Management Plan

for Antarctic Specially Protected Area No 160 FRAZIER ISLANDS, WINDMILL ISLANDS, WILKES LAND, EAST ANTARCTICA

Introduction

The Frazier Islands consists of a group of three islands located approximately 16 km offshore from Australia's Casey station, in East Antarctica (see Map A). The islands support the largest of only four known breeding colonies of southern giant petrels *Macronectes giganteus* on continental Antarctica, and were designated as an Antarctic Specially Protected Area under Measure 2 (2003) for the sanctuary of the birds. The management plan for the Area was revised under Measure 13 (2008).

Following their discovery in 1955, the southern giant petrel colonies at the Frazier Islands were visited intermittently during the period mid-January to late March. The aim of these visits was usually the banding of southern giant petrel chicks. Weather permitting, counts of the chicks present were made but were often restricted to Nelly Island. Thus, the early data available do not offer the information needed for an analysis of possible changes in the status of the total population. In more recent years, occupied nests were counted in December, usually covering all three islands. The indication is that the breeding population, especially at Dewart Island, may be increasing.

Apart from visits for seabird observations, the Frazier Islands have been visited very infrequently. On average a visit for seabird observations have occurred every two years since the late 1950s (see Appendix 1). In the mid-1980s, a formal management strategy was implemented to minimise human disturbance to breeding colonies of southern giant petrels in the vicinity of Australia's Antarctic stations. The Australian Antarctic Division restricted access by Australian Antarctic program participants so that census visits occurred once in every three- to five-year period and implemented tight administrative controls over visits for other purposes. The census interval was considered an appropriate compromise between the risk of disturbance to breeding birds from monitoring activities and the need to obtain population data. Current thinking suggests it is desirable to provide for more frequent censuses, if conducted in an appropriate manner, to allow more detailed understanding of population status and trends.

A more recent ostensible increase in the breeding population of southern giant petrels at the Frazier Islands, combined with the apparent positive effects of the existing protective measures, suggests that continued and formalised protection of southern giant petrel breeding colonies is 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.

This revised management plan reaffirms the values of the original designation and accords with Annex V of the Protocol on Environmental Protection.

1. Description of values to be protected

The Area is primarily designated to protect the breeding colony of southern giant petrels, which is the largest known in the continental Antarctic.

In the late 1980s, the world breeding population of southern giant petrels was estimated at 38,000 pairs. Recent analysis of trend data for the global population over the past three generations (64 years) gives a best case estimate of a 17 % increase and a worst case scenario of a 7.2 % decline; declines consequently do not approach the threshold for classification as Vulnerable on the IUCN Red List of Threatened Species and the species has been down-listed from Near Threatened to Least Concern (BirdLife International, 2012).

The southern giant petrel is listed in Annex 1 of the Agreement on the Conservation of Albatrosses and Petrels (ACAP), a multilateral agreement which seeks to conserve albatrosses and petrels by coordinating international activity to mitigate known threats to their populations, and in Appendix II of the Convention on the Conservation of Migratory Species of Wild Animals.

In East Antarctica, southern giant petrels are uncommon as they are at the southern limit of their distribution range. The most recent estimate of the total population at the Frazier Islands was 237 breeding pairs in 2011. Colonies are found on all three of the islands in the group (Nelly, Dewart and Charlton Islands), the largest being located on Dewart Island. In 2011, automatic cameras were temporarily installed on Nelly Island to establish the breeding chronology and success of the southern giant petrels (Map B).

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 known 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 (Giganteus Island, Rookery Islands, ASPA 102) and Davis (Hawker Island, ASPA 167), and near the French station Dumont d'Urville (Pointe-Géologie Archipelago, ASPA 120). The southern giant petrels on the Antarctic continent comprise less than 1% of the global breeding population. The current population for continental Antarctica is estimated at approximately 300 pairs, comprised of 2-4 pairs on Giganteus Island (2007), approximately 45 pairs on Hawker Island (2010), 8-9 pairs at Pointe Géologie archipelago (Terre Adélie) (2005) and 237 pairs on the Frazier Islands (2011). However, incidental observations at the coast near Mawson station indicate there may be additional colonies that have not been discovered yet.

