Management Plan for Antarctic Specially Protected Area No. 162

MAWSON'S HUTS, CAPE DENISON, COMMONWEALTH BAY, GEORGE V LAND, EAST ANTARCTICA

Introduction

Cape Denison, Commonwealth Bay (67°00'31"S 142°40'43"E) is one of the principal sites of early human activity in Antarctica. It is the location of four timber huts, known as 'Mawson's Huts', which served as the base of the Australasian Antarctic Expedition (AAE) of 1911-14 organised and led by Dr (later Sir) Douglas Mawson. An important symbol of the 'heroic age' of Antarctic exploration (1895-1917), Cape Denison is one of only six hut sites remaining from this period. Cape Denison hosted some of the earliest comprehensive studies of Antarctic geology, geography, terrestrial magnetism, astronomy, meteorology, glaciology, oceanography, biology, zoology and botany. It was also the base of numerous explorations inland and features artefacts associated with these sledging parties, including food caches and equipment.

Cape Denison is characterised by four valleys aligned northwest/southeast. The majority of Australasian Antarctic Expedition artefacts, including Mawson's Huts and other structures, are concentrated in the westernmost valley and on the ridges on either side of the valley (see Map A).

In recognition of the rarity and richness of this social, cultural and scientific resource, the Mawson's Huts site (comprising the four huts and a 5 metre buffer around each hut) was designated under Measure 2 (2004) as Antarctic Specially Protected Area (ASPA) No. 162, to protect the important historical, technical, architectural and aesthetic value of the four AAE huts. The ASPA also contains the site designated under Measure 3 (2004) as Historic Site and Monument No. 77 Cape Denison, Commonwealth Bay, George V Land, and was originally embedded within Antarctic Specially Managed Area (ASMA) No. 3 Cape Denison, Commonwealth Bay, George V Land, designated under Measure 1 (2004).

Under Measure XX (2014), ASMA No. 3 was de-designated and the boundary of ASPA No. 162 was expanded to coincide with the previous ASMA boundary. This provides additional protection for the historic landscape and artefact scatters at Cape Denison, and simplifies the management arrangements for the site.

Cape Denison is subject to a relatively low level of human activity, but does receive periodic visits during summer months by small conservation works teams and commercial tour groups. Visitor Site Guidelines adopted under Resolution 4 (2011) are in place for the site.

1. Description of values to be protected

The ASPA is primarily designated to protect Mawson's Huts and the associated landscape which has considerable historic, archaeological, technical, social and aesthetic values. The building form of the huts themselves shows the functional and efficient planning that was undertaken in response to the site position and the elements endured by the expedition members. The weathering of the huts and the decay of the remains gives a feeling of time elapsed and exposure to the elements.

Historic value

Cape Denison provides the setting for the buildings, structures and relics of the Main Base of the Australasian Antarctic Expedition (AAE) of 1911–14, led by Dr Douglas Mawson. Mawson's Huts

is one of a group of only six sites of 'heroic age' huts where pragmatic consideration of the need to provide permanent shelter in the Antarctic environment resulted in an expedition hut structure suitable for Polar Regions.

Mawson's prime focus was scientific research. Nevertheless, the expedition also had an exploratory agenda, with the aim of charting the entire Antarctic coastline immediately south of Australia. For this purpose at least five sledging expeditions were undertaken from Cape Denison from spring 1912, including the infamous Far-Eastern Sledging Party during which expeditioners Belgrave, Ninnis and Xavier Mertz perished, and Mawson himself barely survived. Overall, more than 6,500 km of coastline and hinterland was explored by sledging parties of the Expedition.

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

Mawson's Huts were built in January, February and March 1912 and May 1913. In their surviving form and setting the huts illustrate the isolation and harsh environment of Cape Denison. They also demonstrate the cramped internal conditions endured by expedition members. The living quarters in the Main Hut, for example, a single space measuring 7.3m x 7.3m, provided sleeping and kitchen facilities for 18 men.

The external form and internal structure of the largest hut, known as the Main Hut (67º00'31"S, 142º39'39"E), are a simple but strong architectural concept: a square base topped by a pyramid roof (to prevent damage by blizzards), with skylights to provide natural lighting. Following the decision to combine two expedition bases into one, a hip-roofed accommodation hut measuring 5.5m x 4.9m was adjoined to the living quarters and equipped as a workshop. A 1.5m wide verandah surrounded the structure on three sides, under the same roof. The verandah was used as a storage space that also assisted in insulating the hut from the weather.

The two huts that form the Main Hut were built of Oregon timber frames clad with Baltic pine tongue-and-groove boards. They were prefabricated in Australia, and on-site construction was assisted by a branded letter code on framing members and coded colours painted on board ends. (None of the expedition party had any previous construction experience). The survival of the Main Hut at one of the windiest sites on Earth is testimony to the strength of its design and care of its construction.

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The three other AAE huts are:

- The Absolute Magnetic Hut (67°00'23"S, 142°39'48"E), constructed during February 1912. It measured 1.8m x 1.8m in plan with a skillion roof and had an Oregon timber frame to which boards of remnant timber were fixed. The hut was used in association with, and as a reference point for, observations made in the Magnetograph House. Today it is considered to be a standing ruin.
- The Magnetograph House (67°00'21"S, 142°39'37"E) was erected in March 1912 to house equipment used to measure variations in the South Magnetic Pole. It measures 5.5m x 2m with a shallow pitched skillion roof and no windows. After the first building attempt was demolished by

high winds, large rocks were heaped against the new hut to provide a wind barrier. Sheepskin and hessian attached to the roof also assisted in keeping the internal temperature constant and in minimising the ingress of drift snow. These innovations may have contributed to the relatively intact condition of the hut today.

