it is to be conducted and shall be issued only in the following circumstances:
 - (a) to provide specimens for scientific study or scientific information;
 - (b) to provide specimens for museums, herbaria, zoological and botanical gardens, or other educational or cultural institutions or uses; and
 - (c) to provide for unavoidable consequences of scientific activities not otherwise authorized under sub-paragraphs (a) or (b) above, or of the construction and operation of scientific support facilities.
3. The issue of such permits shall be limited so as to ensure that:
 - (a) no more native mammals, birds, or plants are taken than are strictly necessary to meet the purposes set forth in paragraph 2 above;
 - (b) only small numbers of native mammals or birds are killed and in no case more native mammals or birds are killed from local populations than can, in combination with other permitted takings, normally be replaced by natural reproduction in the following season; and
 - (c) the diversity of species, as well as the habitats essential to their existence, and the balance of the ecological systems existing within the Antarctic Treaty are maintained.
4. Any species of native mammals, birds and plants listed in Appendix A to this Annex shall be designated "Specially Protected Species", and shall be accorded special protection by the Parties.
5. A permit shall not be issued to take a Specially Protected Species unless the taking:
 - (a) is for a compelling scientific purpose;
 - (b) will not jeopardize the survival or recovery of that species or local population; and
 - (c) uses non-lethal techniques where appropriate.
6. All taking of native mammals and birds shall be done in the manner that involves the least degree of pain and suffering practicable.

ARTICLE 4

INTRODUCTION OF NON-NATIVE SPECIES, PARASITES AND DISEASES

1. No species of animal or plant not native to the Antarctic Treaty area shall be introduced onto land or ice shelves, or into water in the Antarctic Treaty area except in accordance with a permit.
2. Dogs shall not be introduced onto land or ice shelves and dogs currently in those areas shall be removed by April 1, 1994.
3. Permits under paragraph 1 above shall be issued to allow the importation only of the animals and plants listed in Appendix B to this Annex and shall specify the species, numbers and, if appropriate, age and sex and precautions to be taken to prevent escape or contact with native fauna and flora.
4. Any plant or animal for which a permit has been issued in accordance with paragraphs 1 and 3 above, shall, prior to expiration of the permit, be removed from the Antarctic Treaty area or be disposed of by incineration or equally effective means that eliminates risk to native fauna or flora. The permit shall specify this obligation. Any other plant or animal introduced into the Antarctic Treaty area not native to that area, including any progeny, shall be removed or disposed of, by incineration or by equally effective means, so as to be rendered sterile, unless it is determined that they pose no risk to native flora or fauna.
5. Nothing in this Article shall apply to the importation of food into the Antarctic Treaty area provided that no live animals are imported for this purpose and all plants and animal parts and products are kept under carefully controlled conditions and disposed of in accordance with Annex III to the Protocol and Appendix C to this Annex.
6. Each Party shall require that precautions, including those listed in Appendix C to this Annex, be taken to prevent the introduction of micro-organisms (e.g., viruses, bacteria, parasites, yeasts, fungi) not present in the native fauna and flora.

ARTICLE 5

INFORMATION

Each Party shall prepare and make available information setting forth, in particular, prohibited activities and providing lists of Specially Protected Species and relevant Protected Areas to all those persons present in or intending to enter the Antarctic Treaty area with a view to ensuring that such persons understand and observe the provisions of this Annex.

ARTICLE 6

EXCHANGE OF INFORMATION

1. The Parties shall make arrangements for:
 - (a) collecting and exchanging records (including records of permits) and statistics concerning the numbers or quantities of each species of native mammal, bird or plant taken annually in the Antarctic Treaty area;
 - (b) obtaining and exchanging information as to the status of native mammals, birds, plants, and invertebrates in the Antarctic Treaty area, and the extent to which any species or

population needs protection;

(c) establishing a common form in which this information shall be submitted by Parties in accordance with paragraph 2 below.

2. Each Party shall inform the other Parties as well as the Committee before the end of November of each year of any step taken pursuant to paragraph 1 above and of the number and nature of permits issued under this Annex in the preceding period of 1st July to 30th June.

ARTICLE 7

RELATIONSHIP WITH OTHER AGREEMENTS OUTSIDE THE ANTARCTIC TREATY SYSTEM

Nothing in this Annex shall derogate from the rights and obligations of Parties under the International Convention for the Regulation of Whaling.

ARTICLE 8

REVIEW

The Parties shall keep under continuing review measures for the conservation of Antarctic fauna and flora, taking into account any recommendations from the Committee.

ARTICLE 9

AMENDMENT OR MODIFICATION

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or that it is unable to approve the measure.

