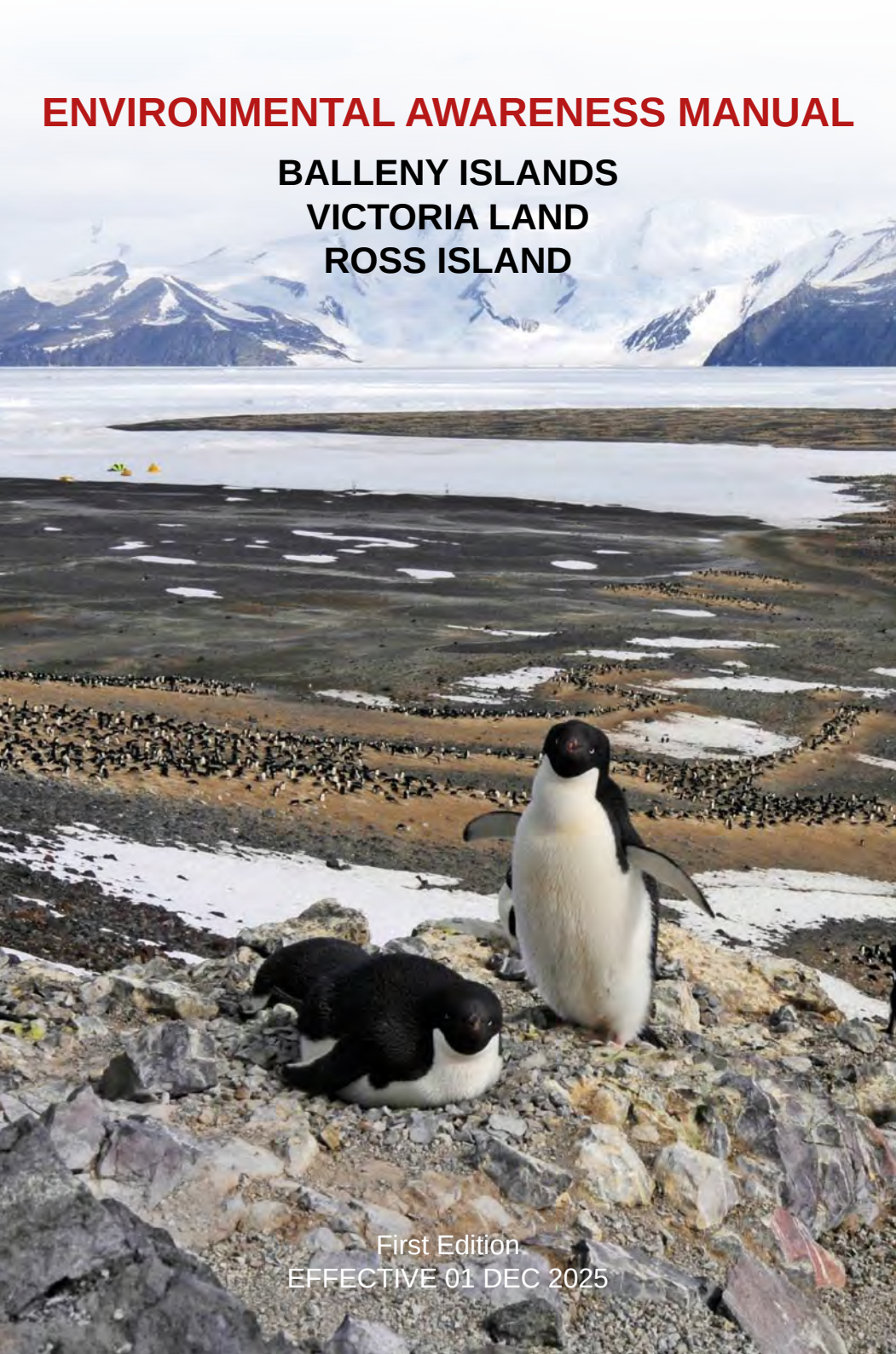
ENVIRONMENTAL AWARENESS MANUAL

BALLENY ISLANDS
VICTORIA LAND
ROSS ISLAND



First Edition
EFFECTIVE 01 DEC 2025

WAIVER

Whilst every care has been taken to ensure the accuracy of this publication, it has not been possible to undertake a comprehensive check of the accuracy or completeness of data compiled from external sources. Maps and images contained in this publication are not intended for navigation or to locate precisely any particular feature. None of those involved in producing this publication can accept liability for injury, loss or damage arising in any respect of any part of this publication.

Environmental Awareness Manual: Balleny Islands, Victoria Land, Ross Island

First published in the United Kingdom in 2025 by Environmental Research & Assessment (ERA), Cambridge.

ISBN 978-0-9575208-5-1

British Library Cataloguing-in-Publication data: A CIP catalogue record for this publication is available from the British Library.

Cover: Adélie penguins, Seabee Hook; view over Edisto Inlet towards Gordon Glacier (see EAM04-02). Photo: © C. Harris 2010.

Printing: BluePrint, Christchurch, New Zealand, on NEO Gloss Art (FSC; PFAS / Chlorine / acid-free; ISO 9002/14001; Recyclable).

Citation: Harris, C.M. (ed.) 2025. *Environmental Awareness Manual: Balleny Islands, Victoria Land, Ross Island*. *First Edition*. Prepared for the governments of Germany, Italy, Republic of Korea, New Zealand and the United States of America. Environmental Research & Assessment, Cambridge.

CONTENTS

ENVIRONMENTAL AWARENESS MANUAL

Purpose

The Ross Sea Environmental Awareness Manual (EAM) aims to raise awareness of important features throughout the region such as protected areas, sites with wildlife or sensitive flora, sites of scientific interest, national program stations, and logistics and research facilities. This information is presented in a series of maps showing topography, glaciology, hydrology and oceanography.

Background

The first Wildlife Awareness Manual (WAM) was designed as an aid for helicopter pilots operating in the Antarctic Peninsula region. Flight operations have potential to cause wildlife disturbance. Helicopters typically operate at lower elevations than fixed-wing aircraft and also have greater flexibility in where they can land, elevating the risk of potential interactions with wildlife. The manual was therefore modelled on a Helicopter Landing Site manual in routine use by the Royal Air Force in the United Kingdom (AIDU 2003), even though that manual was not designed around wildlife awareness. The Antarctic Peninsula manual was found to be effective in the field by national program operators, and has come to be used by scientific expeditions and tour operators. The Ross Sea Environmental Awareness Manual has therefore adopted the same general format, although the range of information included and detail in supporting maps has been substantially enhanced.