- Construction of the Transit Hut (67°00’30”S, 142°39’42”E) commenced in May 1913, with packing case timbers being affixed to an Oregon frame. The structure was also clad in sheepskin and canvas. Originally known as the Astronomical Observatory, the hut housed the theodolite used to take star sights to determine the exact longitude of Cape Denison. It is now considered to be a standing ruin.

Aesthetic values

The Area is designated to preserve not only the artefacts remaining in situ but also the cultural landscape of Cape Denison in which Mawson and his men lived and worked. Cape Denison is characterised by its almost incessant blizzard conditions, which severely limit access to the region and activities at the site. Katabatic winds pour down the plateau and funnel through the Cape’s valleys; blasting the hut with gusts that in May 1912 reached 322 km/h. (The average wind speed for the month was 98 km/h). Cape Denison is not only the windiest place in Antarctica, but also the windiest place on Earth at sea level. The site thus demonstrates the physical and symbolic context of the extreme isolation and harsh conditions endured by the expedition members and, by association, all other ‘heroic age’ researchers and explorers. In designating the entire area as an ASPA, Cape Denison’s unique ‘sense of place’ is protected, with Mawson’s Huts and Boat Harbour as the focus of the visual catchment.

Educational values

Cape Denison’s wildlife and undisturbed artefacts, framed against the dramatic backdrop of the Antarctic Plateau, represent significant educational values. The Area’s isolation and extreme weather provide visitors with a unique insight into the conditions endured by ‘heroic age’ researchers and explorers, and a chance to form a deeper appreciation of their achievements.

Environmental values

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

Flora at Cape Denison is represented by 13 lichen species distributed on boulders and other moraines throughout the peninsula. These species are listed at Appendix A to the management plan for ASPA 162. No bryophytes are evident. The lichens’ distribution on rocks, which are subject to different patterns of snow ablation, makes them vulnerable to trampling and other interference by visitors, however infrequent visitation may be.

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

Scientific values

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

Cape Denison provides opportunities to repeat Mawson's experiments and conduct further research into magnetism, meteorology, biology, and other sciences. For example, although Antarctic lakes are generally recognised as valuable due to their relatively simple natural ecosystems, the lakes at Cape Denison have neither been sampled nor their biota studied. There are also numerous non-marine algae present; however, no surveys have been undertaken. The records from Mawson's expedition provide a dataset against which the results of modern research may be compared, and the site's isolation lends it considerable value for future use as a reference site for other areas that experience a greater level of human activities

2. Aims and objectives

The aim of the Management Plan is to provide protection for the Area so that the identified values can be preserved. Management of the Area aims to:

- maintain the historic values of the Area through planned conservation[1] and archaeological work programmes;
- allow management activities which support the protection of the values and features of the Area, its features and artefacts through managed access to the huts;
- allow activities in the Area for educational and outreach purposes (including tourism), provided that such activities are for compelling reasons which cannot be served elsewhere and which will not jeopardise the cultural values and natural ecological systems in the Area;
- allow scientific research; and
- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area, its features and artefacts by means of managed access to the four Australasian Antarctic Expedition huts and surrounding artefact scatters.

3. Management activities

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

- research and other activities essential or desirable for understanding, protecting and maintaining the values of the Area
- programmes of conservation and archaeological work and environmental monitoring work on Mawson's Huts and any artefacts contained within the huts and found in the Area;
- the removal of objects not related to the AAE of 1911–14 and/or the British Australian New Zealand Antarctic Research Expeditions (BANZARE) of 1929–31 and that compromise the historic and aesthetic values of the Area, provided that removal does not adversely impact on the values of the Area, and that the objects are appropriately documented prior to removal. Priority should be given to the removal of field infrastructure from the Visual Protection Zone, giving consideration to the needs (including those of safety) of conservation workers and the program of conservation works;

[1] In the context of this Management Plan the term *conservation* "means all the processes of looking after a place so as to retain its cultural significance", as defined in Article 1.4 , of The Burra Charter: The Australian ICOMOS Burra Charter, 1999.

- essential maintenance of other objects and infrastructure, including the Automatic Weather Station;
- visits made as necessary for management purposes;
- review of the Management Plan at least once every five (5) years, and update as required;
- consultation among national Antarctic programs operating in the region, or those with an interest or experience in Antarctic historic site management, with a view to ensuring the above provisions are implemented effectively.

4. Period of designation

This ASPA is designated for an indefinite period.

5. Maps

Map A: Mawson's Huts, Cape Denison.

The map shows the boundaries of the ASPA, the Historic Site, the Visual Protection Zone, and significant topographic features of the Area. The inset map indicates the location in relation to the Antarctic continent.

Map B: Cape Denison Visual Protection Zone.

The map shows the boundaries of the Visual Protection Zone and indicates the position of significant historic artefacts, including the four Australasian Antarctic Expedition huts, the Memorial Cross, and Anemometer Hill, the site of the BANZARE Proclamation Pole.

Map C: Cape Denison Flight Paths and Bird Colonies.

The map indicates the approaches, departures and landing site for helicopters, as well as the location of bird colonies in the vicinity.

Specification for all maps:

Projection: UTM Zone 54
Horizontal Datum: WGS84

6. Description of the Area

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

Cape Denison (142°40'6"E—67°00'35"S) is located on the coast of Commonwealth Bay, a 60 km-wide stretch of coast in George V Land some 3,000 km south of Hobart, Australia. The Cape itself is a rugged, 1.5 km-wide tongue of ice, snow, rock and moraine projecting into Commonwealth Bay from the steeply rising wall of the ice cap of continental Antarctica. On the western side of the Cape is Boat Harbour, a 330m-long indentation in the coast.