The Area also supports breeding colonies of Adélie penguins and several other species of flying birds.

2. Aims and objectives

Management of the Frazier Islands aims to:

- minimise human disturbance to the breeding colonies of southern giant petrels to assist further the protection 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; and
- minimise the possibility of the introduction of alien plants, animals and microbes to the Frazier Islands.

3. Management activities

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

- research visits to assess population levels and trends of the southern giant petrel colony and/or other wildlife shall be permitted. Wherever feasible, preference shall be given to activities and methodologies which minimise disturbance to the breeding colony (e.g. use of automated cameras);
- where practicable the Area shall be visited outside the breeding season of southern giant petrels (i.e. during the period mid-April to mid-September) as necessary, to assess whether it continues to serve the purposes for which it was designated and to ensure that management activities are adequate;
- information about the location of the Area and the restrictions that apply shall be produced and prominently displayed at Casey station. 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;
- the management plan shall be reviewed at least every five years and updated/modified as required.

4. Period of designation

Designated for an indefinite period

5. Maps

Map A: Antarctic Specially Protected Areas, Windmill Islands, East Antarctica.

Map B: Antarctic Specially Protected Area No. 160 Frazier Islands – Topography and Bird Distribution.

Map Specifications:

Projection: UTM Zone 49

Horizontal Datum: WGS84

6. Description of the Area

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

General description

The Frazier Islands are located at latitude 66°14'S, longitude 110°10'E (Map A). The three islands (Nelly, Dewart and Charlton) lie in the eastern part of Vincennes Bay approximately 16km to the west north west of Casey station. Nelly Island is the largest of the three islands (approximately 0.35km² in area), and was named for the presence of several colonies of southern giant petrels or "Nellies". The Area 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 Antarctic Specially Protected Area is approximately 0.6km². There are no boundary markers.

Southern Giant Petrels

The breeding season for southern giant petrels at the Frazier Islands usually commences in late October to mid November, and extends through to April when the birds depart northward for the winter. Banded chicks from the Frazier Islands dispersed throughout the Southern Hemisphere and have previously been recovered in New Zealand, South America, Easter Island, and South Africa within nine months of departure.

In the mid 1980s, a management strategy was implemented for all three southern giant petrels breeding localities in the vicinity of the Australian stations, to minimise human disturbance. Previously the Australian Antarctic Division restricted census visits to one in every three to five year period and implemented tight administrative controls over all other visits. At this time, this level of visitation was considered an appropriate compromise between the risk of disturbing the birds and the need to obtain meaningful population data. However, this management regime impacted on the level of visitation needed to assess population levels (and trends) and did not appear to significantly benefit the breeding success of the southern giant petrels. With the development of new technology (such as automated cameras), detailed information can now be obtained with little or no human presence during the breeding period.

In December 2011, 80 breeding pairs were observed on Nelly Island including two banded birds, 130 breeding pairs on Dewart Island and 27 breeding pairs on Charlton Island. The four automatic cameras temporarily installed on Nelly Island will assist with establishing/understanding key breeding parameters (Map B).

Other birds

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 the island. South Polar skua nests have also been observed on Dewart Island (Appendix 2, Map B).

In 1961/62, 100 Adélie penguin (*Pygoscelis adeliae*) nests were reported in one colony on Nelly Island. During the 1989/90 season, three colonies were recorded on the north-west 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. In the 2001/02 season, approximately 1,000 pairs were estimated to be nesting on Nelly Island. A brief inspection of the Adélie penguin colonies in 2005/06 suggested that the breeding population continues to increase.

Marine mammals

Recorded sightings of marine mammals at the Frazier Islands are scarce. In 1968 three Weddell seals (*Leptonychotes weddellii*) were observed on an ice floe located between Nelly and Dewart Islands. Orcas (killer whale: *Orcinus orca*) have been also sighted offshore from the islands, including a large pod in late 2011. A few leopard seals (*Hydrurga leptonyx*) were sighted on sea ice near Nelly Island and a small number of Weddell seals were recorded on the sea ice near the Frazier Islands in the 2001/02 season (Appendix 2).