2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

APPENDICES TO THE ANNEX

APPENDIX A:

SPECIALLY PROTECTED SPECIES

All species of the genus *Arctocephalus*, Fur Seals. *Ommatophoca rossii*, Ross Seal.

APPENDIX B:

IMPORTATION OF ANIMALS AND PLANTS

The following animals and plants may be imported into the Antarctic Treaty area in accordance with permits issued under Article 4 of this Annex:

(a) domestic plants; and

- (b) laboratory animals and plants including viruses, bacteria, yeasts and fungi.

APPENDIX C:
PRECAUTIONS TO PREVENT INTRODUCTIONS OF MICRO-ORGANISMS

1. Poultry. No live poultry or other living birds shall be brought into the Antarctic Treaty area. Before dressed poultry is packaged for shipment to the Antarctic Treaty area, it shall be inspected for evidence of disease, such as Newcastle's Disease, tuberculosis, and yeast infection. Any poultry or parts not consumed shall be removed from the Antarctic Treaty area or disposed of by incineration or equivalent means that eliminates risks to native flora and fauna.
2. The importation of non-sterile soil shall be avoided to the maximum extent practicable.

ANNEX III
TO THE PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE
ANTARCTIC TREATY
WASTE DISPOSAL AND WASTE MANAGEMENT

ARTICLE 1
GENERAL OBLIGATIONS

1. This Annex shall apply to activities undertaken in the Antarctic Treaty area pursuant to scientific research programmes, tourism and all other governmental and non-governmental activities in the Antarctic Treaty area for which advance notice is required under Article VII (5) of the Antarctic Treaty, including associated logistic support activities.
2. The amount of wastes produced or disposed of in the Antarctic Treaty area shall be reduced as far as practicable so as to minimise impact on the Antarctic environment and to minimise interference with the natural values of Antarctica, with scientific research and with other uses of Antarctica which are consistent with the Antarctic Treaty.
3. Waste storage, disposal and removal from the Antarctic Treaty area, as well as recycling and source reduction, shall be essential considerations in the planning and conduct of activities in the Antarctic Treaty area.
4. Wastes removed from the Antarctic Treaty area shall, to the maximum extent practicable, be returned to the country from which the activities generating the waste were organized or to any other country in which arrangements have been made for the disposal of such wastes in accordance with relevant international agreements.
5. Past and present waste disposal sites on land and abandoned work sites of Antarctic activities shall be cleaned up by the generator of such wastes and the user of such sites. This obligation shall not be interpreted as requiring:
 - (a) the removal of any structure designated as a historic site or monument; or
 - (b) the removal of any structure or waste material in circumstances where the removal by any practical option would result in greater adverse environmental impact than leaving the structure or waste material in its existing location.

ARTICLE 2
WASTE DISPOSAL BY REMOVAL FROM THE ANTARCTIC TREATY AREA

1. The following wastes, if generated after entry into force of this Annex, shall be removed from the Antarctic Treaty area by the generator of such wastes:

- (a) radio-active materials;
- (b) electrical batteries;
- (c) fuel, both liquid and solid;
- (d) wastes containing harmful levels of heavy metals or acutely toxic or harmful persistent compounds;
- (e) poly-vinyl chloride (PVC), polyurethane foam, polystyrene foam, rubber and lubricating oils, treated timbers and other products which contain additives that could produce harmful emissions if incinerated;
- (f) all other plastic wastes, except low density polyethylene containers (such as bags for storing wastes), provided that such containers shall be incinerated in accordance with Article 3 (1);
- (g) fuel drums; and
- (h) other solid, non-combustible wastes;

provided that the obligation to remove drums and solid non-combustible wastes contained in subparagraphs (g) and (h) above shall not apply in circumstances where the removal of such wastes by any practical option would result in greater adverse environmental impact than leaving them in their existing locations.

2. Liquid wastes which are not covered by paragraph 1 above and sewage and domestic liquid wastes, shall, to the maximum extent practicable, be removed from the Antarctic Treaty area by the generator of such wastes.

3. The following wastes shall be removed from the Antarctic Treaty area by the generator of such wastes, unless incinerated, autoclaved or otherwise treated to be made sterile:

- (a) residues of carcasses of imported animals;
- (b) laboratory culture of micro-organisms and plant pathogens; and
- (c) introduced avian products.

ARTICLE 3
WASTE DISPOSAL BY INCINERATION

1. Subject to paragraph 2 below, combustible wastes, other than those referred to in Article 2 (1), which are not removed from the Antarctic Treaty area shall be burnt in incinerators which to the maximum extent practicable reduce harmful emissions. Any emission standards and equipment guidelines which may be recommended by, inter alia, the Committee and the Scientific Committee on Antarctic Research shall be taken into account. The solid residue of such incineration shall be removed from the Antarctic Treaty area.