The designated ASPA (Map A) extends from Land's End (67° 00' 47" S, 142° 39' 28" E) in the west, along the coastline to the northern tip of the western shore of Boat Harbour (67° 00' 21" S, 142° 39' 28" E), across the mouth of Boat Harbour (in a straight north-easterly diagonal) to the eastern shore of Boat Harbour (67° 00' 21" S, 142° 39' 27" E), south-west of Penguin Knob, and then along the coastline in a south-easterly direction down to John O'Groats (67° 00' 47" S, 142° 41' 27" E). The southern boundary extends in a straight line from Land's End to John O'Groats along

latitude 67° 00’ 47” S. With the exception of the boundary across the mouth of Boat Harbour, the northern coastal boundary extends to that land above the lowest tide.

The shoreline and the ice cliffs at both ends of the Cape (Land’s End and John O’Groats) form a clearly defined boundary; as such, no boundary markers have been installed because the coast is a clearly defined boundary.

Environmental domains and biogeographic regions
Based on the Environmental Domains Analysis for Antarctica (Resolution 3 (2008)) the Area is located within Environment L Continental coastal-zone ice sheet. The Area is not classified in accordance with the Antarctic Conservation Biogeographic Regions identified in Resolution 6 (2012).

Natural features: Topography and geomorphology

The topography of Cape Denison is defined by a series of four rocky ridges, running south- southeast to north-northwest, and three valleys. The largest, most westerly of these valleys contains the AAE buildings. The basement rock of the Cape Denison area consists of partially migmatised, massive felsic orthogneiss intruded about 2350 million years ago (Ma) into an older metamorphosed sequence. Above the basement the area features a lower zone of relatively polished rock and a higher zone of relatively unpolished rock; the former being especially prominent below 12 metres above sea level and indicative of more recent uplift and exposure than the upper zone. Upper and lower moraines are apparent, with the upper moraine, closer to the edge of plateau, containing a diversity of angular boulders. The lower moraine is dominated by local rocks sorted into bands, perhaps the result of an ‘ice push’ from the sea rather than being genuine glacial moraine.

Water bodies

Cape Denison contains 13 small glacial lakes, which are generally oriented parallel to the foliation of the basement rocks. At the height of summer Cape Denison also features numerous melt streams which flow into Commonwealth Bay. It is not known whether the streams flow down established courses, or whether the streams are a feature of the regular freeze/thaw cycle.

Biological features

Cape Denison is the summer habitat for breeding Adélie penguins, Wilson’s storm-petrels, snow petrels and the south polar skua (Map C). Other species sighted in the area include the Cape petrel, Antarctic petrel, southern giant petrel and emperor penguin. A full list of species and number of breeding pairs (where available) is attached as Appendix B. Weddell seals, southern elephant seals and leopard seals have been recorded as hauling out and, in the case of elephant seals, moulting at Cape Denison. However, the sporadic nature of visits to the Area means that monitoring has been inconsistent and the exact extent of the seal population uncertain. Some data is presented in Appendix B(ii).

The only flora evident at Cape Denison is lichens, for which a list of species is included at Appendix A and non-marine algae, which have yet to be studied.

6(ii) Access to the Area

Sea, land and air access to Mawson’s Huts is difficult due to the rugged topography and climate of the area. Sea ice extent and uncharted bathymetry may constrain ship access up to 10nm or more from the coastline. Access can be gained either by small watercraft or by helicopter, although attempts to land are frequently hampered by heavy seas and prevailing north-westerly or katabatic winds. Boat landings can be made at Boat Harbour and due north of Sørensen Hut. The helicopter landing site (67°0’30”S, 142°39’19”E) and approach and departure flight paths are indicated on Map

C.

Travel within the ASPA is to be on foot, except where vehicle use is authorised for work parties, in accordance with the terms and conditions of entry described in Section 7(ii). Pedestrian access within the Area is unrestricted except in places where AAE buildings, artefacts, or bird or lichen colonies are present, and should be conducted in accordance with the terms and condition of entry.With the exception of a short boardwalk close to the Main Hut, there are no roads or other transportation infrastructure on shore. The boardwalk is frequently covered by snow and therefore unusable for all but a few weeks of the year.

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

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

Cape Denison is notable for being the location of four historic buildings (described in section 1) and a Memorial Cross (67°0’36”S, 142°39’48”E) constructed by the AAE of 1911-1914. The AAE also installed the survey markers and mast which are still present on top of Anemometer Hill, about 150 m east of Mawson’s Main Hut. On 5 January 1931 members of the BANZARE party (including Douglas Mawson) visited Cape Denison to claim formal possession of George V Land on behalf of Great Britain, and used the mast to support the proclamation flag and canister containing the proclamation itself. A small timber plaque and proclamation, still attached to the mast, are the only ‘formal’ artefacts of that visit remaining in situ today. A time capsule was installed on 16 January 2012 at the base of the proclamation pole (142°39’51.9”E 67°0’33.3”S) to commemorate the centenary of the AAE. A plaque to commemorate this event was laid at the base of the proclamation pole next to the time capsule.

Cape Denison additionally features seven other structures: an automatic weather station (AWS); a tide gauge; a field shelter and conservation laboratory known as Sørensen Hut; a red fibreglass ‘Apple’ hut; a wooden platform on which tents may be pitched; a field shelter known as Granholm Hut, and a plaque near Mawson’s Main Hut indicating that the hut is a Historic Monument.