Ross Sea Environmental Awareness Manual

The Ross Sea Environmental Awareness Manual (EAM) is designed to support national program managers, operations staff, scientists, and station personnel. It will also be useful to non-governmental expeditions, tour leaders and tourists.The environment, topography and hydrography of the Balleny Islands, Victoria Land and Ross Island are featured in 172 maps and 62 photographs covering a region extending over 1700 km from north to south. A wide range of information is included on stations and facilities, protected areas, Important Bird Areas, Historic Sites and Monuments, sites with Visitor Site Guidelines, and sensitive sites. The manual was jointly commissioned by the National Antarctic Programs of Germany, Italy, New Zealand, South Korea and the United States.

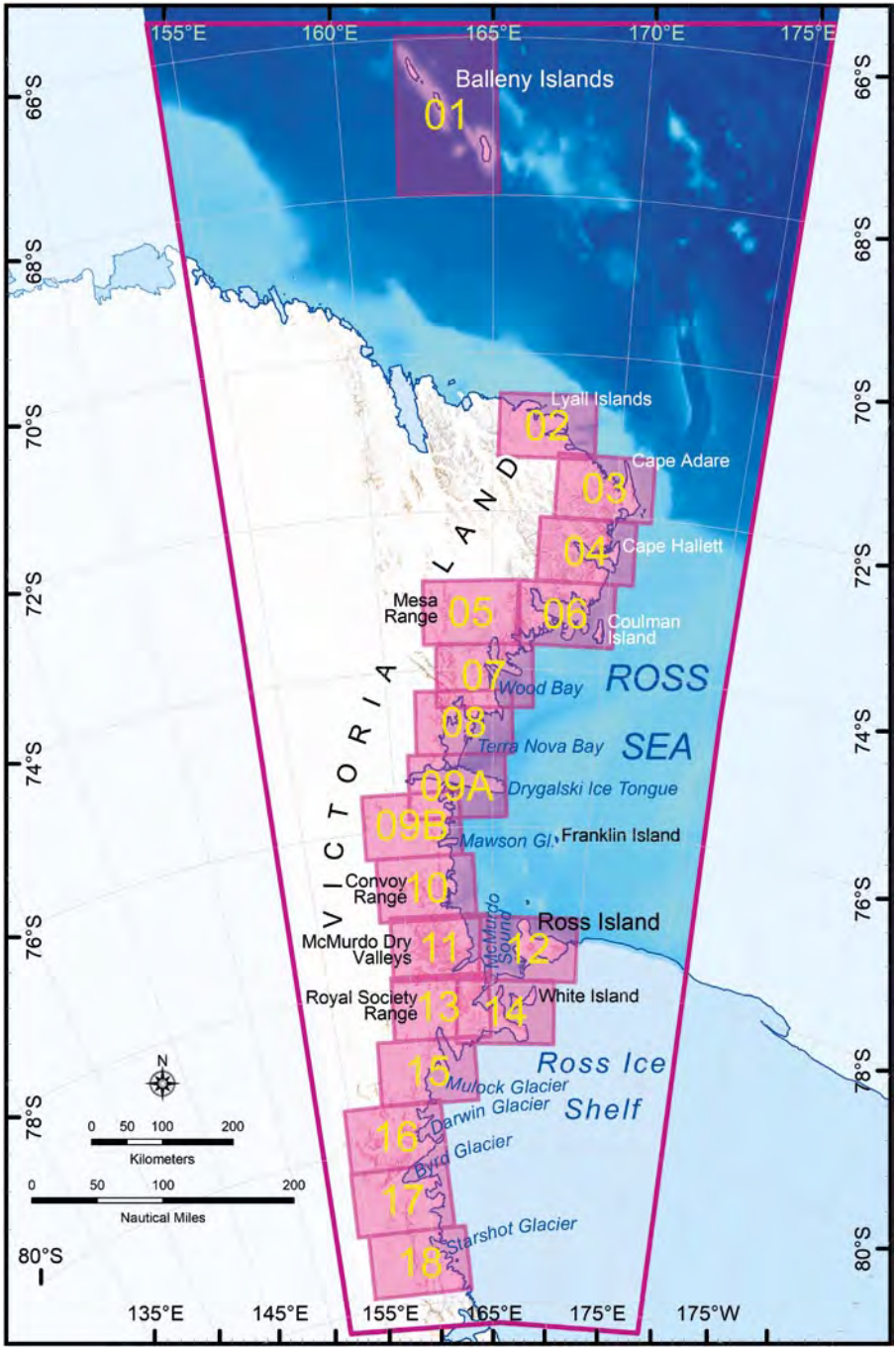
The region of Antarctica covered by this manual is changing rapidly as a result of climate change. As a result, even as this manual is published we know that some aspects – such as ice coastlines – will already be out of date. Wildlife populations are constantly fluctuating and even though breeding localities for many species tend to persist over time, there is also evidence that populations are shifting in response to environmental drivers, with changes in sea ice being especially influential. In addition, regulations such as protected areas and Visitor Site Guidelines may also change from year to year.

The Ross Sea EAM is therefore a guide to a dynamic environment, and it should not be assumed that because wildlife, vegetation or other sensitive features are not identified in this publication they are not present in the field. Moreover, only wildlife species for which data on breeding sites are available and philopatric species – those that breed in the same localities each year – have been included. It is recommended that visitors exercise caution at all times when operating in the region, and reliance should be made on prudent judgement gained from experience and information from other sources, as well as that provided in this manual.

We hope the Ross Sea EAM will help you to protect and use wisely this most remarkable region for science and other peaceful purposes in accordance with the Antarctic Treaty and its Environmental Protocol.

Dr Colin Harris, Editor
Cambridge, Dec 2025

INDEX MAP OF EAM REGIONAL OVERVIEWS EAM00



GEOGRAPHICAL INDEX BY REGION

GEOGRAPHICAL INDEX cont...

GEOGRAPHICAL INDEX cont...

GEOGRAPHICAL INDEX cont...