2. All open burning of wastes shall be phased out as soon as practicable, but no later than the end of the 1998/1999 season. Pending the completion of such phase-out, when it is necessary to dispose of wastes by open burning, allowance shall be made for the wind direction and speed and the type of wastes to be burnt to limit particulate deposition and to

avoid such deposition over areas of special biological, scientific, historic, aesthetic or wilderness significance including, in particular, areas accorded protection under the Antarctic Treaty.

ARTICLE 4
OTHER WASTE DISPOSAL ON LAND

1. Wastes not removed or disposed of in accordance with Articles 2 and 3 shall not be disposed of onto ice-free areas or into fresh water systems.
2. Sewage, domestic liquid wastes and other liquid wastes not removed from the Antarctic Treaty area in accordance with Article 2, shall, to the maximum extent practicable, not be disposed of onto sea ice, ice shelves or the grounded ice-sheet, provided that such wastes which are generated by stations located inland on ice shelves or on the grounded ice-sheet may be disposed of in deep ice pits where such disposal is the only practicable option. Such pits shall not be located on known ice-flow lines which terminate at ice-free areas or in areas of high ablation.
3. Wastes generated at field camps shall, to the maximum extent practicable, be removed by the generator of such wastes to supporting stations or ships for disposal in accordance with this Annex.

ARTICLE 5
DISPOSAL OF WASTE IN THE SEA

1. Sewage and domestic liquid wastes may be discharged directly into the sea, taking into account the assimilative capacity of the receiving marine environment and provided that:
 - (a) such discharge is located, wherever practicable, where conditions exist for initial dilution and rapid dispersal; and
 - (b) large quantities of such wastes (generated in a station where the average weekly occupancy over the austral summer is approximately 30 individuals or more) shall be treated at least by maceration.
2. The by-product of sewage treatment by the Rotary Biological Contacter process or similar processes may be disposed of into the sea provided that such disposal does not adversely affect the local environment, and provided also that any such disposal at sea shall be in accordance with Annex IV to the Protocol.

ARTICLE 6
STORAGE OF WASTE

All wastes to be removed from the Antarctic Treaty area, or otherwise disposed of, shall be stored in such a way as to prevent their dispersal into the environment.

ARTICLE 7
PROHIBITED PRODUCTS

No polychlorinated biphenyls (PCBs), non-sterile soil, polystyrene beads, chips or similar

forms of packaging, or pesticides (other than those required for scientific, medical or hygiene purposes) shall be introduced onto land or ice shelves or into water in the Antarctic Treaty area.

ARTICLE 8

WASTE MANAGEMENT PLANNING

1. Each Party which itself conducts activities in the Antarctic Treaty area shall, in respect of those activities, establish a waste disposal classification system as a basis for recording wastes and to facilitate studies aimed at evaluating the environmental impacts of scientific activity and associated logistic support. To that end, wastes produced shall be classified as:
 - (a) sewage and domestic liquid wastes (Group 1);
 - (b) other liquid wastes and chemicals, including fuels and lubricants (Group 2);
 - (c) solids to be combusted (Group 3);
 - (d) other solid wastes (Group 4); and
 - (e) radioactive material (Group 5).

2. In order to reduce further the impact of waste on the Antarctic environment, each such Party shall prepare and annually review and update its waste management plans (including waste reduction, storage and disposal), specifying for each fixed site, for field camps generally, and for each ship (other than small boats that are part of the operations of fixed sites or of ships and taking into account existing management plans for ships):
 - (a) programmes for cleaning up existing waste disposal sites and abandoned work sites;
 - (b) current and planned waste management arrangements, including final disposal;
 - (c) current and planned arrangements for analysing the environmental effects of waste and waste management; and
 - (d) other efforts to minimise any environmental effects of wastes and waste management.

3. Each such Party shall, as far as is practicable, also prepare an inventory of locations of past activities (such as traverses, field depots, field bases, crashed aircraft) before the information is lost, so that such locations can be taken into account in planning future scientific programmes (such as snow chemistry, pollutants in lichens or ice core drilling).

ARTICLE 9

CIRCULATION AND REVIEW OF WASTE MANAGEMENT PLANS

1. The waste management plans prepared in accordance with Article 8, reports on their implementation, and the inventories referred to in Article 8 (3), shall be included in the annual exchanges of information in accordance with Articles III and VII of the Antarctic Treaty and related Recommendations under Article IX of the Antarctic Treaty.

2. Each Party shall send copies of its waste management plans, and reports on their implementation and review, to the Committee.

