ANTARCTIC SPECIALLY PROTECTED AREA ASPA NO. 160, FRAZIER ISLANDS, WINDMILL ISLANDS, WILKES LAND, EAST ANTARCTICA

1. Description of Values to be Protected

The Frazier Islands, a group of three islands located approximately 16 km offshore from the Australian Casey Station in East Antarctica (Map A) at 66°13'S 110°11'E, is a breeding locality for Southern Giant Petrels *Macronectes giganteus*.

Macronectes giganteus has a world population of approximately 62,000 individuals and is inferred to have sustained a population reduction of at least 20% over the last 60 years. The species is in continued rapid decline.[1] The population of Southern Giant Petrels at the Frazier Islands is the largest known in the continental Antarctic[2]. The most recent estimate of the population was 248 breeding pairs in 2001/02[3]. Breeding colonies of Southern Giant Petrels are found on all three of the Frazier Islands (Nelly, Dewart and Charlton Islands). The largest breeding population is found on Dewart Island (Map B), with smaller colonies on Nelly and Charlton Islands.

The Frazier Islands are one of only four known breeding localities of Southern Giant Petrels around the coastline of continental Antarctica and are the only site in nearly 3000 km of coastline between Davis station and Dumont d'Urville. The other three continental breeding colonies are located near the Australian stations of Mawson (67º36'S, 62º53'E) (Giganteus Island) and Davis (68º35'S, 77º58'E) (Hawker Island), and near the French station Dumont d'Urville (66º40'S, 140º01'E) in Terre Adélie[4]. The Southern Giant Petrels on the Antarctic continent comprise less than 1% of the global breeding population[5]. The current population for continental Antarctica is estimated at approximately 290 pairs, comprised of 3 pairs on Giganteus Island, 25 pairs on Hawker Island, 16 pairs at Pointe Géologie archipelago (Terre Adélie) and 248 pairs on the Frazier Islands[6].

The breeding season for Southern Giant Petrels at the Frazier Islands usually commences between late October and mid November, and extends through to April with their departure northward for the winter (Murray and Luders 1990). Chicks from the Frazier Islands disperse throughout the Southern Hemisphere, with banded chicks recovered in

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[1] Birdlife International (2000) Threatened birds of the world, pp. 53.

[2] Patterson D.L., Woehler, E.J., Croxall, J.P., Cooper, J., Poncet, S., Fraser, W.R. (in press) Breeding distribution and population status of the Northern Giant Petrel *Macronectes halli* and the Southern Giant Petrel *M. giganteus. Marine Ornithology.*

[3] Woehler, E. and Olivier, F. unpublished data.

[4] Woehler, E.J., Martin, M.R., Johnstone, G.W. (1990) The Status of Southern Giant Petrels *Macronectes giganteus* at the Frazier Islands, Wilkes Land, East Antarctica. *Corella* 14: 101-106.

[5] Woehler, E.J., Riddle, M.J., Ribic, C.A. 2003. *Long-term population trends in Southern Giant Petrels in East Antarctica.* Proceedings 8th SCAR Biology Symposium.

[6] Micol, T., Jouventin, P. (2001) Long-term population trends in seven Antarctic seabirds at Point Géologie (Terre Adélie): Human impact compared with environmental change. *Polar Biology* 24: 175-185

New Zealand, South America, Easter Island, and South Africa within nine months of departure (summarised in Murray and Luders 1990).

The global breeding population of Southern Giant Petrels is listed as Vulnerable under IUCN criteria (Table 1) and is estimated at around 31,300 pairs[7]. A total of 30 populations contain 500 or fewer breeding pairs, and at 15 of these sites there are 50 or fewer breeding pairs[8]. In the previous three generations, the global population has decreased by 20-50%[9].

Table 1: The conservation status of Southern Giant Petrels by various authorities using IUCN criteria.

Authority	**Conservation Status under IUCN criteria**
IUCN Red List 2000	Vulnerable (A1a,b,d,e & A2b,d,e)
Garnett, S.T. & Crowley, G. M. (2000) *The Action Plan for Australian Birds 2000*	Vulnerable (global population) Endangered (Australian population only)

Following its discovery in 1955, the breeding population of Southern Giant Petrels at the Frazier Islands decreased until the early 1980s (Appendix 1). The estimated total breeding population at the Frazier Islands in the mid 1950s was approximately 250 pairs (Appendix 1). The population decreased by approximately 80% and was visited six times, or once every 4-5 years between discovery in 1955 and the recorded population minimum of 57 pairs in 1982. The population has increased since 1982 with more than 200 nests recorded in 1998/99, and almost 248 nests in 2001/02. Most other breeding populations are decreasing[10].