DATA & DESIGN

1. WILDLIFE INFORMATION

1.1 **THE ABSENCE OF CONCENTRATIONS OF WILDLIFE IN THE MANUAL DOES NOT NECESSARILY IMPLY THEIR ABSENCE IN THE FIELD.** PILOTS SHOULD BE ATTENTIVE TO SIGNS OF WILDLIFE DISTURBANCE AT ALL TIMES AND TAKE CORRECTIVE ACTION WHERE PRACTICAL TO AVOID OR MITIGATE THE EFFECTS OF AIRCRAFT OPERATIONS.

1.2 All known breeding colonies of penguins (Adélie (*Pygoscelis adeliae*), Chinstrap (*P. antarcticus*), Emperor (*Aptenodytes forsteri*)), South polar skuas (*Catharacta maccormicki*), Snow petrels (*Pagodroma nivea*), Antarctic petrels (*Thalassoica antarctica*), and Weddell seals (*Leptonychotes weddellii*) are included where data are available.

1.3 **Note:** owing to lack of data and the life habits of other petrels, Ross seals and Crabeater seals breeding locations for these species are **not shown** and are likely to be present in many locations.

1.4 Only previously confirmed breeding colonies are included for birds. However, some records are old and occasionally colonies may no longer exist, or colonies may now exist in previously unreported locations. In the case of seals, the sites identified are where larger concentrations have been reported, although these are not necessarily breeding colonies.

1.5 Bird counts refer to numbers of breeding pairs. Seal counts refer to numbers of individuals.

1.6 Colony locations have been mapped using best available information from a variety of sources and databases (see reference list below). In some cases it has proven impossible to determine precise colony location and/or numbers because of map and/or data limitations (e.g. some small islands are not shown, some numbers are outdated). In these cases colonies are placed as near to the correct location as the information / maps allow.

1.7 Wildlife information is drawn primarily from published sources listed in the References. Access to previously unpublished data was kindly provided by Antarctica New Zealand.

2. PROTECTED AREAS AND SPECIAL DESIGNATIONS

2.1 **Antarctic Specially Managed Areas (ASMAs)**: permits are not required for entry into ASMAs, although their Management Plans must be followed and a specific Code of Conduct may apply, including guidelines on landing sites / overflight. ASMA No.2 McMurdo Dry Valleys is the only ASMA within the region covered by this manual. A number of Management Zones are designated within the ASMA setting out specific conditions on field facilities, restrictions, scientific activities and for non-governmental visitors.

2.2 **Antarctic Specially Protected Areas (ASPAs)**: permits are required for entry into ASPAs and their Management Plans must be followed. Overflight restrictions often apply at protected areas, particularly where breeding wildlife are present.

2.3 **Historic Sites and Monuments**: sites designated by the Antarctic Treaty Parties.

2.4 I**mportant Bird Areas**: identified by *Birdlife International* as of significance for breeding bird populations. IBAs have also been recognised by the Antarctic Treaty Parties.

2.5 **Visitor Site Guidelines**: sites frequently visited by tourists, where management guidelines have been agreed by the Antarctic Treaty Parties.

3. MAP DESIGN

3.1 EAM maps are generally based on the SCAR Antarctic Digital Database (ADD) (v7.3 and v7.5, 2019-22) which is compiled from a wide variety of sources at maximum original scales of 1:250,000. ADD v7.5 (2022) provided the most recent region-wide coastline data

available. Elevation data in the Ross Sea were not updated in ADD v7.5, so contours are from ADD v7.3. These elevation data are derived from the Reference Elevation Model of Antarctica (REMA) v1.1, a high resolution Digital Surface Model (DSM) of Antarctica prepared at original 2-metre spatial resolution (Howat *et al*. 2022). REMA v2.0, which is the most accurate region-wide elevation model available, has been used to fill gaps in ADD v7.3 data (e.g. Balleny Islands, Franklin Island).

3.2 The hillshade model underlying maps is derived from the REMA v2.0 100 m DSM. Because the hillshade model is based directly on the REMA v2.0 DSM, the apparent coastline differs slightly in some places from the coastline based on ADD v7.5 (which was derived from satellite imagery). The coastline differences can be seen in some maps where the REMA data underlie the partly transparent ADD v7.5 coastline layer. It was beyond the scope of the Ross Sea EAM project to revise ADD v7.5 coastlines, and therefore the maps are presented with coastal differences sometimes evident through the transparent ADD layer. This is most often apparent at ice shelf and ice tongue margins, which are constantly changing. This illustrates the highly dynamic nature of many ice coastlines in Antarctica.

3.3 ADD data on ice-free areas were not updated at the same time as publication of new versions of ADD data on coastlines and elevations. Thus, older data on ice-free areas in the ADD are based mainly on digitised 1:250K maps based on historical ice extents and older datums. As a result, ADD data on ice-free margins frequently do not match coastline and elevation data from more recent versions of the ADD. It was beyond the scope of the Ross Sea EAM project to revise ice-free ground extents, so the older, less accurate, data on ice free areas were used as it is the only region-wide dataset available.

3.4 The ADD includes a layer based on automatic extraction of ice-free areas from Landsat data. In some areas where older data on ice-free areas in the ADD were clearly significantly in error, the Landsat data layer showing ice-free areas has been used. Where this was used, the extent of ice-free ground was checked against more modern satellite data to verify that the Landsat data represented an improvement.

3.5 Ice-free areas in the McMurdo Dry Valleys and on Ross Island are an exception, where more recent and accurate data are available from the Land Information New Zealand (LINZ) / United States Geological Survey (USGS) 1: 50,000 series. These data were downloaded from LINZ in 2022 and glaciology, ice-free areas, coastlines and lakes in this region are thus based on the LINZ / USGS 1: 50K digital maps. These data were edited in collaboration with the Polar Geospatial Center (PGC) in a few places (e.g. Bowers Ice Piedmont) where data were missing. Elevation data from REMA have been used for maps in the McMurdo Dry Valleys.

3.6 Facilities and zones in the McMurdo Dry Valleys are from ERA data prepared in support of the management plan for ASMA No.2. Site maps prepared for ASPA management plans throughout the region have been incorporated where appropriate and practical.

3.7 The bathymetry model used in all maps is from the International Bathymetric Chart of the Southern Ocean (IBCSO) v2.0 (2022). This has been corrected using IBCSO v.1.0 data near the Erebus Ice Tongue where a major error exists in the IBCSO v2.0 depth model.

3.8 Maps are in Lambert Conformal Conic projections using the WGS84 Horizontal Datum.

3.9 Latitude and Longitude are in degrees, minutes and seconds or degrees and decimal minutes (customary for air operations). Because of limitations to the spatial accuracy of the base mapping **GPS coordinates do not necessarily match map coordinates**.