Vegetation

Vegetation recorded at Nelly Island comprises at least 11 species, including lichens *Buellia frigida*, *Usnea antarctica*, *Rhizoplaca melanophthalma*, *Candelariella flava*' a terrestrial alga *Prasiola crispa*, an indeterminate green crust which is thought to be 'a mixture of fungal hyphae and green alga *Desmococcus olivaceus*', and several species of snow algae including *Chlorococcum* sp., *Chloromonas polyptera*, *Chlorosarcina antarctica*, *Prasiococcus calcarius* (Appendix 2). There are no published records of terrestrial invertebrates on the Frazier Islands; however, no surveys have been undertaken.

Geology and geography

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. Highly polished glacial striae in the gneisses provide evidence of recent glaciation and indicate the former direction of ice flow of 265° and 280° T. Surface sediments consist of fine gravelly sand located in bedrock depressions.

Climate

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 east south east 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.

Environmental domains analysis

The Frazier Islands are not classified in accordance with the Environmental Domains Analysis for Antarctica (Resolution 3 (2008)).

Antarctic Conservation Biogeographic Regions

Based on the Antarctic Conservation Biogeographic Regions (Resolution 6 (2012)) the Frazier Islands are located within Biogeographic Region 7 *East Antarctica.*

6(ii) Access to the Area

Depending on sea ice conditions, access to the vicinity of the Frazier Islands can be gained by small boat, in accordance with section 7(ii) of this plan. Sea ice conditions are usually too unstable for over sea-ice access by vehicles.

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

There are no permanent structures within or adjacent to the Area and none are to be erected. At the time of writing four automatic cameras were temporarily located in proximity to the southern giant petrel colony, for the purposes of ongoing population monitoring (Map B).

6(iv) Location of other protected areas in the vicinity

The following Protected Areas are located on the Budd Coast near the Frazier Islands (see Map A):

ASPA No 135, North-east Bailey Peninsula (66°17'S, 110°32'E), approximately 16km to the east-south-east.

ASPA No 136, Clark Peninsula (66°15'S, 110°36'E), approximately 15km to the east-south-east; and

ASPA No 103, Ardery Island and Odbert Island (66°22'S, 110°30'E), approximately 20km to the south-east.

6(v) Special zones within the Area

There are no special zones within the Area.

7. Terms and conditions for entry permits

7(i) General permit conditions

Entry to 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 for compelling scientific reasons which cannot be served elsewhere, or for reasons essential to the management of the Area;
- the actions permitted are in accordance with this management plan;
- the activities permitted will give due consideration via the environmental impact assessment process to the continued protection of the environmental values of the Area;
- the Permit shall be issued for a finite period; and
- the Permit shall be carried when in 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 include all census data obtained during the visit.

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

- Vehicles are prohibited within the Area and all movement within the Area should be on foot.
- The only permitted access to the Frazier Islands is by watercraft. 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 3. 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;
- To reduce disturbance to wildlife, noise levels including verbal communication are 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; and
- Sea-ice conditions are usually too unstable to permit aircraft landings, however permission to land a single-engined helicopter adjacent to the Area may be granted for essential scientific or management purposes when sea-ice conditions are suitable and only if it can be demonstrated that disturbance will be minimal, at a distance of no less than 930m from any breeding colony of bird or seal (emergencies exempted). Only personnel who are required to carry out work in the Area should leave the helicopter;
- Overflights of the islands during the breeding season is prohibited, except where essential for scientific or management purposes. Such overflights are to be at an altitude of no less than 930 m (3050 ft) for single-engined helicopters and fixed-wing aircraft, and no less than 1500 m (5000 ft) for twin-engined helicopters;
- Clothing (particularly all footwear) and field equipment shall be thoroughly cleaned before entering the Area.