The AWS is located at 67°00’33”S, 142°39’51”E on a rise near Round Lake and approximately 150m southeast of Mawson’s Main Hut. It has been operating since 1990 as part of the Antarctic Automatic Weather Project of the University of Wisconsin—Madison, and is the property of that institution.

In 2008 French personnel installed a tide gauge in the Area. The gauge is bolted to a rock on the sea bed on the east side of Boat Harbour at 142°39’30”E, 67°0’25”S. A cable to the shore is to be installed, when the opportunity arises, to allow the streaming of data from the tide gauge remotely via Iridium satellite.

Sørensen Hut is located about 400m east of Mawson’s Main Hut at 67°00’29”S, 142°40’12”E. It was constructed by the Australian Antarctic program in 1986 to provide temporary shelter for parties conducting conservation works on Mawson’s Huts and contains some provisions and field equipment. Numerous items are also stored underneath and immediately adjacent to Sørensen Hut, and in the adjacent Apple hut. Access to Sørensen Hut is limited to those who are part of authorised

work parties.

Granholm Hut is situated at 67°00’29”S, 142°39’26”E, some 160 m northwest of Mawson’s Main Hut. It was constructed in 1978 to provide a temporary shelter and workshop for parties working on Mawson’s Huts. It contains numerous building materials, some field equipment and limited provisions. The hut has been painted to blend into the rocky landscape to lessen its visual impact on the site.

Objects left by Mawson’s expedition are scattered throughout the Area, and appear from year to year depending on snow cover. These include cairns; cached seal and penguin carcasses; timbers; and a large collection of disassembled penguin skeletons. It is believed that a significant number of artefacts exist under the snow and have yet to be uncovered. It is additionally possible that artefacts from the ice cave known as ‘Aladdin’s Cave’, sledging depot excavated by Mawson’s expedition in 1912, may also be present in the vicinity of the ASPA, if not within the ASPA itself. The cave was originally located on the plateau at 67°05’S, 142°38’E, some 8 km south of Mawson’s Main Hut, but it may have been relocated (via the movement of ice) up to 4.5 km down-slope from the original 1912 location. Its exact location has yet to be determined.

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

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

6(v) Special zones within the Area

The visual catchment of Mawson’s Huts and the Memorial Cross is of particular importance within the Cape Denison cultural landscape. In order to protect the landscape setting and ‘sense of place’ of Mawson’s Huts, a Visual Protection Zone is defined within the ASPA. To preserve these values, no new structures should be built within the Visual Protection Zone. The Visual Protection Zone is illustrated on Maps A and B and is generally defined as the area enclosed by the western and eastern ridge lines of the valley containing the historic structures. The boundary extends from the coastline (67°00’24.9”S, 142°39’14.3”E) and runs southeast along the western side of the westernmost ridge to the ice plateau (67°00’46.8”S, 142°39’37.2”E); northeast along the edge of the ice plateau to 67°00’43.9”S, 142°40’5.6”E; north- northwest between Round Lake and Long Lake to 67°00’33.7”S, 142°39’59.8” E; then as far as Magnetograph House (67°00’20.3” S, 142°39’46.6”E); and then northwest along the eastern side of the eastern ridge line to the sea (67°00’15.7”S, 142°39’28.2”E).

7. Terms and conditions for entry permits

Annex V of the Protocol on Environmental Protection to the Antarctic Treaty prohibits entry into an ASPA except in accordance with a Permit. Permits shall only be issued by appropriate national authorities and may contain general and specific conditions. A Permit may be issued by a national authority to cover a number of visits in a season by the same operator. Parties operating in the Commonwealth Bay area shall consult together and with non-government operators interested in visiting the Area to ensure that visitors are managed appropriately.

7(i) General permit conditions

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

- it is issued for compelling scientific, educational (such as tourism) or outreach reasons which cannot be served elsewhere, or for reasons essential to the management of the Area;
- activities related to conservation, inspection, maintenance, research and/or monitoring purposes, consistent with the aims and objectives of this Management Plan;
- 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 historic values of the Area;
- the Permit shall be issued for a finite period; and
- the Permit shall be carried when in the Area.

A visit report must be supplied to the authority named in the Permit on or before the expiry date of the Permit.

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

All land vehicles are prohibited within the Area, with the exception of small all-terrain vehicles by authorised work parties which, due to the colonisation of rocky areas by lichens and seabirds, should be used on snow and ice surfaces only and with due consideration of the location of historic artefacts. Pedestrian access within the Area is unrestricted but artefact-rich areas (such as the scatter immediately to the north of the Main Hut), bird or lichen colonies, and penguin 'highways' (the established route of birds moving between their nest and the sea) should be avoided.

Authorised work parties, when undertaking conservation work on the huts, may use small all-terrain vehicles within the Area to assist with the transport of materials and equipment to and from the buildings.

Access to Sørensen Hut is limited to those who are part of authorised work parties.

Visitors may enter the Main Hut and Magnetograph House provided that:

- a person who has approved cultural heritage skills (to the satisfaction of the permitting Party) accompanies all visitors inside the huts;
- visitation of the interior of the huts is limited to up to four (4) persons (including the guide) at any one time inside the Main Hut, and up to three (3) persons (including the guide) in the Magnetograph House;
- artefacts, scientific and related conservation management equipment and the interior building fabric are not touched;
- briefings on this Management Plan and the values of the ASPA are conducted prior to visits and adequate site interpretation materials are made available to each visitor;
- visitors accessing the Area avoid sensitive historic artefacts, such as the artefacts scatter to the immediate north of the Main Hut, and other sensitive areas, such as lichen communities;
- visitors do not touch the exterior fabric of the buildings or any artefacts; and
- smoking in or near the huts is not permitted.