3.10 Scale bars are in nautical miles and kilometers. Horizontal distances are given in yards and feet (customary for air operations). Horizontal and coordinate accuracy varies across the region, ranging from approximately ±10 m to ±100 m.

3.11 **Contours are in metres**, and the contour interval is generally 200 m, with 100 m contours available in a few specific areas.

3.12 **Spot Heights** are in **metres** and *feet*. Spot heights are derived from several sources: LINZ

1:50K series spot height data layer; USGS 1:250K series mapsheets; PGC Air Operations Planning Map Series Map 16 Victoria Land (4th Ed. 2019); and from descriptions in New Zealand and United States place name records for the Ross Sea region.

3.13 Horizontal distances and vertical heights in this manual are not considered reliable for aeronautical purposes.

3.14 Site Maps are prepared at scales ranging between 1:150,000 and 1:400,000, depending on the surrounding geography, the amount of wildlife present, and human features such as stations. The majority of Site Maps are prepared at a scale of 1:250,000.

3.15 All Overview Maps are prepared at a scale of 1:750,000 except for the Balleny Islands Overview (EAM01) which is at 1:1M.

3.16 Maps are oriented with North consistently at the top of the map (not page).

3.17 General guidance on access routes etc. to stations is provided, where available, in order to reduce the risk of overflight of concentrations of wildlife.

3.18 Refer to the Antarctic Flight Information Manual (AFIM) and other aircraft operation manuals for technical aeronautical information on station access procedures as appropriate. The Ross Sea EAM is not intended for technical aeronautical purposes.

3.19 Place names used throughout (except station names) are those formally adopted by Germany, Italy, New Zealand, Republic of Korea and the United States (downloaded 2023). Station names are as identified in COMNAP (2017, downloaded 2023) and as identified by China. For practical reasons, names in use by New Zealand and the United States are used, with other names applied close to stations of the respective countries.

3.20 Supplementary maps and photographs are provided in addition to the EAM maps where available in order to provide more detailed information. Many of these maps are drawn directly from ASMA and ASPA management plans. As such, the map numbers appearing on those maps remain those used in the corresponding plans.

3.21 In general, all data have been drawn from the references cited below. For very site-specific information, sources are noted under "Information sources and dates" in the site details.

REFERENCES

AIDU (Air Information Documents Unit) 2003. *Helicopter Landing Site Manual*. Royal Airforce, United Kingdom.

Ainley, D.G., Morrell, S.H. & Wood, R.C. 1986. South Polar Skua breeding colonies in the Ross Sea region. *Notornis* **33**: 155-63.

Antarctica New Zealand *et al*. 2023. Database on Adélie penguin numbers in the Ross Sea, compiled from various records contributed by researchers working in the Ross Sea region.

Barber-Meyer, S.M., Kooyman, G.L. & Ponganis, P.J. 2008. Trends in western Ross Sea emperor penguin chick abundances and their relationship with climate. *Antarctic Science* **20**: 3–11.

Bradford-Grieve, J. & Fenwick, G. 2002. A review of the current knowledge describing the biodiversity of the Balleny Islands. Final Research Report to the New Zealand Ministry of Fisheries, Project ZBD2000/01. NIWA, Wellington.

Cannone, N. 2006. A network for monitoring terrestrial ecosystems along a latitudinal gradient in Continental Antarctica. *Antarctic Science* **18**(4): 549–60.

Cannone, N. & Seppelt, R. 2008. A preliminary floristic classification of southern and northern Victoria Land vegetation, continental Antarctica. *Antarctic Science* **20**(6): 553–62.

Castello, M. 2003. Lichens of the Terra Nova Bay area, northern Victoria Land (Continental Antarctica). *Studia Geobotanica* **22**: 3-54.

COMNAP (Council of Managers of National Antarctic Programs) 2021. *Antarctic Flight Information Manual* (AFIM).

COMNAP (Council of Managers of National Antarctic Programs) 2023. *Antarctic Station Catalogue*. www.comnap.aq

Croxall, J.P., Steele, W.K., Mcinnes, S.J. & Prince, P.A. 1995. Breeding distribution of the snow petrel *Pagodroma nivea*. *Marine Ornithology* **23**(2): 69-99.

Farr Biswell, S. 2007. End of the line; New Zealand's Balleny Isles. *New Zealand Geographic* **84** (Mar/Apr): 64-73. https://www.nzgeo.com/issue/084/. [accessed 2025]

Fretwell, P.T., LaRue, M.A, Morin, P., Kooyman, G.L., Wienecke, B., et al. 2012. An Emperor penguin population estimate: the first global synoptic survey of a species from space. *PLoS ONE* **7**(4): e33751.

Fretwell, P.T. & Trathan, P.N. 2020. Discovery of new colonies by Sentinel2 reveals good and bad news for emperor penguins. *Remote Sensing in Ecology & Conservation*.

Harris, C.M. *et al*. 2015. *Important Bird Areas in Antarctica*. Environmental Research and Assessment, Cambridge.

Hatherton, T., Dawson, E.W. & Kinsky, F.C. 1965. Balleny Islands Reconnaissance Expedition, 1964. *New Zealand Journal of Geology and Geophysics* **8**(2): 164-79.

Herman, R., Borowicz, A., Lynch, M., Trathan, P., Hart, T. & Lynch, H. 2020. Update on the global abundance and distribution of breeding Gentoo Penguins (*Pygoscelis papua*). *Polar Biology* **43**: 1947–56.

Howat, Ian, *et al*., 2022, "The Reference Elevation Model of Antarctica – Mosaics, Version 2", https://doi.org/10.7910/DVN/EBW8UC, Harvard Dataverse, V1 [accessed 2022].