3. The Committee may review waste management plans and reports thereon and may offer comments, including suggestions for minimising impacts and modifications and improvement to the plans, for the consideration of the Parties.

4. The Parties may exchange information and provide advice on, inter alia, available

low waste technologies, reconversion of existing installations, special requirements for effluents, and appropriate disposal and discharge methods.

ARTICLE 10
MANAGEMENT PLANS

Each Party shall:

- (a) designate a waste management official to develop and monitor waste management plans; in the field, this responsibility shall be delegated to an appropriate person at each site;
- (b) ensure that members of its expeditions receive training designed to limit the impact of its operations on the Antarctic environment and to inform them of requirements of this Annex; and
- (c) discourage the use of poly-vinyl chloride (PVC) products and ensure that its expeditions to the Antarctic Treaty are advised of any PVC products they may introduce into that area in order that these products may be removed subsequently in accordance with this Annex.

ARTICLE 11
REVIEW

This Annex shall be subject to regular review in order to ensure that it is updated to reflect improvement in waste disposal technology and procedures and to ensure thereby maximum protection of the Antarctic environment.

ARTICLE 12
CASES OF EMERGENCY

1. This Annex shall not apply in cases of emergency relating to the safety of human life or of ships, aircraft or equipment and facilities of high value or the protection of the environment.
2. Notice of activities undertaken in cases of emergency shall be circulated immediately to all Parties and to the Committee.

ARTICLE 13
AMENDMENT OR MODIFICATION

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or that it is unable to approve the amendment.
2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

**ANNEX IV
TO THE PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE
ANTARCTIC TREATY**

PREVENTION OF MARINE POLLUTION

**ARTICLE 1
*DEFINITIONS***

For the purposes of this Annex:

- (a) "discharge" means any release howsoever caused from a ship and includes any escape, disposal, spilling, leaking, pumping, emitting or emptying;
- (b) "garbage" means all kinds of victual, domestic and operational waste excluding fresh fish and parts thereof, generated during the normal operation of the ship, except those substances which are covered by Articles 3 and 4;
- (c) "MARPOL 73/78" means the International Convention for the Prevention of Pollution from Ships, 1973, as amended by the Protocol of 1978 relating thereto and by any other amendment in force thereafter;
- (d) "noxious liquid substance" means any noxious liquid substance as defined in Annex II of MARPOL 73/78;
- (e) "oil" means petroleum in any form including crude oil, fuel oil, sludge, oil refuse and refined oil products (other than petrochemicals which are subject to the provisions of Article 4);
- (f) "oily mixture" means a mixture with any oil content; and
- (g) "ship" means a vessel of any type whatsoever operating in the marine environment and includes hydrofoil boats, air-cushion vehicles, submersibles, floating craft and fixed or floating platforms.

**ARTICLE 2
*APPLICATION***

This Annex applies, with respect to each Party, to ships entitled to fly its flag and to any other ship engaged in or supporting its Antarctic operations, while operating in the Antarctic Treaty area.

**ARTICLE 3
*DISCHARGE OF OIL***

1. Any discharge into the sea of oil or oily mixture shall be prohibited, except in cases permitted under Annex I of MARPOL 73/78. While operating in the Antarctic Treaty area, ships shall retain on board all sludge, dirty ballast, tank washing waters and other oily residues and mixtures which may not be discharged into the sea. Ships shall discharge these residues only outside the Antarctic Treaty area, at reception facilities or as otherwise permitted under Annex I of MARPOL 73/78.

2. This Article shall not apply to:

- (a) the discharge into the sea of oil or oily mixture resulting from damage to a ship or its

equipment:

(i) provided that all reasonable precautions have been taken after the occurrence of the damage or discovery of the discharge for the purpose of preventing or minimising the discharge; and

(ii) except if the owner or the Master acted either with intent to cause damage, or recklessly and with the knowledge that damage would probably result; or

(b) the discharge into the sea of substances containing oil which are being used for the purpose of combating specific pollution incidents in order to minimise the damage from pollution.

ARTICLE 4 ***DISCHARGE OF NOXIOUS LIQUID SUBSTANCES***

The discharge into the sea of any noxious liquid substance, and any other chemical or other substances, in quantities or concentrations that are harmful to the marine environment, shall be prohibited.

ARTICLE 5 ***DISPOSAL OF GARBAGE***

1. The disposal into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, and plastic garbage bags, shall be prohibited.

2. The disposal into the sea of all other garbage, including paper products, rags, glass, metal, bottles, crockery, incineration ash, dunnage, lining and packing materials, shall be prohibited.