Authorised work parties undertaking approved conservation and/or archaeological work programmes are exempt from the provisions of this sub-section.

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

Activities which may be conducted within the Area include:

- compelling scientific research which cannot be undertaken elsewhere;
- sampling, which should be the minimum required for approved research programs;
- conservation, inspection and maintenance;
- essential management activities, including monitoring;
- operational activities in support of scientific research or management within or beyond the Area, including visits to assess the effectiveness of the Management Plan and management activities;

and

- educational and/or recreational visits, including tourism.

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

To preserve the historic, archaeological, social, aesthetic and environmental values of the ASPA, no new structures or equipment should be constructed, nor additional scientific equipment installed in the Area, except for the conservation, research or maintenance activities specified in Section 3 above.

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

Cape Denison is also designated as a Historic Site. In accordance with Annex V, Article 8 (4) of the Protocol, no historic structure or other artefact at Cape Denison (including Mawson's Huts) should be damaged, removed or destroyed except in accordance with an approved conservation and/or archaeological work programme. A historic artefact may only be removed from the Area for the purposes of conservation and/or preservation and then only in accordance with a Permit issued by a national authority in consultation with the Australian Antarctic program.

The repatriation of the artefact to its original location at Cape Denison is generally preferable unless further damage or deterioration may result from repatriation.

7(v) Location of field camps

- Only tents associated with authorised works parties should be pitched on the wooden platform adjacent to Sørensen Hut.
- Camping by other personnel is permitted within the Visual Protection Zone.
- Use of Mawson's Huts for accommodation is not permitted.
- If Sørensen Hut is used in an emergency, use of any supplies should be reported to the Australian Antarctic Division as soon as practicable to ensure the safety of other people who may be reliant upon known stores.
- Existing non-historic infrastructure should be used by parties undertaking activities in accordance with this Management Plan, in preference to establishing new infrastructure.

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

- No living animals, plant material, micro-organisms or soils shall be deliberately introduced into the Area, and all reasonable precautions shall be taken to prevent accidental introductions.
- No poultry products, with the exception of sterilised egg powder, may be brought into the Area.
- No polystyrene packaging materials may be brought into the Area.
- No pesticides or herbicides may be brought into the Area, except those used for the purposes of conservation or preservation of historic structures or artefacts, which shall be allowed into the Area in accordance with a Permit, and then 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.
- Use of combustion-type lanterns is not permitted inside the Area under any circumstances.

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

Taking or harmful interference with native flora and fauna is prohibited, except in accordance with a

separate Permit issued under Article 3 of Annex II (of the Protocol on Environmental Protection to the Antarctic Treaty) by the appropriate national authority specifically for that purpose.

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

Visitors are prohibited from washing, swimming or diving into the lakes. These activities could contaminate the water body and disturb the water column, microbial communities, and sediments.

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

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

7(viii) The collection or removal of anything not brought into the Area by the permit holder

- No historic structure or other artefact in the Area may be handled, disturbed or removed from the Area unless for conservation, preservation or protection purposes, or for scientific reasons, and then only in accordance with a Permit issued by an appropriate national authority.
- The repatriation of the artefact to the location at Cape Denison from which it was removed is generally preferable unless further damage or deterioration may result from repatriation.
- If an artefact is to be removed, the Australian Antarctic program should be informed so that documentation regarding that program's archaeological research at Mawson's Huts may be amended accordingly.
- Material of human origin (excluding historic material) that is likely to compromise the values of the Area, and 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 material is to be removed, the appropriate Authority must be notified and approval obtained.

7(ix) Disposal of wastes

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

7(x) Measures that may be necessary to ensure aims of the Plan can continue to be met

- The provision of information for tourists and other visitors to the Area, including a briefing video

and interpretative literature;

- a post-visit survey to assist in the formal monitoring of visitor impact (with primary regard to conservation requirements, rather than visitor access);
- off-site interpretation of the Area that maximises the use of available media, including the internet; and
- the development of skills and resources, particularly those related to the excavation of artefacts from ice, to assist in the protection of the Area's values.

7(xi) Requirements of reports

The principal permit holder for each visit to the Area shall submit a report to the appropriate national authority as soon as practicable, and no later than six months after the visit has been completed.

Such visit reports should include, as applicable, the information identified in the recommended visit report form contained in the *Guide to the Preparation of Management Plans for Antarctic Specially Protected Areas*, available from the website of the Secretariat of the Antarctic Treaty www.ats.aq.

If appropriate, the national authority should also forward a copy of the visit report to the Party that proposed the Management Plan, to assist in managing the Area and reviewing the Management Plan.

Parties should, wherever possible, deposit originals or copies of such original visit 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 further visitation and/or use of the Area.

8. Supporting documentation

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Appendix A

Flora recorded at Cape Denison, Commonwealth Bay

The following taxa were recorded at Cape Denison by the Australasian Antarctic Expedition (AAE) of 1911–14 and the British Australian New Zealand Antarctic Research Expedition (BANZARE) in 1929–31 and published by Carroll W. Dodge in BANZARE Reports, Series B, Vol. VII, July 1948.

LICHENS

Lecideaceae

Lecidea cancriformis Dodge & Baker
Toninia johnstoni Dodge

Umbilicaiaceae

U*mbilicaria decussata* (Vill.) Zahlbr.

Lecanoraceae

Rhizoplaca melanophthalma (Ram.) Leuck. & Poelt
Lecanora expectans Darb.
Pleopsidium chlorophanum (Wahlenb.) Zopf

Parmeliaceae

Physcia caesia (Hoffm.) Th. Fr.