Humphries, G., Naveen, R., Schwaller, M., Che-Castaldo, C., McDowall, P., Schrimpf, M. & Lynch, H. 2017. Mapping Application for Penguin Populations and Projected Dynamics (MAPPPD): Data and tools for dynamic management and

decision support. *Polar Record* **53**(2): 160-66.
Lynch, H.J. 2021. Mapping Application for Penguin Populations and Projected Dynamics (MAPPPD). Online database accessed Jan/Feb 2021 at http://www.penguinmap.com/mapppd.
Lynch H. & LaRue, M. 2014. First global census of the Adélie Penguin. *The Auk* **31**(4): 457-66.
Lyver, P.O'B., Barron, M., Barton, K.J., Ainley, D.G., Pollard, A., Gordon, S., McNeill, S., Ballard, G. & Wilson, P. 2014. Trends in the breeding population of Adélie Penguins in the Ross Sea, 1981–2012: a coincidence of climate and resource extraction effects. *PLoS ONE* **9**(3): e91188.
MacDiarmid, A. & Stewart, R. 2015. *Ross Sea and Balleny Islands biodiversity: routine observations and opportunistic sampling of biota made during a geophysical survey to the Ross Sea in 2006*. New Zealand Aquatic Environment and Biodiversity Report No 153.
Pezzo, F., Olmastroni, S., Corsolini, S. & Focardi, S. 2001. Factors affecting the breeding success of the South Polar Skua *Catharacta maccormicki* at Edmonson Point, Victoria Land, Antarctica. *Polar Biology* **24**: 389-93.
Ricker, J. 1964. Bird records for Victoria Land, 1962-63. *Emu* **64**: 20–27.
Robertson, C.J.R., Gilbert, J.R. & Erikson, A.W. 1980. Birds and seals of the Balleny Islands, Antarctica. *National Museum of New Zealand Records* **1**(16): 271-79.
Sharp, B.R. 2006. Preliminary report from New Zealand research voyages to the Balleny Islands in the Ross Sea region, Antarctica, January-March 2006. CCAMLR Report WG-EMM-06/31.
Strycker, N., Wethington, M., Borowicz, A., Forrest, S., Witharana, C., Hart, T. & Lynch, H.J. 2020. A global population assessment of the Chinstrap penguin (*Pygoscelis antarctica*). *Nature Scientific Reports* **10**:19474.
van Franeker, J.A., Gavrilo, M., Mehlum, F., Veit, R.R. & Woehler, E. 1999. Distribution and abundance of the Antarctic petrel *Thalassoica antarctica*. *Waterbirds* **22**: 14-28.
Varian, S.J. 2005. *A summary of the values of the Balleny Islands, Antarctica. Marine Biodiversity Biosecurity Report 6*. Ministry for Fisheries, New Zealand.
Woehler, E.J. 1993. *The distribution and abundance of Antarctic and Subantarctic penguins*. SCAR, Cambridge. [Updated 2004, Woehler, pers. comm.: publication summarises data from more than 132 references.]

Mount Herschel (3335 m): view across sea ice covering Edisto Inlet from near Seabee Hook, Cape Hallett. Photo: © C.Harris, ERA, 02 Dec 2009.

ACKNOWLEDGEMENTS

Antarctica New Zealand: Ceisha Poirot, Natasha Gardiner, Rachel Innes.

German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety: Division IK I 1.

German Environment Agency: Heike Herata, Fritz Hertel.

Italian Antarctic Research Program: Giorgio Budillon, Orazio Guanciale, Giuseppe Magnifico, Roberta Mecozzi, Silvano Onofri, Carla Ubaldi, Isabella Vitali.

Korean Polar Research Institute: Ji Hee Kim, Jeong-Hoon Kim, Jong-U Kim, Myeong-ho Seo, Khanghyun Lee.

United States Antarctic Program: Polly Penhale, Andrew Titmus, Laura Elliott, Nathan Williams.

Scientific Committee on Antarctic Research: SCAR's role in the coordination of Antarctic research has been vital to the development of key databases underpinning this Manual. SCAR is thanked for kind permission to use the Antarctic Digital Database as the primary map base.

Land Information New Zealand: Dave Collett. LINZ 1:50K spatial data covering the McMurdo Dry Valleys, Ross Island and Darwin Mountains and the updated Ross Sea toponym database are gratefully acknowledged.

ABBREVIATIONS

~	approximately
ADD	Antarctic Digital Database
AGL	Above Ground Level
AFIM	Antarctic Flight Information Manual
ASMA	Antarctic Specially Managed Area
ASPA	Antarctic Specially Protected Area
C.	Cape
CCAMLR	Convention on the Conservation of Antarctic Marine Living Resources
CEMP	CCAMLR Ecosystem Monitoring Programme
Ch.	Channel
COMNAP	Council of Managers of National Antarctic Programs
FT / ft	feet
Gl.	Glacier
HLS	Helicopter Landing Site
Hbr	Harbour
HSM	Historic Site & Monument
I. / Is.	Island / Islands
IBA	Important Bird Area
km	Kilometer
KOPRI	Korean Polar Research Institute
L.	Lake
LINZ	Land Information New Zealand
m	meter
Mt.	Mount
nm	nautical mile
Pen.	Peninsula
PGC	Polar Geospatial Center
PNRA	Programma Nazionale di Ricerche in Antartide
Pt.	Point
PPR	Prior Permission Required
RPAS	Remotely Piloted Aircraft Systems
SCAR	Scientific Committee on Antarctic Research
Stn	Station
TWR / Twr	Tower
UAV	Unmanned Aerial Vehicle
USAP	United States Antarctic Program
USGS	United States Geological Survey
VSG	Visitor Site Guidelines
yds	yards

ISO Code	COUNTRY
CN	China
DE	Germany
IT	Italy
KR	Republic of Korea
NZ	New Zealand
US	United States of America

GUIDELINES FOR THE OPERATION OF AIRCRAFT NEAR CONCENTRATIONS OF BIRDS IN ANTARCTICA

RESOLUTION 2 (2004)
ANTARCTIC TREATY CONSULTATIVE MEETING XXVII

Fixed and rotary wing aircraft operations have the potential to cause disturbance leading to changes in the behaviour, physiology and the breeding success of wildlife. The level of impact will vary according to the intensity, duration and frequency of disturbance, the species involved and the phase in their breeding season. Most species are particularly sensitive to disturbance between late September and early May – the period when Antarctic helicopter and fixed wing operations usually occur.

There are many variables affecting noise levels received on the ground during aircraft operations, including: flight height; the type of aircraft and engine; the flight profile; the weather; and the geography of the location. Pilots have to make the final judgement regarding aircraft operations based on the aircraft type, task and safety considerations. Such judgments should also pay due consideration to potential wildlife impacts, noting that Annex II of the Protocol on Environmental Protection to the Antarctic Treaty defines that 'harmful interference' means 'flying or landing helicopters or other aircraft in a manner that disturbs concentrations of birds and seals'.