3. The disposal into the sea of food wastes may be permitted when they have been passed through a comminuter or grinder, provided that such disposal shall, except in cases permitted under Annex V of MARPOL 73/78, be made as far as practicable from land and ice shelves but in any case not less than 12 nautical miles from the nearest land or ice shelf. Such comminuted or ground food wastes shall be capable of passing through a screen with openings no greater than 25 millimeters.

4. When a substance or material covered by this article is mixed with other such substance or material for discharge or disposal, having different disposal or discharge requirements, the most stringent disposal or discharge requirements shall apply.

5. The provisions of paragraphs 1 and 2 above shall not apply to:

(a) the escape of garbage resulting from damage to a ship or its equipment provided all reasonable precautions have been taken, before and after the occurrence of the damage, for the purpose of preventing or minimising the escape; or

(b) the accidental loss of synthetic fishing nets, provided all reasonable precautions have been taken to prevent such loss.

6. The Parties shall, where appropriate, require the use of garbage record books.

ARTICLE 6
DISCHARGE OF SEWAGE

1. Except where it would unduly impair Antarctic operations:
 - (a) each Party shall eliminate all discharge into the sea of untreated sewage ("sewage" being defined in Annex IV of MARPOL 73/78) within 12 nautical miles of land or ice shelves;
 - (b) beyond such distance, sewage stored in a holding tank shall not be discharged instantaneously but at a moderate rate and, where practicable, while the ship is *en route* at a speed of no less than 4 knots.

This paragraph does not apply to ships certified to carry not more than 10 persons.
2. The Parties shall, where appropriate, require the use of sewage record books.

ARTICLE 7
CASES OF EMERGENCY

1. Articles 3, 4, 5 and 6 of this Annex shall not apply in cases of emergency relating to the safety of a ship and those on board or saving life at sea.
2. Notice of activities undertaken in cases of emergency shall be circulated immediately to all Parties and to the Committee.

ARTICLE 8
EFFECT ON DEPENDENT AND ASSOCIATED ECOSYSTEMS

In implementing the provisions of this Annex, due consideration shall be given to the need to avoid detrimental effects on dependent and associated ecosystems, outside the Antarctic Treaty area.

ARTICLE 9
SHIP RETENTION CAPACITY AND RECEPTION FACILITIES

1. Each Party shall undertake to ensure that all ships entitled to fly its flag and any other ship engaged in or supporting its Antarctic operations, before entering the Antarctic Treaty area, are fitted with a tank or tanks of sufficient capacity on board for the retention of all sludge, dirty ballast, tank washing water and other oil residues and mixtures, and have sufficient capacity on board for the retention of garbage, while operating in the Antarctic Treaty area and have concluded arrangements to discharge such oily residues and garbage at a reception facility after leaving that area. Ships shall also have sufficient capacity on board for the retention of noxious liquid substances.
2. Each Party at whose ports ships depart *en route* to or arrive from the Antarctic Treaty area undertakes to ensure that as soon as practicable adequate facilities are provided for the reception of all sludge, dirty ballast, tank washing water, other oily residues and mixtures, and garbage from ships, without causing undue delay, and according to the needs of the ships using them.

3. Parties operating ships which depart to or arrive from the Antarctic Treaty area at ports of other Parties shall consult with those Parties with a view to ensuring that the establishment of port reception facilities does not place an inequitable burden on Parties adjacent to the Antarctic Treaty area.

ARTICLE 10

DESIGN, CONSTRUCTION, MANNING AND EQUIPMENT OF SHIPS

In the design, construction, manning and equipment of ships engaged in or supporting Antarctic operations, each Party shall take into account the objectives of this Annex.

ARTICLE 11

SOVEREIGN IMMUNITY

1. This Annex shall not apply to any warship, naval auxiliary or other ship owned or operated by a State and used, for the time being, only on government non-commercial service. However, each Party shall ensure by the adoption of appropriate measures not impairing the operations or operational capabilities of such ships owned or operated by it, that such ships act in a manner consistent, so far as is reasonable and practicable, with this Annex.

2. In applying paragraph 1 above, each Party shall take into account the importance of protecting the Antarctic environment.

3. Each Party shall inform the other Parties of how it implements this provision.

4. The dispute settlement procedure set out in Articles 18 to 20 of the Protocol shall not apply to this Article.

ARTICLE 12

PREVENTIVE MEASURES AND EMERGENCY PREPAREDNESS AND RESPONSE

1. In order to respond more effectively to marine pollution emergencies or the threat thereof in the Antarctic Treaty area, the Parties, in accordance with Article 15 of the Protocol, shall develop contingency plans for marine pollution response in the Antarctic Treaty area, including contingency plans for ships (other than small boats that are part of the operations of fixed sites or of ships) operating in the Antarctic Treaty area, particularly ships carrying oil as cargo, and for oil spills, originating from coastal installations, which enter into the marine environment. To this end they shall:

- (a) co-operate in the formulation and implementation of such plans; and
- (b) draw on the advice of the Committee, the International Maritime Organization and other international organizations.