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

Permits to enter the Area during the non-breeding period for southern giant petrels (1 May to 30 September) may be issued for compelling scientific research that cannot be undertaken elsewhere, or for essential management purposes consistent with the objectives and provisions of this management plan. Permits are only to be issued for activities that will not jeopardise the ecological or scientific values of the Area, or interfere with existing scientific studies.

Permits to enter the Area during the breeding period for southern giant petrels (1 October to 30 April) may be issued for the purpose of conducting censuses. 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. Wherever practicable, censuses are to be conducted from outside the giant petrel colonies. In most cases there are vantage points from where the nesting giant petrels may be counted. Access to the Area should be limited to the minimum amount of time and personnel reasonably required to undertake the census. Boat operators and other support personnel should remain at the landing site for safety reasons.

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

- No new structures are to be erected within the Area, or scientific equipment installed, except for compelling scientific or management reasons and for a pre-established period, as specified in a permit.
- Permanent structures or installations are prohibited with the exception of permanent survey markers.
- All markers, structures or scientific equipment installed in the Area must be clearly identified by country, name of the principal investigator or agency, year of installation and date of expected removal.
- All such items should be free of organisms, propagules (e.g. seeds, eggs) and non-sterile soil, and be made of materials that can withstand the environmental conditions and pose minimal risk of contamination of the Area.
- Installation (including site selection), maintenance, modification or removal of structures and equipment shall be undertaken in a manner that minimises disturbance to the values of the Area.
- All temporary structures and installations must be removed when they are no longer required, or on the expiry of the permit, whichever is the earlier.
- Removal of specific structures or equipment for which the permit has expired shall be the responsibility of the authority which granted the original permit and shall be a condition of the Permit.

7(v) Location of field camps

Camping is prohibited in the Area except in an emergency.

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

In addition to the requirements of the Protocol on Environmental Protection to the Antarctic Treaty, restrictions on materials and organisms which may be brought into the area are:

- the deliberate introduction of animals, plant material, micro-organisms and non-sterile soil into the Area shall not be permitted. Precautions shall be taken to prevent the accidental introduction of animals, plant material, micro-organisms and non-sterile soil from other biologically distinct regions (within or beyond the Antarctic Treaty area).
- no poultry products, including dried food containing egg powder, are to be taken into the Area.
- fuel or other chemicals shall not be stored in the Area. Boat refuelling is permitted at shoreline landing sites. A small amount of fuel is permitted for an emergency stove and must be handled in a way that minimises the risk of their accidental introduction into the environment. 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:
- materials introduced into the Area shall be for a stated period only and shall be removed by the end of that stated period:
- no herbicides or pesticides are to be brought into the Area.

7(vii) 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. Visitors should be alert to changes in wildlife behaviour, especially changes in posture or vocalisation. If birds are showing signs of wanting to leave the nest, all persons shall retreat immediately.

7(viii) The collection or removal of material 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 national authority must be notified. Where possible, photographic documentation should be obtained and included with site visit report.

7(ix) Disposal of waste

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

7(x) Measures that may be necessary to continue to meet the aims of the management plan

A census of southern giant petrels should be conducted at least once in each 5 year period. Censuses of other species may be undertaken during these visits provided no additional disturbance is caused to the southern giant petrels.

All GPS data obtained for specific sites of long-term monitoring shall be registered in the Antarctic Master Directory, through the appropriate national authority.

7(xi) Requirements 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 the *Guide to the Preparation of Management Plans for Antarctic Specially Protected Areas*. 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 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, for the purpose of any review of the management plan and in organising the scientific use of the Area. A copy of the report should be forwarded to the 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: Southern giant petrel populations at the Frazier Islands, Antarctica

Note: To the extent possible, each observation below has been validated by a review of the primary data records. The comments indicate where variations from published literature were identified. Further consideration of each observation would be required before using and of these data in analyses.