Minimum recommended separation distances for aircraft operations close to concentrations of birds are set out below. These recommended distances should be maintained to the greatest extent possible, unless greater separation distances are specified for the area of operation, for example by an ASPA or ASMA management plan or guidelines already developed by national operators to suit their own particular needs and circumstances. These distances are only a guide and if wildlife disturbance is observed at any separation distance, a greater distance should be maintained wherever practical:

- Penguin, albatross and other bird colonies are not to be overflown below 2000 ft (~610 m) Above Ground Level, except when operationally necessary for scientific purposes.
- Landings within 1/2 nautical mile (~930 m) of penguin, albatross or other bird colonies should be avoided wherever possible.
- Never hover or make repeated passes over wildlife concentrations or fly lower than necessary.
- Maintain a vertical separation distance of 2000 ft (~610 m) AGL and a horizontal separation of 1/4 nautical mile (~460 m) from the coastline where possible.
- Cross the coastline at right angles and above 2000 ft (~610 m) AGL where possible.

Location of aircraft operations (other considerations)

- Where practical, avoid overflying concentrations of birds.
- Be aware that concentrations of birds are most often found in coastal areas. Snow petrel and Antarctic petrel colonies are also frequently found inland on nunataks. Minimum vertical separation distances should be maintained in these areas.
- Where practical, landings near to concentrations of birds should be downwind and / or behind a prominent physical barrier (e.g. hill) to minimise disturbance.
- Avoid Antarctic Specially Protected Areas, unless authorised to over-fly and/or land by a permit issued by an appropriate national authority. For many ASPAs there are specific controls on aircraft operations, which are set out in the relevant Management Plans.
- Follow aircraft flight heights, preferred flight paths and approach paths contained in the Antarctic Flight Information Manual (AFIM), in station aircraft operation manuals and on relevant charts, maps and any Wildlife and Low Flying Avoidance Maps for the major airstrips in the Antarctic (e.g. Marsh, Marambio, Rothera, McMurdo).
- Particularly avoid flying toward concentrations of birds immediately after take-off and avoid steep banking turns in flight as these significantly increase the amount of noise generated.

Timing of aircraft operations

- Most native bird species breed at coastal locations in Antarctica between September and May each season. During the planning of aircraft operations near to concentrations of birds, consideration should be given to undertaking flying activities outside of the main breeding and/or moulting periods.
- Where aircraft operations are necessary close to concentrations of birds, then the duration of flights should be the minimum necessary.
- To minimise bird strikes, especially in coastal areas, avoid flying after dark between September and May. At this time of year, prions and petrels are active. These birds are nocturnal when breeding and are attracted by lights.
- Aircraft operations should be delayed or cancelled if weather conditions (e.g. cloud base, winds) are such that the suggested minimum vertical and horizontal separation distances given in these guidelines cannot be maintained.

USE OF REMOTELY PILOTED AIRCRAFT NEAR WILDLIFE IN ANTARCTICA

The use of Remotely Piloted Aircraft Systems (RPAS) – or Unmanned Aerial Vehicles (UAVs), or drones as they are commonly known – also has potential for wildlife disturbance.

There are strict rules about the use of RPAS in Antarctica, and so you should check with your tour operator or national permitting authority before planning any RPAS activities.

Flying or landing a RPAS in a manner that disturbs wildlife is prohibited, except in accordance with a permit issued by an appropriate authority under Annex II to the Protocol on Environmental Protection to the Antarctic Treaty. Permits can be issued in recognition that RPAS, when used responsibly, can be incredibly useful as scientific tools, for example to gather data on the status of wildlife colonies themselves. For those with a permit, the *Environmental Guidelines for operation of Remotely Piloted Aircraft Systems (RPAS) in Antarctica* (v 1.1) (Resolution 4 (2018); available from the Antarctic Treaty Secretariat) provide guidance to minimise the risk of harmful interference with wildlife.

RPAS are also a potential danger to piloted aircraft, and it is critical that appropriate permissions are obtained before operating in proximity of vessels and piloted aircraft, especially near Antarctic stations. A guidance manual was issued by the International Civil Aviation Organisation (ICAO) in 2015, and the Council of Managers of National Antarctic Programs (COMNAP) regularly updates and publishes its *Antarctic Remotely Piloted Aircraft Systems (RPAS) Operator's Handbook* (v. 8: 18 December 2023). Many National Programmes also have manuals for RPAS operation.

Preparation is essential for RPAS operation in Antarctica. Flying conditions are very different from those most pilots will have experienced, so it is important to simulate and practice techniques prior to flying in Antarctica. In particular, flying from moving vessels and sea ice require special practice as the Return to Home (RTH) point will change during flight. For safe take-off and landing ensure the Remotely Piloted Aircraft will move away from a vessel in the event of any loss of control.

Before flying, pilots should consult the environmental and operational guidelines for RPAS use in Antarctica, although a few key points relevant to wildlife are:

PRIOR TO DEPLOYMENT TO ANTARCTICA

- Make sure the appropriate authorisation or permit is obtained for using RPAS in Antarctica;
- Undertake an environmental impact assessment, including of wildlife and site sensitivities, and detailed pre-flight planning with contingency plans for incidents;
- Design flight plans to avoid wildlife unless this is part of your research and you have a permit;
- Flying Remotely Piloted Aircraft into protected areas is prohibited unless you have a permit for entry;
- Carefully consider aircraft capabilities for use in extreme Antarctic conditions (e.g. wind, cold, etc);
- All pilots must be trained, including in all operational and environmental guidelines for RPAS use.

ON-SITE AND IN-FLIGHT OPERATIONS

- Operate within Visual Line Of Sight at all times, unless specifically authorised otherwise;
- Select launch / landing sites away from wildlife and avoid overflight unless you have a permit;
- Monitor any signs of wildlife disturbance and take corrective action / cease operations if necessary;
- Wildlife reactions to Remotely Piloted Aircraft vary extensively, for example depending on species, breeding status, flight altitude and whether flight approaches are either horizontal or vertical;
- Take special care operating near cliffs where hidden birds may be nesting;
- Pay close attention to changes in weather conditions which may affect RPAS capabilities.