2. The Parties shall also establish procedures for cooperative response to pollution emergencies and shall take appropriate response actions in accordance with such procedures.

ARTICLE 13
REVIEW

The Parties shall keep under continuous review the provisions of this Annex and other measures to prevent, reduce and respond to pollution of the Antarctic marine environment, including any amendments and new regulations adopted under MARPOL 73/78, with a view to achieving the objectives of this Annex.

ARTICLE 14
RELATIONSHIP WITH MARPOL 73/78

With respect to those Parties which are also Parties to MARPOL 73/78, nothing in this Annex shall derogate from the specific rights and obligations thereunder.

ARTICLE 15
AMENDMENT OR MODIFICATION

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX (1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or that it is unable to approve the measure.

2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

ANNEX V
TO THE PROTOCOL ON ENVIRONMENTAL PROTECTION TO THE
ANTARCTIC TREATY

AREA PROTECTION AND MANAGEMENT

ARTICLE 1
DEFINITIONS

For the purposes of this Annex:

- (a) "appropriate authority" means any person or agency authorized by a Party to issue permits under this Annex;
- (b) "permit" means a formal permission in writing issued by an appropriate authority;
- (c) "Management Plan" means a plan to manage the activities and protect the special value or values in an Antarctic Specially Protected Area or an Antarctic Specially Managed Area.

ARTICLE 2
OBJECTIVES

For the purposes set out in this Annex, any area, including any marine area, may be designated as an Antarctic Specially Protected Area or an Antarctic Specially Managed Area. Activities in those Areas shall be prohibited, restricted or managed in accordance with Management Plans adopted under the provisions of this Annex.

ARTICLE 3
ANTARCTIC SPECIALLY PROTECTED AREAS

1. Any area, including any marine area, may be designated as an Antarctic Specially Protected Area to protect outstanding environmental, scientific, historic, aesthetic or wilderness values, any combination of those values, or ongoing or planned scientific research.
2. Parties shall seek to identify, within a systematic environmental-geographical framework, and to include in the series of Antarctic Specially Protected Areas:
 - (a) areas kept inviolate from human interference so that future comparisons may be possible with localities that have been affected by human activities;
 - (b) representative examples of major terrestrial, including glacial and aquatic, ecosystems and marine ecosystems;
 - (c) areas with important or unusual assemblages of species, including major colonies of breeding native birds or mammals;
 - (d) the type locality or only known habitat of any species;
 - (e) areas of particular interest to on-going or planned scientific research;
 - (f) examples of outstanding geological, glaciological or geomorphological features;
 - (g) areas of outstanding aesthetic and wilderness value;
 - (h) sites or monuments of recognized historic value; and
 - (i) such other areas as may be appropriate to protect the values set out in paragraph 1 above.
3. Specially Protected Areas and Sites of Special Scientific Interest designated as such by past Antarctic Treaty Consultative Meetings are hereby designated as Antarctic Specially Protected Areas and shall be renamed and renumbered accordingly.
4. Entry into an Antarctic Specially Protected Area shall be prohibited except in accordance with a permit issued under Article 7.

ARTICLE 4
ANTARCTIC SPECIALLY MANAGED AREAS

1. Any area, including any marine area, where activities are being conducted or may in the future be conducted, may be designated as an Antarctic Specially Managed Area to assist in the planning and co-ordination of activities, avoid possible conflicts, improve co-operation between Parties or minimize environmental impacts.
2. Antarctic Specially Managed Areas may include:
 - (a) areas where activities pose risks of mutual interference or cumulative environmental impacts; and
 - (b) sites or monuments of recognized historic value.
3. Entry into an Antarctic Specially Managed Area shall not require a permit.
4. Notwithstanding paragraph 3 above, an Antarctic Specially Managed Area may contain one or more Antarctic Specially Protected Areas, entry into which shall be prohibited except in accordance with a permit issued under Article 7.