Breeding populations of Southern Giant Petrels are highly sensitive to human disturbance at their colonies. It has been suggested that visits to the colonies to band adults and chicks contributed to the decreases recorded[11]. Reductions in breeding populations of Southern Giant Petrels at other locations in the Antarctic and Subantarctic have been attributed to

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[7] Environment Australia (2001) *Recovery Plan for Albatrosses and Giant Petrels.* prepared by Wildlife Scientific Advice, Natural Heritage Division in consultation with the Albatross and Giant Petrel Recovery Team, Canberra.

[8] Ibid.

[9] Stattersfield, A.J., Capper, D.R. (2000) *Threatened Birds of the World.* Birdlife International, Lynx Publications; Garnett, S.T., Crowley, G.M. (2000) *The Action Plan for Australian Birds 2000.* Commonwealth of Australia, Environment Australia, Canberra; Patterson *et al.* Breeding distribution and population status of the Giant Petrel.

[10] Woehler, E.J., Cooper, J., Croxall, J.P., Fraser, W.R., Kooyman, G.L., Miller, G.D., Nel, D.C., Patterson, D.L., Peter, H-U, Ribic, C.A., Salwicka, K., Trivelpiece, W.Z., Weimerskirch, H. (2001) *A Statistical Assessment of the Status and Trends of Antarctic and Subantarctic Seabirds.* SCAR/CCAMLR/NSF, 43 pp.; Patterson *et al.* Breeding distribution and population status of the Giant Petrel; Woehler *et al.* "*Long-term population trends in Southern Giant Petrels*".

[11] Woehler, E.J., Riddle, M.J. (2001) *Long-term population trends in Southern Giant Petrels in the Southern Indian Ocean.* Poster presented at 8th SCAR Biology Symposium 2001, Amsterdam.

activities associated with stations[12]. The bycatch of Southern Giant Petrels in longline fisheries operating in the Southern Ocean is also likely to have contributed to observed population decreases[13]. Decreases in breeding populations of Southern Giant Petrels have also been observed at sites where human disturbance has been minimal, such as Heard Island[14].

Apart from visits for seabird censuses, the Frazier Islands have been visited relatively infrequently. Twenty-three visits, or on average one visit every two years has occurred since 1956 (see Appendix 1). In the mid 1980s, a management strategy was implemented for all three breeding localities in the vicinity of Australian Stations to minimise human disturbance to breeding colonies of Southern Giant Petrels. The strategy involved the Australian Antarctic Division restricting census visits to one in every three to five year period and implementing tight administrative controls over all other visits. The interval was considered an appropriate compromise between the risk of disturbance to breeding birds from censuses and the need to obtain meaningful population data. The strategy is believed to have contributed to the stabilisation and recovery observed in two of the three populations in Eastern Antarctica during the late 1980s onwards.

The recent increase in the breeding population of Southern Giant Petrels at the Frazier Islands in contrast to global trends, combined with the apparent positive effects of the existing management strategy, suggests that continued and formalised protection of Southern Giant Petrel breeding colonies may be warranted. Long-term protection and monitoring of Southern Giant Petrels at the Frazier Islands will contribute to the development of appropriate regional and global conservation strategies for the species and will provide information for comparisons with populations elsewhere.

2. Aims and Objectives

Management of the Frazier Islands aims to:

- minimise human disturbance to the breeding colonies of Southern Giant Petrels to assist stabilisation and recovery of the population in the wild;
- conserve the Frazier Islands as a reference area for future comparative studies with other breeding populations of Southern Giant Petrels;
- minimise the possibility of the introduction of alien plants, animals and microbes to the Frazier Islands; and

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[12] Jouventin, P., Weimerskirch, H. (1991) Changes in the population size and demography of southern seabirds: management implications. In: Perrins, C.M., Lebreton, J.-D. and Hirons, G.J.M. *Bird population studies*: *Relevance to conservation and management.* Oxford University Press: 297-314; Woehler *et al*. The Status of Southern Giant Petrels *Macronectes giganteus*; Woehler *et al*. "*Long-term population trends in Southern Giant Petrels*".