GUIDELINES FOR VISITORS TO ANTARCTICA

The Antarctic Treaty Parties have agreed *General Guidelines for Visitors to the Antarctic*, which are available in full from the Antarctic Treaty Secretariat. These Guidelines provide general advice for visiting Antarctica, with the aim of ensuring visits do not have adverse impacts on the Antarctic environment, or on its scientific and aesthetic values. *Visitor Site Guidelines* have also been agreed by the Antarctic Treaty Parties to provide additional site-specific advice at some locations (see the list of sites where *Visitor Site Guidelines* apply in the region covered by the EAM on p.184). The *Visitor Site Guidelines* are available in full from the Antarctic Treaty Secretariat. The most important of the *General Guidelines for Visitors to the Antarctic* provisions on protection of wildlife are**:**

PROTECTION OF WILDLIFE

- The taking of, or harmful interference with, Antarctic wildlife is prohibited except in accordance with a permit.
- When in the vicinity of wildlife, walk slowly and carefully and keep noise to a minimum.
- Maintain an appropriate distance from wildlife. While in many cases a greater distance may be appropriate, in general don't approach closer than 5 m. Abide by any guidance on distances in site specific guidelines.
- Observe wildlife behaviour. If wildlife changes its behaviour stop moving, or slowly increase your distance.
- Animals are particularly sensitive to disturbance when they are breeding (including nesting) or moulting. Stay outside the margins of a colony and observe from a distance.
- Every situation is different. Consider the topography and the individual circumstances of the site, as these may have an impact on the vulnerability of wildlife to disturbance.
- Always give animals the right of way and do not block their access routes to the sea.
- Do not feed wildlife or leave food or scraps lying around.

In addition, entry into Antarctic Specially Protected Areas (ASPAs) is prohibited without a permit. Entry to Antarctic Specially Managed Areas (ASMAs) is allowed without a special permit, although Management Plans set out Codes of Conduct for activities in these areas, including zones where special conditions apply (e.g. ASMA No.2 McMurdo Dry Valleys has a number of Restricted Zones where access is closely controlled). See the list of designated ASPAs and ASMAs in the region on p.183.

RECENT ENVIRONMENTAL CHANGES IN THE ROSS SEA

The Ross Sea region is one of the world's most intact large marine ecosystems, home to the world's largest Marine Protected Area, and supports globally significant wildlife populations. However, the region faces a range of threats, of which climate change is the primary concern. Adélie penguin populations, historically stable or increasing, saw a notable drop after 2020, coinciding with record-low sea ice. A 20-year study of emperor penguins reveals a >20% decline in the regional springtime population, also with an accelerated drop after 2020. While their southernmost colonies have grown, northern colonies are shrinking, raising concern for this fast ice-dependent species. In contrast, the Weddell seal population in Erebus Bay has grown in recent decades, although the causes remain unclear, and demographic rates are increasingly variable compared to the 1980's/90's. The Antarctic toothfish fishery is a potential, though debated, pressure on predators like Weddell seals and killer whales. Other stressors include disturbance from operations, such as aircraft overflights and landings potentially impacting bird colonies. Another threat is the arrival of pathogens like Highly Pathogenic Avian Influenza. While not yet detected in the Ross Sea, it could be devastating, with risks exacerbated by increasing human visitation. The status of many species remains poorly understood, making continued research and precautionary management essential to safeguard this unique ecosystem.

Grant Ballard, Jay Rotellla, Jeong-Hoon Kim, Dean Anderson, Michelle La Rue. Oct 2025

ENVIRONMENTAL AWARENESS MAPS

EAM01: BALLENY ISLANDS

BALLENY ISLANDS OVERVIEW EAM01

LOCATION: Balleny Islands overview.

DESCRIPTION:
The Balleny Islands host eight species of breeding birds, including Adélie and Chinstrap penguins, Cape petrel, Snow Petrel, Antarctic Petrel, Southern Fulmar, Wilson's Storm-petrel and South Polar Skua (Robertson *et al*. 1980; ASPA No.104 Management Plan 2021).

At least 15 other species have been observed in the area although are not known to breed, including Southern Giant and White-chinned petrels, Antarctic prion, Sooty shearwater, Arctic tern, Brown skua, Macaroni penguin and Grey-headed, Black-browed, Light-mantled Sooty and Wandering albatrosses.

Humpback whale are reported as common near the Balleny Islands. Weddell, Crabeater, Leopard and Southern Elephant seals are present, although not known to breed (ASPA No.104 Management Plan 2021).

Young Island (EAM01-01):
Southern fulmar, Snow petrel and Cape petrel reported nesting along western coast. These species also breeding on outcrops around Cape Ellsworth. Southern fulmar present on south and SE coasts.

Buckle Island (EAM01-02):
Cape petrel and Snow petrel observed breeding in cliffs along western coast and at Cape Freeman in 1965 (Robertson *et al*. 1980). ~533 pairs of Adélie penguin were reported at Cape Cornish in 1984, although this may be the same colony (43 pairs) recorded ~4 km east of Cape Cornish, (Lynch & LaRue 2014). See EAM01-02-1 / 2 Cape McNab / Sabrina Island for detail in southern part of Buckle Island.