Usnaeceae

Pseudephebe minuscula (Nyl. ex Arnold) Brodo & D. Hawksw.
Usnea antarctica Du Rietz

Blasteniaceae

Candelariella flava (C.W. Dodge & Baker) Castello & Nimis
Xanthoria elegans (Link) Th. Fr.
Xanthoria mawsonii Dodge

Buelliaceae

Buellia frigida Darb.

BRYOPHYTES

No bryophytes evident at Cape Denison.

There are numerous non-marine algae; however, no surveys have been undertaken.

Appendix B(i)

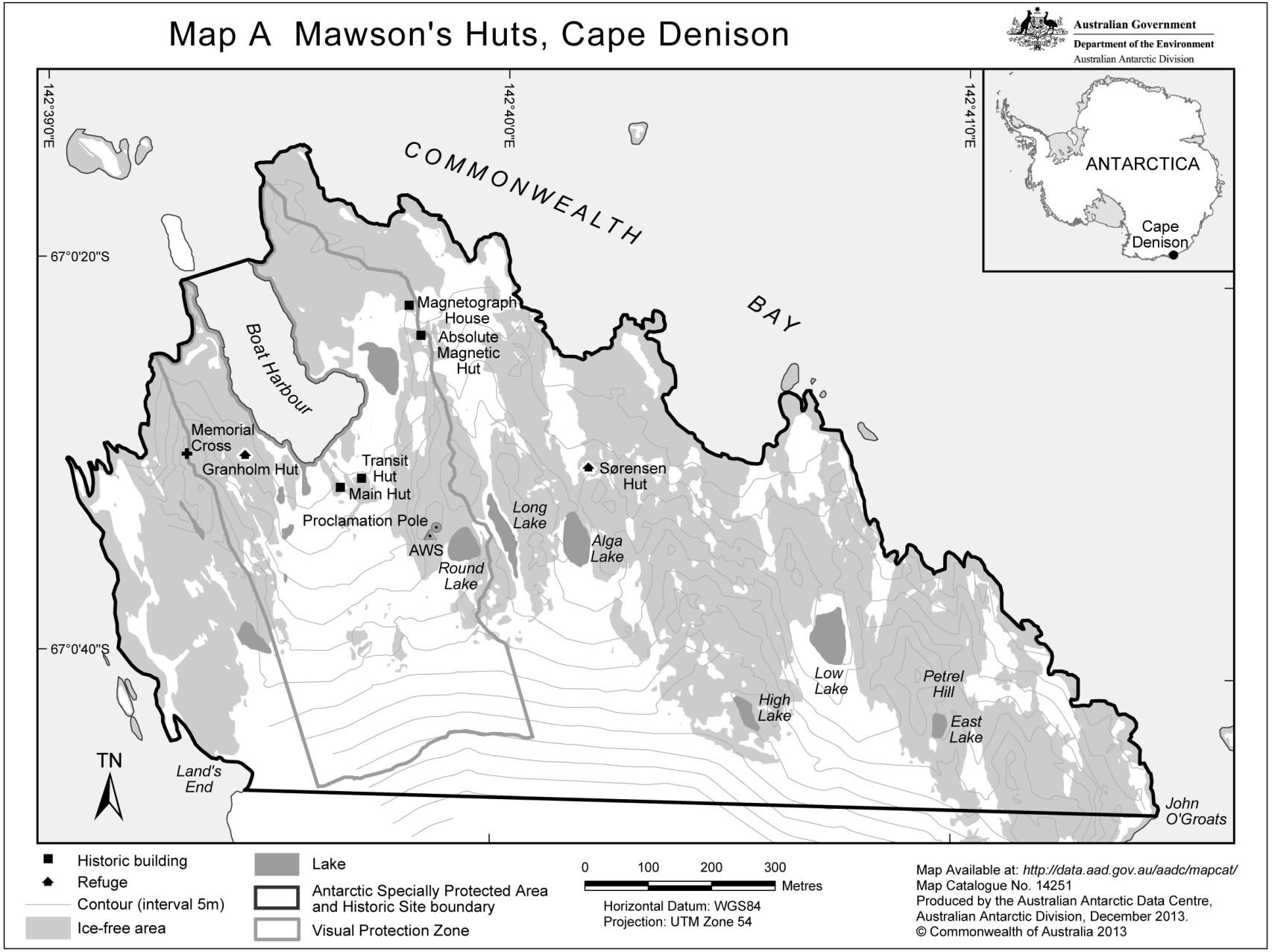
Breeding cycles of nesting seabirds at Cape Denison, Commonwealth Bay