[13] Garnett, S.T., Crowley, G.M. (2000) The Action Plan for Australian Birds 2000. Commonwealth of Australia, Environment Australia, Canberra; Woehler et al. "A Statistical Assessment of the Status of Antarctic and Subantarctic Seabirds".

[14] Woehler, E.J. (1991) Status and Conservation of the Seabirds of Heard and the McDonald Islands. In: Croxall, J.P. (ed.) Seabird Status and Conservation: A Supplement. *ICBP Technical Publication* No. 11: 263-277.

- preserve the Frazier Islands, henceforth, as a highly restricted area by limiting human visitation to the islands during the Southern Giant Petrel breeding season.

3. Management Activities

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

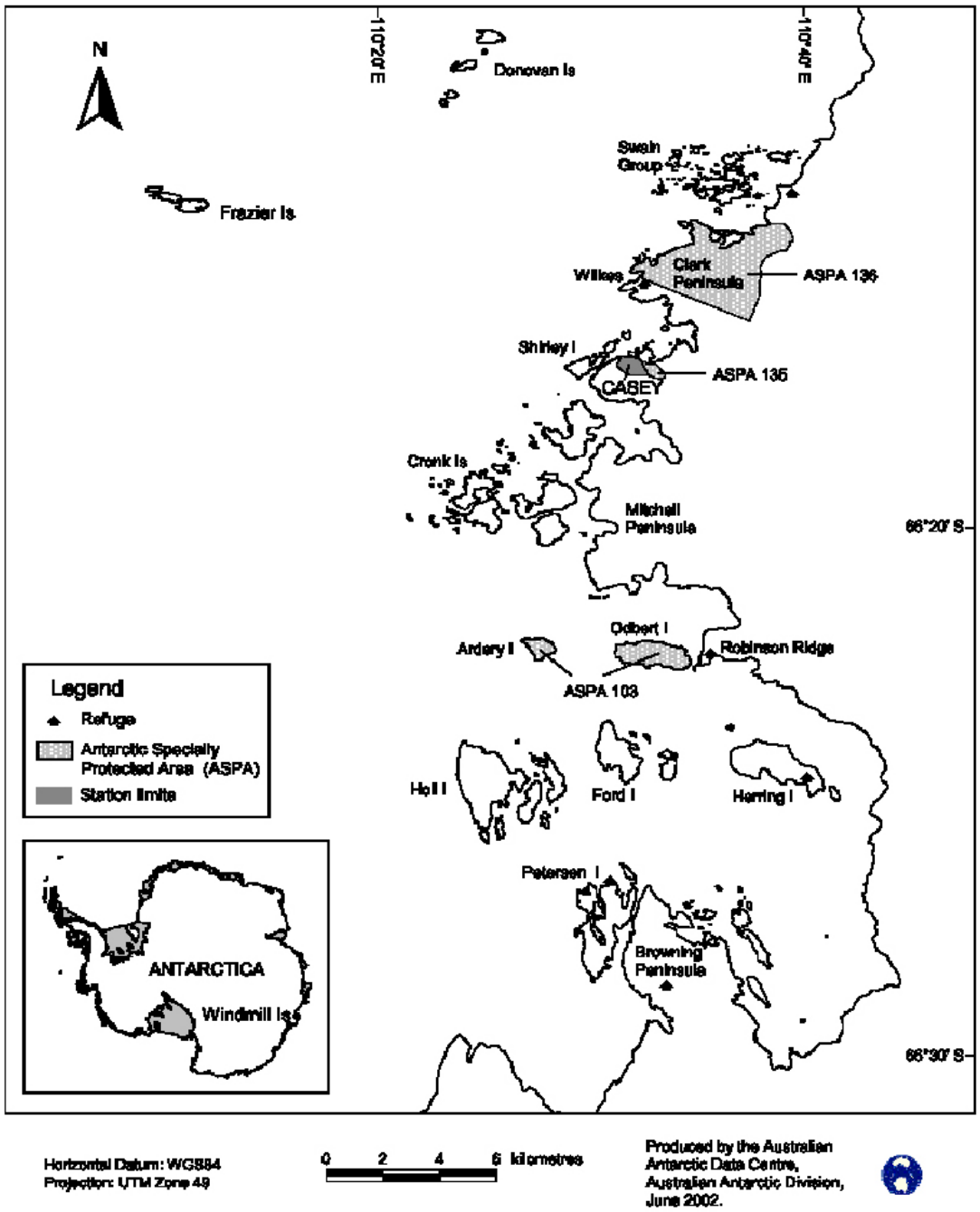
- one research visit should be conducted to census the Southern Giant Petrels and other seabird populations in each 5 year period to enable monitoring of breeding populations. These visits are to be conducted by two people, one of whom should be a bird biologist associated with an approved national program(s) or who has had previous field experience with Southern Giant Petrels;
- information on the location of the Frazier Islands ASPA (stating the restrictions that apply) shall be produced and prominently displayed at Casey Station and copies of this Management Plan shall be available at the station. Informative material and the Management Plan shall be provided to ships visiting the vicinity;
- clothing (particularly all footwear) and field equipment shall be appropriately cleaned before entering the Area; and
- the Management Plan shall be reviewed at least every five years and updated/modified as required.