Date	Nelly Island	Dewart Island	Charlton Island	Source	Comment
21, 22 Jan. 1956	250 N	not visited	not visited	Unpublished data: J Bunt 2008 pers. comm.; Law (1958)	Counted at four separate rookeries on higher parts of Nelly Island. Notes say that most nests contained chicks. Many of these nests could be old nests.
24-5 Jan. 1959	25 N	not visited	not visited	Unpublished data: Bird log Magga Dan-Wilkes & Oates Land Voyage (Jan-Mar 1959); Unpublished data: Biology report for Wilkes, (1959/60-1960-61), R Penny.	It is not clear whether these observations are all chicks, but Penny comments that some of them were chicks.
15 Dec. 1959	60 A	not visited	not visited	Unpublished data: Biology report for Wilkes, Appendix F (1961) M. Orton; Creuwels *et al.* (2005)	20 other birds were associated with nests.
12 Feb. 1960	46 C	not visited	not visited	Unpublished data: Biology report for Wilkes, (1959/60- 1960-61), R Penny; Unpublished data: Biology report for Wilkes, Appendix F (1961) M. Orton.	Orton reports that there were 47 chicks on Nelly Island when in fact it was 46 (Penny 1960).
15 Dec. 1960	not visited	60 N	not visited	Unpublished data: Biology report for Wilkes, Appendix F (1961) M. Orton; Woehler *et al.* (1990); Creuwels *et al.* (2005)	20 other birds were associated with nests. Woehler *et al.* (1990) and Creuwels *et al.* (2005) have both quoted directly from R. Penny's unpublished report.
22 Mar. 1961	34 C	10 C	no data	Unpublished data: Biology report for Wilkes, Appendix F (1961) M. Orton; Unpublished data: Biology: Giant petrel Wilkes report (1961); Creuwels *et al.* (2005)	All chicks observed on Nelly Island were banded. Only a subset of the chicks observed at Dewart Island were banded.
23 Nov. 1962	11 eggs	not visited	not visited	Unpublished data: Davis and Mawson station biology log records (1962)	This count appears to have been a subset of the population only.
21 Jan. 1964	10 C	not visited	not visited	Unpublished data: Wilkes station report, biology log records (1964), L.G. Murray	Birds were observed on the north-east ridge, with about 20 occupied nests in this area, and more on the lower area on the southern side of the ridge. There were many old and uninhabited nests.
7 Mar. 1968	72	no data	not visited	Unpublished data: Bird Log Nella Dan (1967-8) Vol. 1; Shaughessey (1971); Murray & Luders (1990)	This count is the total for all four rookeries found on Nelly Island. There is a map of their location in the field notes.
20, 21 Jan. 1972	52 C	53 C	10-20 N (aerial survey only)	Murray (1972)	Land survey primarily for banding. 49 of 52 chicks seen were banded on Nelly Island. 51 of 53 chicks seen were banded on Dewart Island. Please note counts quoted in Murray & Luders (1990) are incorrect.
31 Jan. 1974	27 BC	no data	no data	Unpublished data: Biology report for Casey (1974) A. Jones; Murray & Luders (1990); Woehler *et al.* (1990); Creuwels *et al.* (2005)	All peer-reviewed papers appear to have reported an incorrect count of a total of 76, however only 27 chicks were banded in this season.
13-17 Feb. 1977	27 C	43 C	no data	Cowan (1979); Murray & Luders (1990); Woehler et al. (1990); Creuwels et al. (2005)	All peer-reviewed papers appear to have reported the wrong count. Cowan is the original reference, where data has gone straight to peer- reviewed publication.
25 Jan. 1978	48 C	48 C	6 C	Cowan (1979); Murray & Luders (1990); Woehler *et al.* (1990); Creuwels *et al.* (2005)	
30 Jan., 2 Feb. 1979	35 (method unknown)	46 (method unknown)	5 (method unknown)	Murray & Luders (1990); Woehler *et al.* (1990); Creuwels *et al.* (2005)	The earliest reference to this work is Murray & Luders (1990), but they did not do the original counts. For Nelly, Woehler *et al.* (1990) and Creuwels *et al.* (2005) further report the chick count as 37 and not 35 as reported in Murray & Luders (1990). Further work is required to know which figure reflects the correct count. K. de Jong's original data is unable to be located.