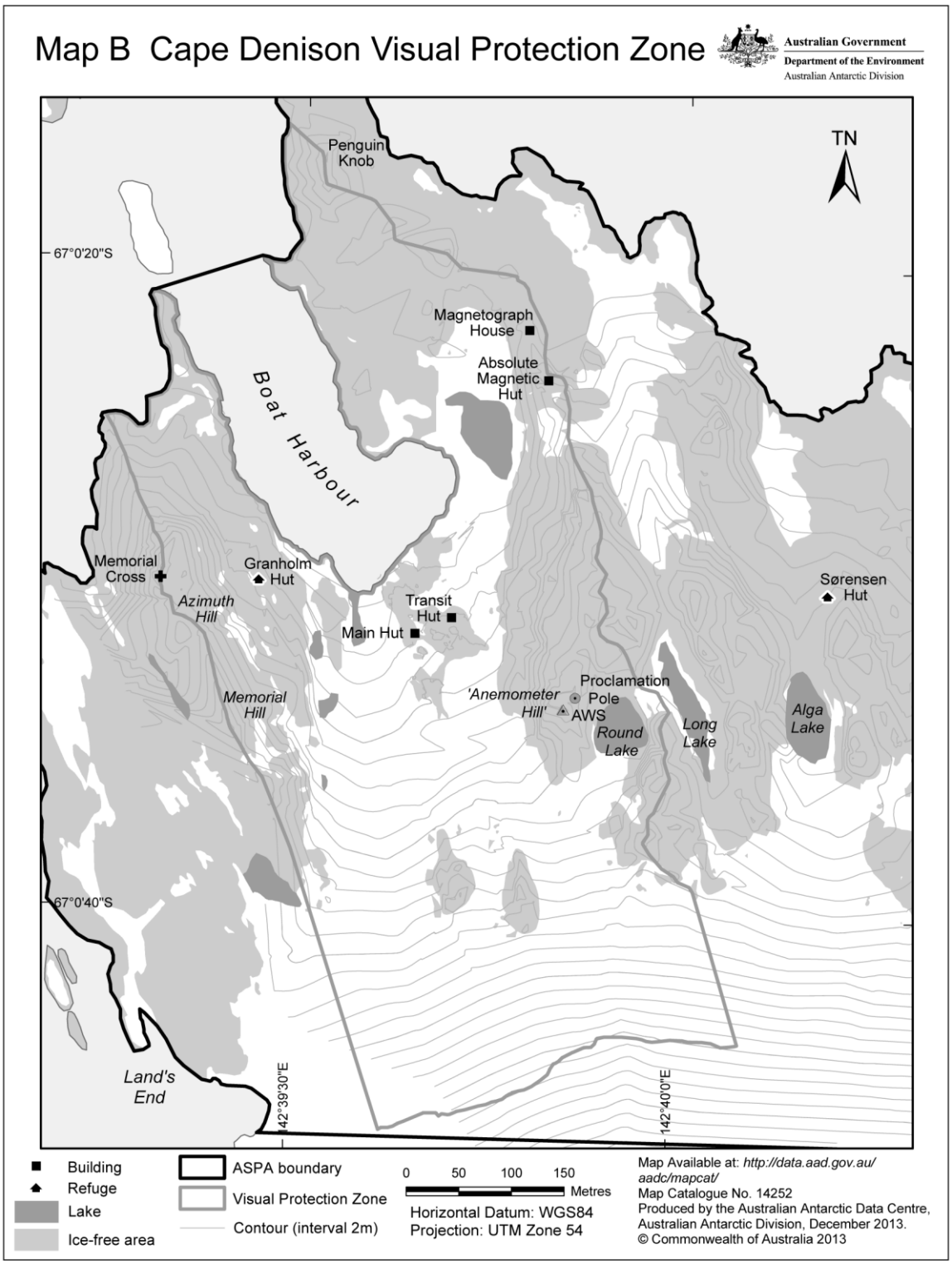
Species breeding at Cape Denison	**Number**	**Summer breeding cycle**
Wilson's storm-petrel (*Oceanites oceanicus*)	Approximately 38 pairs; three small colonies	Before mid-December: adults; after mid-December: adults, eggs and chicks
Snow petrel (*Pagodroma nivea*)	Approximately 30; one small colony	Before late November: adults; after late November: adults, eggs and chicks
Adélie penguin (*Pygoscelis adeliae*)	Approximately 18,800 pairs; numerous colonies	Before November: adults; after November: adults, eggs and chicks
South polar skua (*Catharacta maccormicki*)	Approximately 8 pairs; scattered nests on fringes of penguin colonies	Before mid-December: adults; after mid-December adults and chicks

Appendix B(ii)

Breeding cycles of seals at Cape Denison, Commonwealth Bay

Species	**Number**	**Summer breeding cycle**
Weddell seal (*Leptonychotes weddellii*)	Exact number not known, no established colonies	Before November: no seals; between mid-November to end December, approx. 24 adults per day
Southern elephant seal (*Mirounga leonina*)	Exact number not known, no established colonies	Approx. 2 or more adults per day in December


Map A Mawson's Huts, Cape Denison
Australian Government
Department of the Environment
Australian Antarctic Division
142°39'0"E
142°40'0"E
142°41'0"E
67°0'20"S
67°0'40"S
COMMONWEALTH
BAY
ANTARCTICA
Cape Denison
Boat Harbour
Magnetograph House
Absolute Magnetic Hut
Memorial Cross
Granholm Hut
Transit Hut
Main Hut
Proclamation Pole
AWS
Round Lake
Long Lake
Alga Lake
Sørensen Hut
Low Lake
High Lake
Petrel Hill
East Lake
Land's End
John O'Groats
TN
Historic building
Refuge
Contour (interval 5m)
Ice-free area
Lake
Antarctic Specially Protected Area and Historic Site boundary
Visual Protection Zone
0 100 200 300 Metres
Horizontal Datum: WGS84
Projection: UTM Zone 54
Map Available at: http://data.aad.gov.au/aadc/mapcat/
Map Catalogue No. 14251
Produced by the Australian Antarctic Data Centre, Australian Antarctic Division, December 2013.
© Commonwealth of Australia 2013