4. Period of Designation

Designation is for an indefinite period.

5. Maps

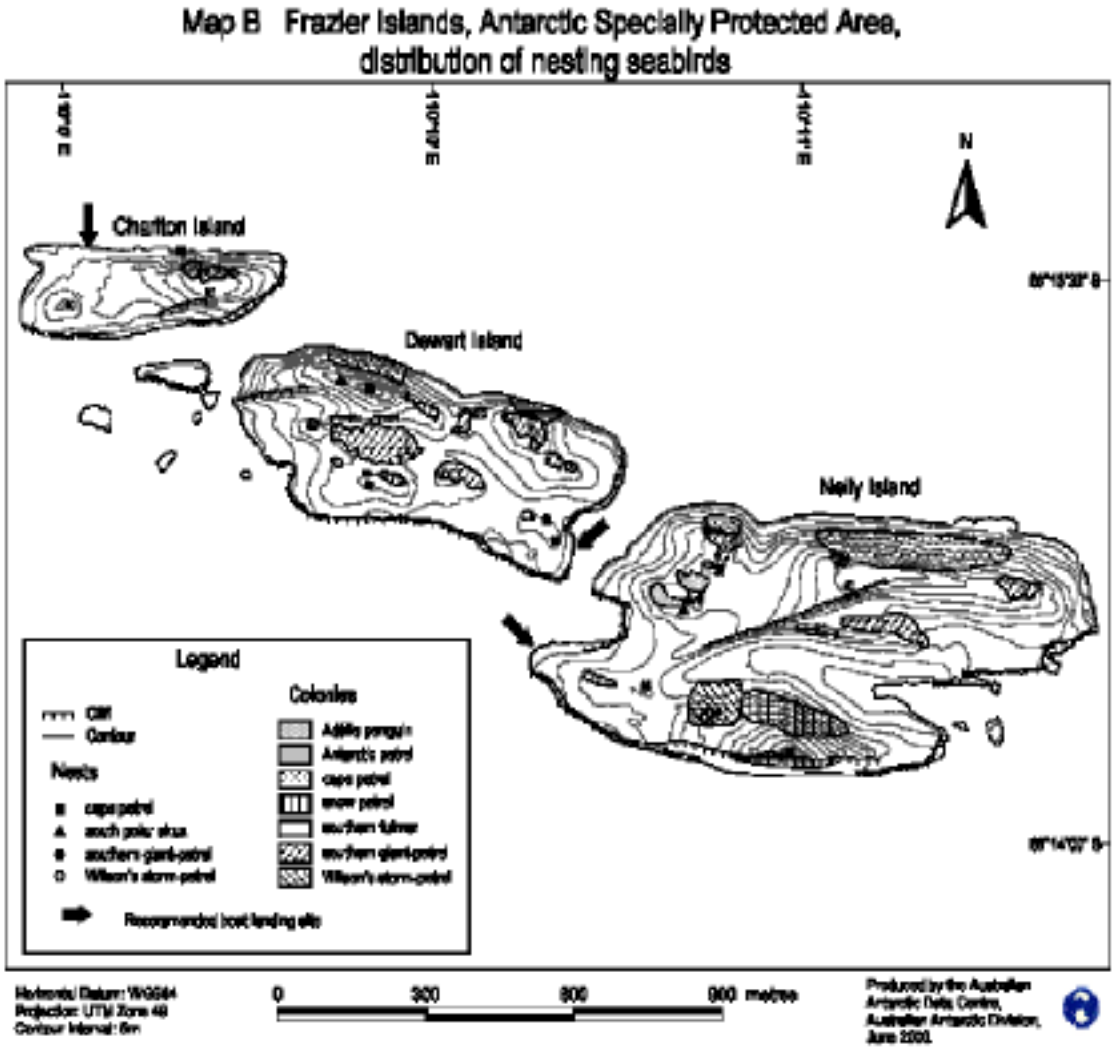
Map A Windmill Islands, showing the location of the Frazier Islands and protected areas within the region