'A' = count of adults, 'AON' = apparently occupied nests, 'BC' = banded chicks, 'C' = count of chicks, 'N' = count of nests, 'ON' = occupied nests

Appendix 2: Biota recorded at the Frazier Islands

	Nelly Island	Dewart Island	Charlton Island
Seabirds			
Adélie penguins (Pygoscelis adeliae)	c.>1400 (2005)		
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)	100N (2005)	149N (2005)	25N (2005)
Wilson's storm petrels (Oceanites oceanicus)	P		
South Polar skua (Catharacta maccormicki)	1N (2005)	1N (2005)	
Southern fulmar (Fulmarus			
glacialoides)	P	P	
Mammals			
Leopard seal (Hydrurga leptonyx)	X (2001)		
Weddell seal (Leptonychotes			
weddellii)	X (2001)		
Orca (killer whale: Orcinus orca)	Small pod		
observed close to island (2005)			
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		

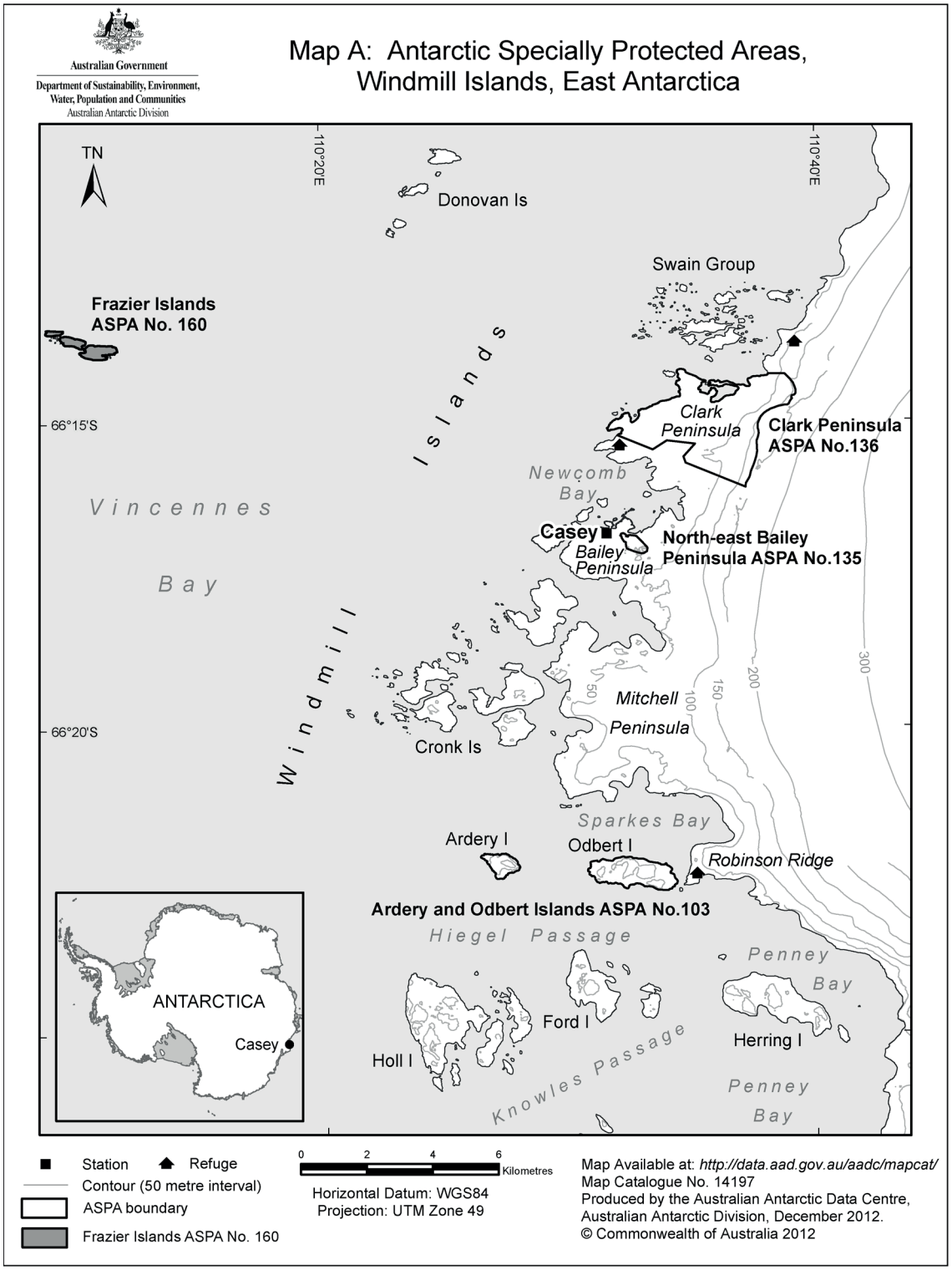
Census data for breeding seabirds provided where available, 'P' indicates recorded breeding seabirds but no census data available, 2001 indicates observations in December 2001 visit, 2005 indicates observations from December 2005 visit, 'X' indicates recorded on or near the island, 'N' a count of nests, 'R' rare, and 'F' frequent. Data compiled 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.J. pers. comm., and Woehler, E.J. and Olivier, F. unpublished data (December 2001), Woehler, E.J. unpublished data (December 2005).