Map B Cape Denison Visual Protection Zone
Australian Government
Department of the Environment
Australian Antarctic Division
TN
Penguin Knob
67°0'20"S
Magnetograph House
Absolute Magnetic Hut
Boat Harbour
Memorial Cross
Granholm Hut
Azimuth Hill
Transit Hut
Main Hut
Sørensen Hut
Memorial Hill
'Anemometer Hill'
Proclamation Pole
AWS
Round Lake
Long Lake
Alga Lake
67°0'40"S
Land's End
142°39'30"E
142°40'0"E
Building
Refuge
Lake
Ice-free area
ASPA boundary
Visual Protection Zone
Contour (interval 2m)
0 50 100 150
Metres
Horizontal Datum: WGS84
Projection: UTM Zone 54
Map Available at: http://data.aad.gov.au/aadc/mapcat/
Map Catalogue No. 14252
Produced by the Australian Antarctic Data Centre, Australian Antarctic Division, December 2013.
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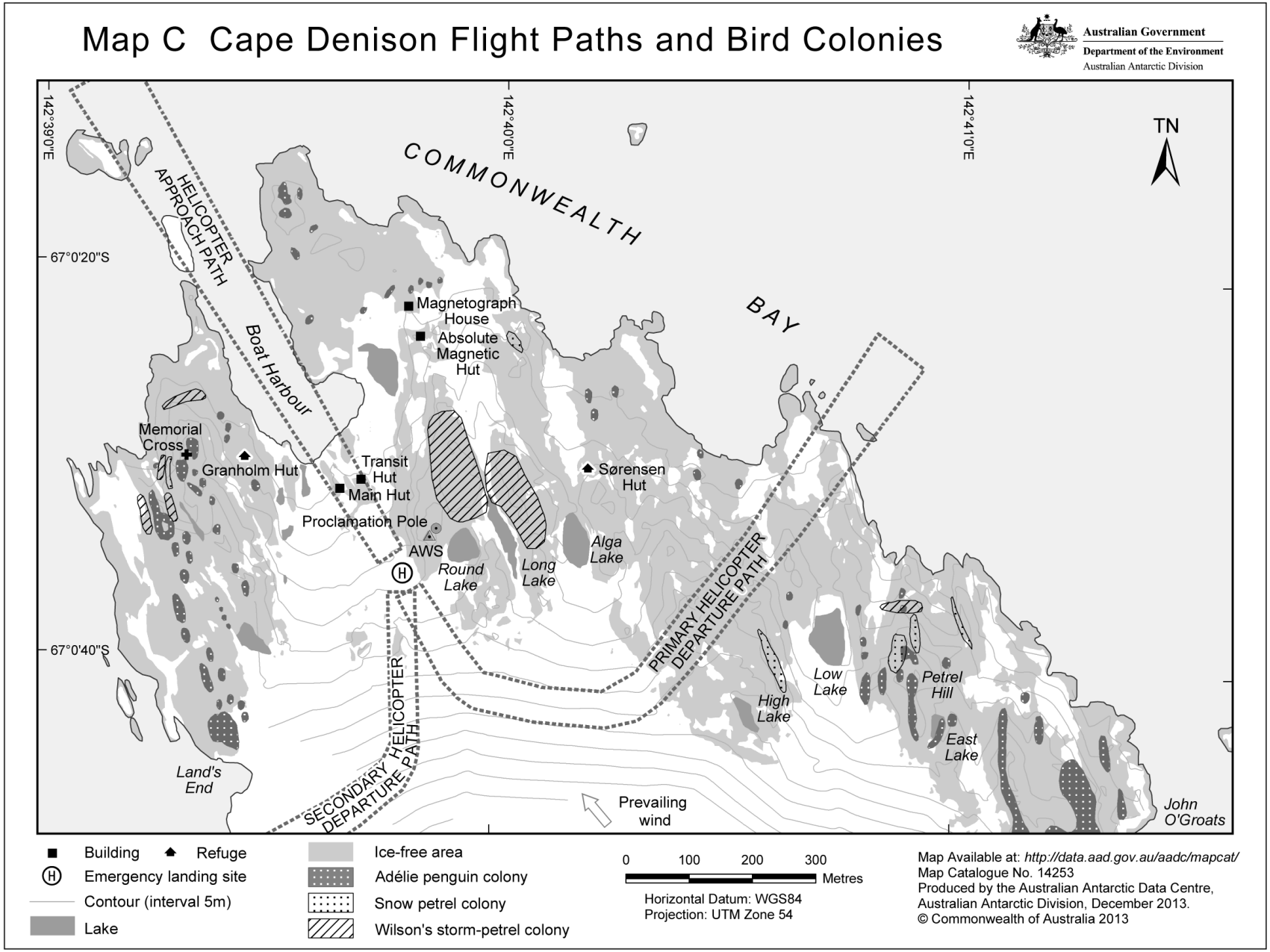
Map C Cape Denison Flight Paths and Bird Colonies
Australian Government
Department of the Environment
Australian Antarctic Division
142°39'0"E
142°40'0"E
142°41'0"E
67°0'20"S
67°0'40"S
TN
COMMONWEALTH
BAY
HELICOPTER APPROACH PATH
Boat Harbour
Magnetograph House
Absolute Magnetic Hut
Memorial Cross
Granholm Hut
Transit Hut
Main Hut
Proclamation Pole
AWS
Round Lake
Long Lake
Alga Lake
Sørensen Hut
PRIMARY HELICOPTER DEPARTURE PATH
SECONDARY HELICOPTER DEPARTURE PATH
High Lake
Low Lake
Petrel Hill
East Lake
Land's End
John O'Groats
Prevailing wind
Building
Refuge
Emergency landing site
Contour (interval 5m)
Lake
Ice-free area
Adélie penguin colony
Snow petrel colony
Wilson's storm-petrel colony
0 100 200 300 Metres
Horizontal Datum: WGS84
Projection: UTM Zone 54
Map Available at: http://data.aad.gov.au/aadc/mapcat/
Map Catalogue No. 14253
Produced by the Australian Antarctic Data Centre,
Australian Antarctic Division, December 2013.
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