Map A: Windmill Islands, showing the location of the Frazier Islands and protected areas within the region

Map specifications

Projection: UTM Zone 49
Horizontal Datum: WGS84



Map B: Frazier Islands, Antarctic Specially Protected Area showing distribution of seabird nesting sites. Map Specifications
Projection: UTM Zone 49
Horizontal Datum: WGS84

6. Description of the Area

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

The Frazier Islands are located at latitude 66°14'S, longitude 110°10'E (Map A). The three islands (Nelly, Dewart and Charlton Island) lie in the eastern part of Vincennes Bay approximately 16 km to the west north west of Casey Station. Nelly Island is the largest of the three islands (approximately 0.35 km_ in area), and was named for the presence of several colonies of Southern Giant Petrels or "Nellies". The ASPA comprises the entire terrestrial area of the three islands, with the seaward boundary at the

low water mark (Map B). The total area of the Frazier Islands ASPA is approximately 0.6 km_. There are no boundary markers.

Nelly Island supports the largest and most varied avian community of the three islands, with records indicating that Snow Petrels (*Pagodroma nivea*), Cape Petrels (*Daption capense*), Antarctic Petrels (*Thalassoica antarctica*), Wilson's Storm-Petrels (*Oceanites oceanicus*), Southern Fulmars (*Fulmarus glacialoides*), and South Polar Skuas (*Catharacta maccormicki*) all nest on Nelly Island. South Polar Skua nests have also been found on Dewart Island (Table 3, Map B).

In 1961/62, 100 Adélie Penguin (*Pygoscelis adeliae*) nests were reported in one colony on Nelly Island[15]. During the 1989/90 season, three colonies were recorded on the northwest ridge of Nelly Island with a total of 554 nests. The increase corresponds with those recorded for most other Adélie Penguin populations in the Windmill Islands region during the period from 1959/60 to 1989/90[16]. In the 2001/02 season, approximately 1,000 pairs were estimated to be nesting on Nelly Island[17].

Recorded sightings of marine mammals at the Frazier Islands are scarce; however, in 1968 three Weddell Seals (*Leptonychotes weddellii*) were observed on an ice floe located between Nelly and Dewart Islands. An Orca (Killer Whale: *Orcinus orca*) was also sighted offshore from the islands during the same year[18]. A few Leopard Seals (*Hydrurga leptonyx*) were sighted near Nelly Island and a low number of Weddell Seals were recorded on the sea ice near the Frazier Islands in the 2001/02 season.

Vegetation recorded at Nelly Island comprises at least 11 species, including lichens *Buellia frigida*, *Usnea antarctica*, *Rhizoplaca melanophthalma*, *Candelariella flava*[19,] (a terrestrial alga *Prasiola crispa*, an indeterminate green crust which is thought to be 'a mixture of fungal hyphae and green alga *Desmococcus olivaceus*'[20], and several species of snow algae including *Chlorococcum* sp., *Chloromonas polyptera*, *Chlorosarcina antarctica*, *Prasiococcus calcarius*. There are no published records of terrestrial invertebrates on the Frazier Islands; however, no surveys have been carried out[21]. (Table 3)

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[15] Woehler, E.J., Slip, D.J., Robertson, L.M., Fullagar, P.J., Burton, H.R. (1991) The distribution, abundance and status of Adélie Penguins *Pygoscelis adeliae* at the Windmill Islands, Wilkes Land, Antarctica. *Marine Ornithology* 19(1): 1-17.

[16] Ibid.

[17] Woehler, E. and Olivier, F. unpublished data.

[18] ANARE 1968, unpublished data

[19] Seppelt, R. pers. comm.

[20] Melick, D.R., Hovenden. M.J., Seppelt, R.D. (1994) Phytogeography of bryophyte and lichen vegetation in the Windmill Islands, Wilkes Land, Continental Antarctica. *Vegetatio* 111: 71-87.

[21] Seppelt, R. pers. comm.

The topography of the Frazier Islands is characterised by steep cliffs rising from the sea. The highest peak on Nelly Island is approximately 65 metres. There is a broad 'U' shaped ice-filled valley on both Nelly and Dewart Islands.