Appendix 3: Minimum wildlife approach distances

The minimum (closest) approach distances as set out below 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.

Species	Approach distance (on foot)
Giant petrels	100m
Other penguins in colonies	30m
Moulting penguins	
Seals with pups	
Seal pups on their own Prions and petrels on nest South polar skua on nest	
Penguins on sea ice	5m
Non breeding adult seals	

Notes: 1. Includes cape petrels, Antarctic petrels, Wilson's storm petrels, snow petrels and southern fulmars.


Australian Government
Department of Sustainability, Environment, Water, Population and Communities
Australian Antarctic Division
Map A: Antarctic Specially Protected Areas, Windmill Islands, East Antarctica
TN
110°20'E
110°40'E
66°15'S
66°20'S
Donovan Is
Swain Group
Frazier Islands ASPA No. 160
Clark Peninsula
Clark Peninsula ASPA No.136
Newcomb Bay
Vincennes Bay
Windmill Islands
Casey
Bailey Peninsula
North-east Bailey Peninsula ASPA No.135
Mitchell Peninsula
Cronk Is
Sparkes Bay
Ardery I
Odbert I
Robinson Ridge
Ardery and Odbert Islands ASPA No.103
Hiegel Passage
Penney Bay
Ford I
Herring I
Holl I
Knowles Passage
Penney Bay
ANTARCTICA
Casey
50
100
150
200
300
Station
Refuge
Contour (50 metre interval)