ARTICLE 5
MANAGEMENT PLANS

1. Any Party, the Committee, the Scientific Committee for Antarctic Research or the Commission for the Conservation of Antarctic Marine Living Resources may propose an area for designation as an Antarctic Specially Protected Area or an Antarctic Specially Managed Area by submitting a proposed Management Plan to the Antarctic Treaty Consultative Meeting.
2. The area proposed for designation shall be of sufficient size to protect the values for which the special protection or management is required.
3. Proposed Management Plans shall include, as appropriate:
 - (a) a description of the value or values for which special protection or management is required;
 - (b) a statement of the aims and objectives of the Management Plan for the protection or management of those values;
 - (c) management activities which are to be undertaken to protect the values for which special protection or management is required;
 - (d) a period of designation, if any;
 - (e) a description of the area, including:
 - (i) the geographical co-ordinates, boundary markers and natural features that delineate the area;
 - (ii) access to the area by land, sea or air including marine approaches and anchorages, pedestrian and vehicular routes within the area, and aircraft routes and landing areas;
 - (iii) the location of structures, including scientific stations, research or refuge facilities, both within the area and near to it; and
 - (iv) the location in or near the area of other Antarctic Specially Protected Areas or Antarctic Specially Managed Areas designated under this Annex, or other protected areas designated in accordance with measures adopted under other components of the Antarctic Treaty system;
 - (f) the identification of zones within the area, in which activities are to be prohibited, restricted or managed for the purpose of achieving the aims and objectives referred to in subparagraph (b) above;
 - (g) maps and photographs that show clearly the boundary of the area in relation to surrounding features and key features within the area;
 - (h) supporting documentation;
 - (i) in respect of an area proposed for designation as an Antarctic Specially Protected Area, a clear description of the conditions under which permits may be granted by the appropriate authority regarding:
 - (i) access to and movement within or over the area;
 - (ii) activities which are or may be conducted within the area, including restrictions on time and place;
 - (iii) the installation, modification, or removal of structures;
 - (iv) the location of field camps;
 - (v) restrictions on materials and organisms which may be brought into the area;

- (vi) the taking of or harmful interference with native flora and fauna;
- (vii) the collection or removal of anything not brought into the area by the permit holder;
- (viii) the disposal of waste;
- (ix) measures that may be necessary to ensure that the aims and objectives of the Management Plan can continue to be met; and
- (x) requirements for reports to be made to the appropriate authority regarding visits to the area;
- (j) in respect of an area proposed for designation as an Antarctic Specially Managed Area, a code of conduct regarding:
 - (i) access to and movement within or over the area;
 - (ii) activities which are or may be conducted within the area, including restrictions on time and place;
 - (iii) the installation, modification, or removal of structures;
 - (iv) the location of field camps;
 - (v) the taking of or harmful interference with native flora and fauna;
 - (vi) the collection or removal of anything not brought into the area by the visitor;
 - (vii) the disposal of waste; and
 - (viii) any requirements for reports to be made to the appropriate authority regarding visits to the area; and
- (k) provisions relating to the circumstances in which Parties should seek to exchange information in advance of activities which they propose to conduct.

ARTICLE 6

DESIGNATION PROCEDURES

1. Proposed Management Plans shall be forwarded to the Committee, the Scientific Committee on Antarctic Research and, as appropriate, to the Commission for the Conservation of Antarctic Marine Living Resources. In formulating its advice to the Antarctic Treaty Consultative Meeting, the Committee shall take into account any comments provided by the Scientific Committee on Antarctic Research and, as appropriate, by the Commission for the Conservation of Antarctic Marine Living Resources. Thereafter, Management Plans may be approved by the Antarctic Treaty Consultative Parties by a measure adopted at an Antarctic Treaty Consultative Meeting in accordance with Article IX(1) of the Antarctic Treaty. Unless the measure specifies otherwise, the Plan shall be deemed to have been approved 90 days after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or is unable to approve the measure.
2. Having regard to the provisions of Articles 4 and 5 of the Protocol, no marine area shall be designated as an Antarctic Specially Protected Area or an Antarctic Specially Managed Area without the prior approval of the Commission for the Conservation of Antarctic Marine Living Resources.

3. Designation of an Antarctic Specially Protected Area or an Antarctic Specially Managed Area shall be for an indefinite period unless the Management Plan provides otherwise. A review of a Management Plan shall be initiated at least every five years. The Plan shall be updated as necessary.
4. Management Plans may be amended or revoked in accordance with paragraph 1 above.
5. Upon approval Management Plans shall be circulated promptly by the Depositary to all Parties. The Depositary shall maintain a record of all currently approved Management Plans.

ARTICLE 7
PERMITS

1. Each Party shall appoint an appropriate authority to issue permits to enter and engage in activities within an Antarctic Specially Protected Area in accordance with the requirements of the Management Plan relating to that Area. The permit shall be accompanied by the relevant sections of the Management Plan and shall specify the extent and location of the Area, the authorized activities and when, where and by whom the activities are authorized and any other conditions imposed by the Management Plan.
2. In the case of a Specially Protected Area designated as such by past Antarctic Treaty Consultative Meetings which does not have a Management Plan, the appropriate authority may issue a permit for a compelling scientific purpose which cannot be served elsewhere and which will not jeopardize the natural ecological system in that Area.
3. Each Party shall require a permit-holder to carry a copy of the permit while in the Antarctic Specially Protected Area concerned.