The geology of the Frazier Islands is typical of the Windmill Islands group and is characterised by the layered schists and finely crenulated gneisses of the Windmill metamorphics. The geological character of the Frazier Islands developed as a result of two phases of metamorphosis at 1400-1310 Ma and about 1200 Ma of pre-existing volcanics, greywacke and shale. On Nelly Island there are steep cliffs of biotite and gneiss. A red sandstone erratic is located in the 'U' shaped valley on Nelly Island below the 30m contour[22]. Highly polished glacial striae in the gneisses provide evidence of recent glaciation and indicate the former direction of ice flow of 265º and 280º T. Surface sediments consist of fine gravelly sand located in bedrock depressions[23].

The climate at the Frazier Islands is characteristic of that experienced at the Windmill Islands and other Antarctic coastal locations in the region. At Casey Station, located 16 kilometres to the ESE of the Frazier Islands group, mean temperatures are 0.3°C for the warmest month and –14.9°C for the coldest month. Precipitation is low and the high albedo of the exposed rock surfaces results in persistent ice-free areas that provide attractive nesting sites for the avifauna.

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[22] Goodwin, I.D. (1993) Holocene Deglaciation, Sea-Level Change, and the Emergence of the Windmill Islands, Budd Coast, Antarctica. *Quaternary Research* 40: 70-80.

[23] Ibid.

Table 3: Biota recorded at the Frazier Islands

	Nelly Island	**Dewart Island**	**Charlton Island**
Seabirds			
Adélie Penguins (*Pygoscelis adeliae*)	c.1000 (2001)		
Antarctic Petrel (*Thalassoica antarctica*)	P		
Cape Petrel (*Daption capense*)	P	P (2001)	P (2001)
Snow Petrel (*Pagodroma nivea*)	P	P	
Southern Giant Petrel (*Macronectes giganteus*)	93N (2001)	135N (2001)	20N(2001)
Wilson's Storm Petrels (*Oceanites oceanicus*)	P		
South Polar Skua (*Catharacta maccormicki*)	3N (2001)	1N (possible)	
Southern Fulmar (*Fulmarus glacialoides*)	P	P	
Mammals			
Leopard Seal (*Hydrurga leptonyx*)	X (2001)		
Weddell Seal (*Leptonychotes weddellii*)	X (2001)		
Orca (Killer Whale: *Orcinus orca*)	X (1968)		
Lichens			
Buellia frigida	R		
Usnea antarctica	R		
Rhizoplaca melanophthalma	R		
Candelariella flava	R	R	
Moss			
Bryum pseudotriquetrum	R		
Algae			
Indeterminate green crust	F		
Prasiola crispa	F		
Chlorococcum sp.	F		
Chloromonas polyptera	F		
Chlorosarcina antarctica	R		
Prasiococcus calcarius	F		

Census data for breeding seabirds provided where available, 'P' indicates recorded breeding seabirds but no census data available, 2001 indicates observations in December 2001 visit, 'X' indicates recorded on or near the island, 'N' a count of nests, 'R' rare, and 'F' frequent. Data complied from records held by the Australian Antarctic Data Centre, ANARE records 1968, Appendix 1, Melick *et al*. 1994, Seppelt, R. pers. comm., Ling, H. pers. comm., Woehler, E. pers. comm., and Woehler, E. and Olivier, F. unpublished data (December 2001).

6(ii) Special Zones within the Area

There are no special zones within the Area.

6(iii) Location of Structures within the Area

There are no structures within or adjacent to the Area and none are to be erected.

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

The following Protected Areas are located on the Budd Coast near the Frazier Islands:

- North-east Bailey Peninsula, Antarctic Specially Protected Area No. 135 (66°17'S, 110°32'E);
- Clark Peninsula, Antarctic Specially Protected Area No. 136 (66º15'S, 110º36'E); and,
- Ardery Island and Odbert Island, Antarctic Specially Protected Area No. 103, (66º22'S, 110º30'E).

7. Permit conditions

Visits to the Frazier Islands ASPA are prohibited except in accordance with a Permit issued by an appropriate National Authority. National Antarctic Programs operating in the region shall consult with each other to ensure that the frequency of visits does not exceed that permitted in the Management Plan. Permits to enter the Area may be issued during the non-breeding period for Southern Giant Petrels, specifically from 1 May to 30 September, for compelling scientific research that cannot be undertaken elsewhere, or for essential management purposes consistent with the objectives and provisions of the Management Plan. Permits are only to be issued for research that will not jeopardise the ecological or scientific values of the Area, or interfere with existing scientific studies.