ASPA boundary
Frazier Islands ASPA No. 160
0 2 4 6 Kilometres
Horizontal Datum: WGS84
Projection: UTM Zone 49
Map Available at: http://data.aad.gov.au/aadc/mapcat/
Map Catalogue No. 14197
Produced by the Australian Antarctic Data Centre, Australian Antarctic Division, December 2012.
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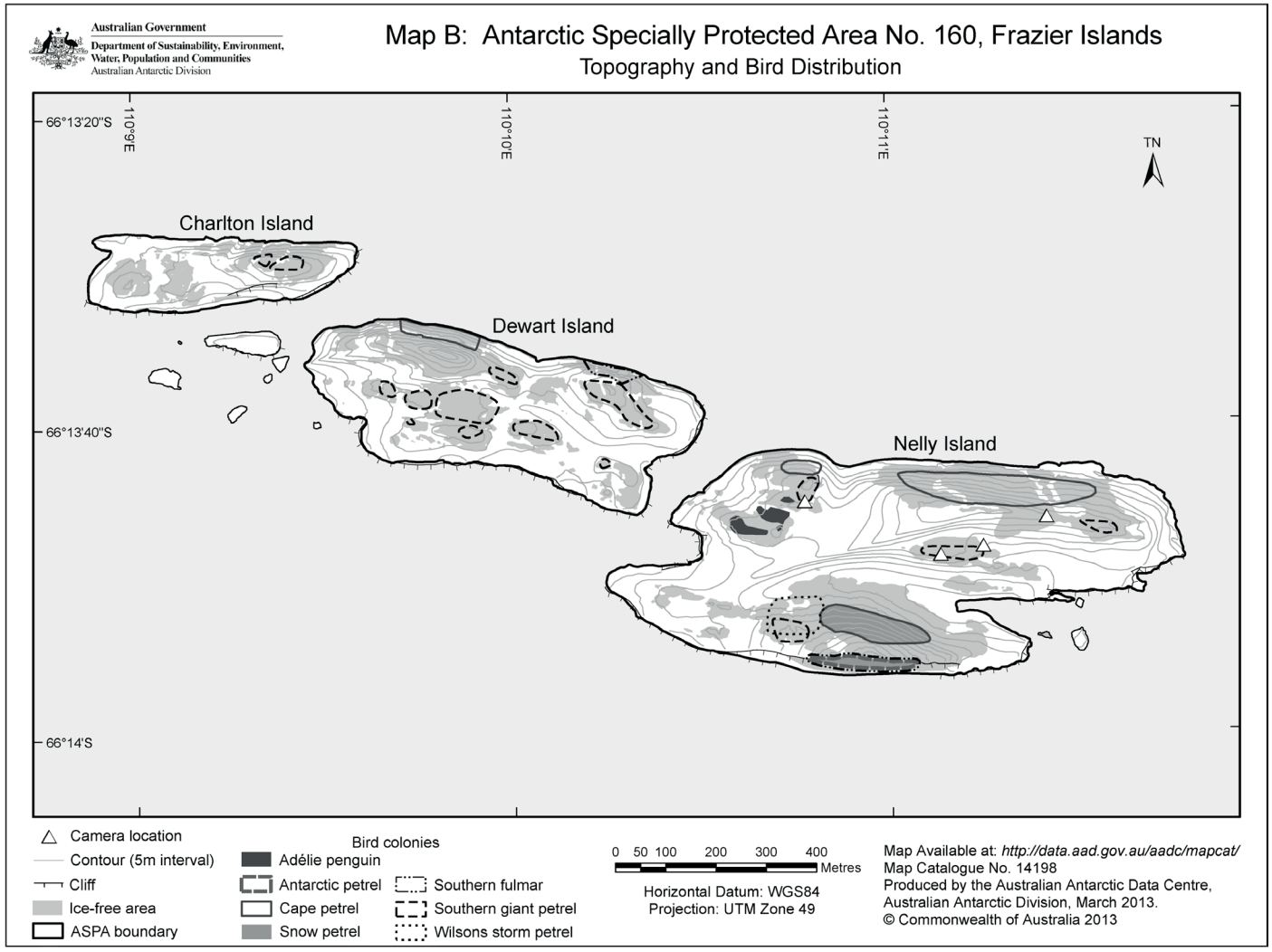
Australian Government
Department of Sustainability, Environment, Water, Population and Communities
Australian Antarctic Division
Map B: Antarctic Specially Protected Area No. 160, Frazier Islands
Topography and Bird Distribution
66°13'20"S
66°13'40"S
66°14'S
110°9'E
110°10'E
110°11'E
TN
Charlton Island
Dewart Island
Nelly Island
Camera location
Contour (5m interval)
Cliff
Ice-free area
ASPA boundary
Bird colonies
Adélie penguin
Antarctic petrel
Cape petrel
Snow petrel
Southern fulmar
Southern giant petrel
Wilsons storm petrel
0 50 100 200 300 400
Metres
Horizontal Datum: WGS84
Projection: UTM Zone 49
Map Available at: http://data.aad.gov.au/aadc/mapcat/
Map Catalogue No. 14198
Produced by the Australian Antarctic Data Centre, Australian Antarctic Division, March 2013.
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