ARTICLE 8
HISTORIC SITES AND MONUMENTS

1. Sites or monuments of recognized historic value which have been designated as Antarctic Specially Protected Areas or Antarctic Specially Managed Areas, or which are located within such Areas, shall be listed as Historic Sites and Monuments.
2. Any Party may propose a site or monument of recognized historic value which has not been designated as an Antarctic Specially Protected Area or an Antarctic Specially Managed Area, or which is not located within such an Area, for listing as a Historic Site or Monument. The proposal for listing may be approved by the Antarctic Treaty Consultative Parties by a measure adopted at an Antarctic Treaty Consultative Meeting in accordance with Article IX(1) of the Antarctic Treaty. Unless the measure specifies otherwise, the proposal shall be deemed to have been approved 90 days after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or is unable to approve the measure.
3. Existing Historic Sites and Monuments which have been listed as such by previous Antarctic Treaty Consultative Meetings shall be included in the list of Historic Sites and

Monuments under this Article.

4. Listed Historic Sites and Monuments shall not be damaged, removed or destroyed.
5. The list of Historic Sites and Monuments may be amended in accordance with paragraph 2 above. The Depositary shall maintain a list of current Historic Sites and Monuments.

ARTICLE 9 ***INFORMATION AND PUBLICITY***

1. With a view to ensuring that all persons visiting or proposing to visit Antarctica understand and observe the provisions of this Annex, each Party shall make available information setting forth, in particular:
 - (a) the location of Antarctic Specially Protected Areas and Antarctic Specially Managed Areas;
 - (b) listing and maps of those Areas;
 - (c) the Management Plans, including listings of prohibitions relevant to each Area;
 - (d) the location of Historic Sites and Monuments and any relevant prohibition or restriction.
2. Each Party shall ensure that the location and, if possible, the limits of Antarctic Specially Protected Areas, Antarctic Specially Managed Areas and Historic Sites and Monuments are shown on its topographic maps, hydrographic charts and in other relevant publications.
3. Parties shall co-operate to ensure that, where appropriate, the boundaries of Antarctic Specially Protected Areas, Antarctic Specially Managed Areas and Historic Sites and Monuments are suitably marked on the site.

ARTICLE 10 ***EXCHANGE OF INFORMATION***

1. The Parties shall make arrangements for:
 - (a) collecting and exchanging records, including records of permits and reports of visits, including inspection visits, to Antarctic Specially Protected Areas and reports of inspection visits to Antarctic Specially Managed Areas;
 - (b) obtaining and exchanging information on any significant change or damage to any Antarctic Specially Managed Area, Antarctic Specially Protected Area or Historic Site or Monument; and
 - (c) establishing common forms in which records and information shall be submitted by Parties in accordance with paragraph 2 below.
2. Each Party shall inform the other Parties and the Committee before the end of November of each year of the number and nature of permits issued under this Annex in the preceding period of 1st July to 30th June.
3. Each Party conducting, funding or authorizing research or other activities in Antarctic Specially Protected Areas or Antarctic Specially Managed Areas shall maintain a record of such activities and in the annual exchange of information in accordance with the Antarctic Treaty shall provide summary descriptions of the activities conducted by persons

subject to its jurisdiction in such areas in the preceding year.

4. Each Party shall inform the other Parties and the Committee before the end of November each year of measures it has taken to implement this Annex, including any site inspections and any steps it has taken to address instances of activities in contravention of the provisions of the approved Management Plan for an Antarctic Specially Protected Area or Antarctic Specially Managed Area.

ARTICLE 11
CASES OF EMERGENCY

1. The restrictions laid down and authorized by this Annex shall not apply in cases of emergency involving safety of human life or of ships, aircraft, or equipment and facilities of high value or the protection of the environment.

2. Notice of activities undertaken in cases of emergency shall be circulated immediately to all Parties and to the Committee.

ARTICLE 12
AMENDMENT OR MODIFICATION

1. This Annex may be amended or modified by a measure adopted in accordance with Article IX(1) of the Antarctic Treaty. Unless the measure specifies otherwise, the amendment or modification shall be deemed to have been approved, and shall become effective, one year after the close of the Antarctic Treaty Consultative Meeting at which it was adopted, unless one or more of the Antarctic Treaty Consultative Parties notifies the Depositary, within that time period, that it wishes an extension of that period or that it is unable to approve the measure.

2. Any amendment or modification of this Annex which becomes effective in accordance with paragraph 1 above shall thereafter become effective as to any other Party when notice of approval by it has been received by the Depositary.

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