Only one Permit is to be issued for the purpose of conducting a seabird census in each 5 year period. The Permit issuing authority is to refer to the provision under the first dot point of section 3 of this management plan when issuing Permits. Censuses are to be conducted from outside the Giant Petrel colonies, wherever practicable. In most cases there are vantage points from where the nesting birds may be counted. The maximum time to be spent on the Frazier Islands is 12 hours in total; however, the census may involve several visits to the islands. Only the two persons named in the Permit may be ashore within the Area at any time. The boat operator and others should remain at the shoreline for safety reasons.

Permits should include a condition that the Permit or a copy shall be carried at all times when within the Area. Additional conditions, consistent with the objectives and provisions of the Management Plan, may be included by the issuing authority. The principal Permit Holder for each Permit issued should be required to submit to the Permit issuing authority a visit report detailing all activities undertaken within the Area, and including all census data obtained during the visit.

7(i) Access to, and movement within or over the Area

Vehicles are prohibited within the Area:

- the only permitted access to the Frazier Islands is by watercraft. Landings must be made at the designated sites as marked on Map B. Boats used to visit the islands must be left at the shoreline and movement within the Area is by foot only. Only personnel who are required to carry out scientific/management work in the Area should leave the landing site;
- any movement within the Area is to be consistent with the minimum approach distances to nesting birds specified in Appendix 2. Persons shall not approach closer than is necessary to obtain census data or biological data from any nesting Southern Giant Petrels, and in no case closer than 20m; and
- to reduce disturbance to wildlife, noise levels including verbal communication is to be kept to a minimum. The use of motor-driven tools and any other activity likely to generate noise and thereby cause disturbance to nesting birds is prohibited within the Area during the breeding period for Southern Giant Petrels (1 October to 30 April).
- landing of aircraft in the Area is prohibited at any time;

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

The following activities may be conducted within the Area from 1 May to 30 September as authorised in a Permit;

- scientific research consistent with the Management Plan for the Area that will not jeopardise the values for which the Area has been designated or the ecosystems of the Area;
- compelling management activities, including monitoring; and
- sampling, which should be the minimum required for approved research programs.

Exceptions to restrictions outlined in the management plan are in an emergency as specified in Article 11 of Annex V of the Protocol on Environmental Protection to the Antarctic Treaty (the Madrid Protocol).

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

No permanent structures are to be erected in the Area.

7(iv) Location of field camps

Camping is prohibited in the Frazier Islands ASPA except in an emergency.

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

- Fuel is not to be depoted on the islands. Boat refuelling is permitted at shoreline landing sites. A small amount of fuel is permitted for an emergency stove.
- No poultry products, including dried food containing egg powder, are to be taken into the Area.
- No herbicides or pesticides are to be brought into the Area.

- Any chemical which may be introduced for compelling scientific purposes as authorised in a Permit shall be removed from the Area, at or before the conclusion of the activity for which the Permit was granted. The use of radio-nuclides or stable isotopes is prohibited.
- No animals, plant material or microorganisms shall be deliberately introduced into the Area and precautions shall be taken against accidental introductions. All equipment and clothing should be thoroughly cleaned before entering the Area.

7(vi) 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 Article 3 of Annex II to the Protocol on Environmental Protection to the Antarctic Treaty.
- Disturbance of Southern Giant Petrels should be avoided at all times.

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

- Material may only be collected or removed from the Area as authorised in 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 the removal is likely to be greater than leaving the material *in situ*. If such material is found the appropriate Authority must be notified.

7(viii) Disposal of waste

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

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

- A census of Southern Giant Petrels should be conducted in each 5 year period. Censuses of other species may be undertaken during this visit provided no additional disturbance is caused to the Southern Giant Petrels.
- The length of time to be spent at the Frazier Islands to conduct a bird census should be minimised; e.g. a survey should be able to be completed in approximately a 12 hour period.
- Novel GPS data shall be obtained for specific sites of long-term monitoring for lodgement with the Antarctic Master Directory through the appropriate National Authority.

7(x) Requirement for reports

Parties should ensure that the principal Permit Holder for each permit issued submits to the appropriate national authority a report on activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form contained in Appendix 4 of Resolution 2 (1998)(CEP I). 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 Plan of Management. 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 both in any review of the Plan of Management and in organising the scientific use of the Area. A copy of the report should be forwarded to the National Party responsible for development of the Management Plan to assist in management of the Area, and monitoring of bird populations, additionally visit reports should provide detailed information on census data, locations of any new colonies or nests not previously recorded, a brief summary of research findings and copies of photographs taken of the Area

8. Supporting documentation

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Appendix 1: Census data for Southern Giant Petrel populations at the Frazier Islands, Wilkes Land, Antarctica

Date	Nelly Island	Dewart Island	Charlton Island	Source
21, 22 Jan. 1956	250N	not visited	not visited	Ingham (1959), ANARE
27 Jan. 1959	80-100	20*	not visited	Murray and Luders (1990)
3,4 Mar. 1959	no data	no data	no data	USARP
15 Dec. 1959	60A	not visited	not visited	R.L. Penney, unpublished data
12 Feb. 1960	46C	not visited	not visited	R.L. Penney, unpublished data
21,22 Mar. 1961	34C	10C*	no data	ANARE
21 Jan. 1964	10C*	not visited	not visited	ANARE
7 Mar. 1968**	72	no data	no data	Murray and Luders (1990)
20,21 Jan. 1972	52C	53C	10C*	Murray (1972)
31 Jan. 1974	76+	no data	no data	Murray and Luders (1990)
29 Jan. 1975	not visited	29C	not visited	Murray and Luders (1990)
13,17 Feb. 1977	37C	33C†	no data	Murray and Luders (1990)
24 Jan. 1978	48C	48C	6C	Murray and Luders (1990)
30 Jan., 2 Feb. 1979	37C†	46C	5C	Murray and Luders (1990)
20 Jan. 1980	44C	55C	no data	ANARE
18 Jan. 1983	43C	10C	Nil	ANARE
28, 29 Nov. 1983	63N	68N	9N	Woehler *et al*. (1990)
23 to 28 Jan. 1984	52C	not visited	not visited	ANARE
3 Mar. 1985	64C	69C	no data	ANARE
14 Feb. 1986	55C	54C	9C	ANARE
23 Dec. 1989	73N	106N	14N	Woehler *et al*. (1990)
23 Dec. 1997***	84N	62N	13N(incomplete survey)	Creuwels, J. unpublished data
26 Dec. 1998	95N	103N	17N	Creuwels, J. unpublished data
26 Dec. 2001	93N	135N	20N	Woehler, E. and Olivier, F. unpublished data

‘N’ indicates a count of nests, ‘A’ count of adults and ‘C’ count of chicks. ‘ANARE’ and ‘USARP’ indicates unpublished data obtained by Australian National Antarctic Research Expeditions and United States Antarctic Research Program personnel, respectively. Census data are from Woehler *et al*. 1990 and supplemented with additional data from the 1997/98, 1998/99 and 2001/02 seasons.

*Only a subset of the chicks present on each visit was banded and no estimates of the total numbers were made.
**Reported as January in Murray and Luders (1990).
*** Data to be verified
†Reported as 43 and 35 respectively in Murray and Luders (1990).

Appendix 2: Minimum wildlife approach distances

The minimum (closest) approach distances as set out in Table 2 are to be maintained when approaching any wildlife on, or in the vicinity of the Frazier Islands unless a closer approach distance is authorised in a Permit. These distances are a guide and should an activity disturb wildlife, a greater distance is to be maintained.

Table 2: Minimum distances to maintain when approaching wildlife

<table>
<tr><th rowspan="2">Species</th><th colspan="3">Distances (m)</th></tr>
<tr><th>People on foot / ski</th><th>Quad/ Skidoo</th><th>Hagglunds</th></tr>
<tr><td>Giant petrels</td><td>100</td><td rowspan="5">150</td><td rowspan="5">250</td></tr>
<tr><td>Emperor penguins in colonies</td><td>30</td></tr>
<tr><td>Other penguins in colonies
Moulting penguins
Seals with pups
Seal pups on their own
Prions and petrels on nest
South polar skua on nest</td><td>15</td></tr>
<tr><td>Penguins on sea ice
Non breeding adult seals</td><td>5</td></tr>
</table>

Notes:

1. Includes Cape petrels, Antarctic petrels, Wilson’s Storm Petrels, Snow Petrels and Southern Fulmars.

Source: Environmental Code of Conduct for Australian Field Activities in Antarctica, Australian Antarctic Division