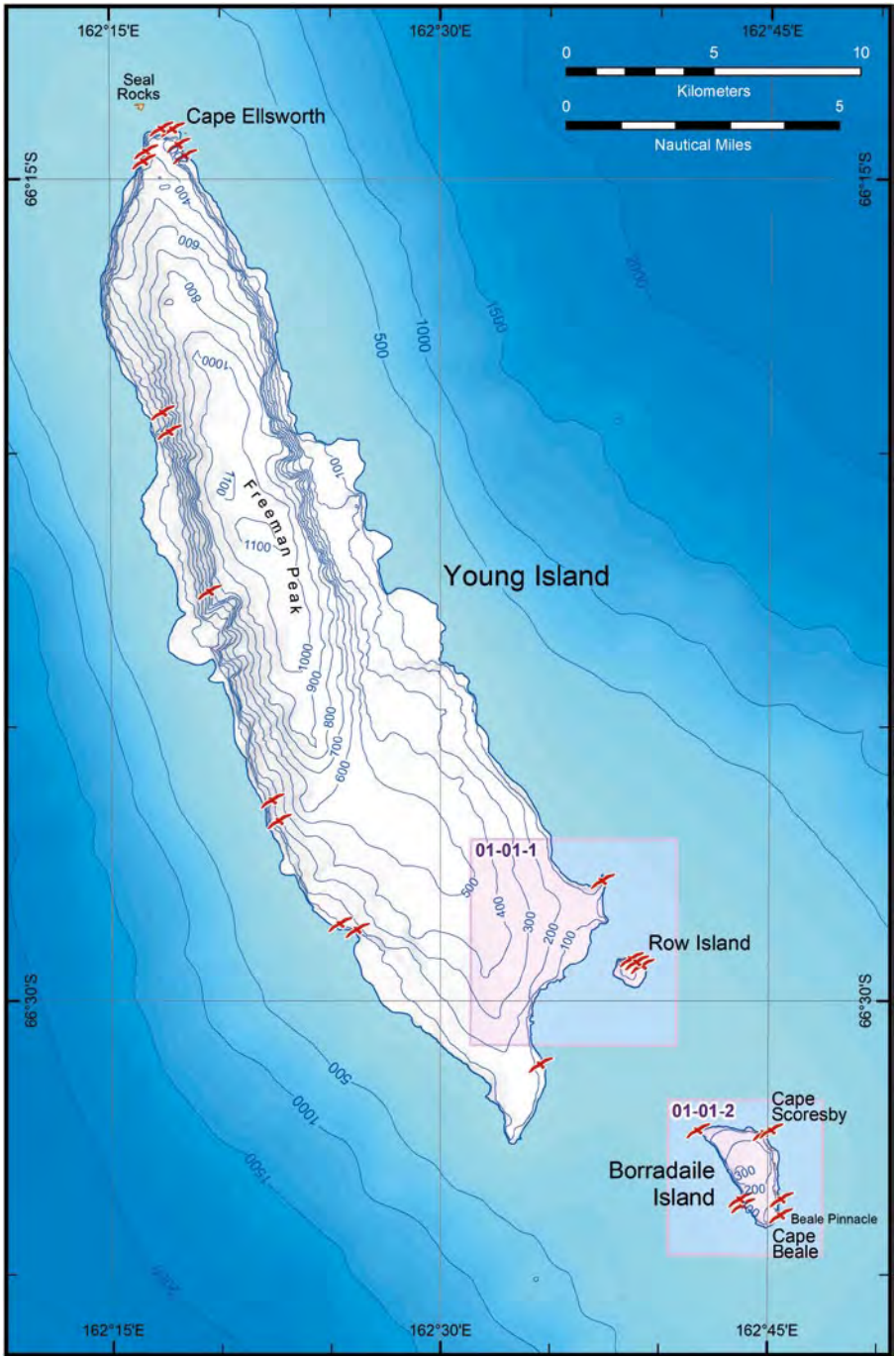
Sturge Island (EAM01-03):
Between ~10–20 000 pairs of Southern fulmar and ~5–10 000 pairs of Snow petrel were observed breeding in cliffs on the western coast and at Cape Freeman in 1965 (Robertson *et al*. 1980). A small colony of Adélie penguin was reported in 1965 although was not seen in 1984. IBA No.163 identified on the basis of the large colonies of Southern fulmar and Snow petrel.

RESTRICTIONS: Entry to ASPA No.104 Sabrina Island, ~2 km south of Buckle Island, is prohibited except by permit.

The western and northern coast of Sturge Island is an Important Bird Area (IBA No.163), with large numbers of Southern fulmar and Snow petrel.

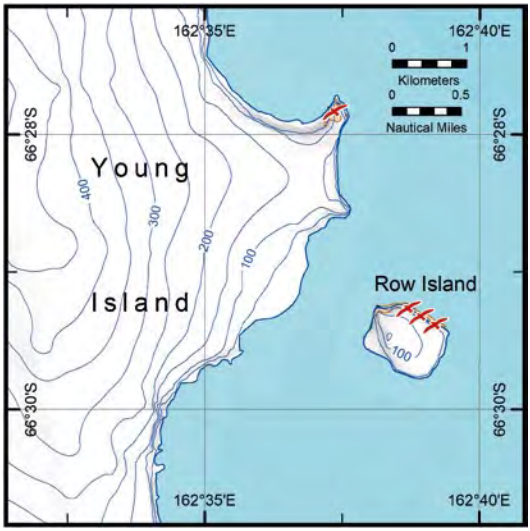
INFORMATION SOURCES and DATES:
Hatherton *et al*. 1965. Robertson *et al*.1980. Bradford-Grieve & Fenwick 2002. Sharp 2006. Lynch & LaRue 2014. ASPA 104 Sabrina Island Management Plan 2021.

Chinstrap Island, Sabrina Island & The Monolith. ASPA No.104, Entry by Permit. Photo: © John Mitchell, RV *Tangaroa* (TAN2602), 09 Mar 2006.


162°15'E
162°30'E
162°45'E
0 5 10
Kilometers
0 5
Nautical Miles
66°15'S
66°30'S
Seal Rocks
Cape Ellsworth
Freeman Peak
Young Island
01-01-1
Row Island
01-01-2
Cape Scoresby
Borradaile Island
Beale Pinnacle
Cape Beale

ROW ISLAND
GRID REF
GPS

EAM01-01-1
ELEV FT



LOCATION: ~1 km E of Young Island.

DESCRIPTION: A colony of 5000-6000 Southern fulmars was reported on the NE coast of Row Island in 1965, along with Snow petrel, small numbers of South Polar skua, and ~15 Weddell seals hauled out on a beach.

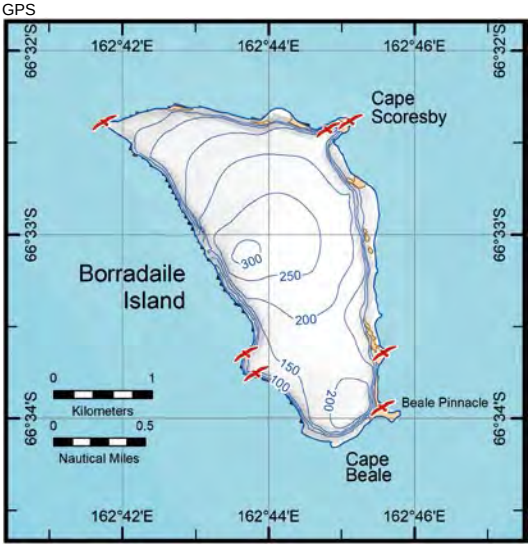
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:
Hatherton *et al.* 1965. Robertson *et al.*1980.

BORRADAILE ISLAND
GRID REF
GPS

EAM01-01-2
ELEV FT



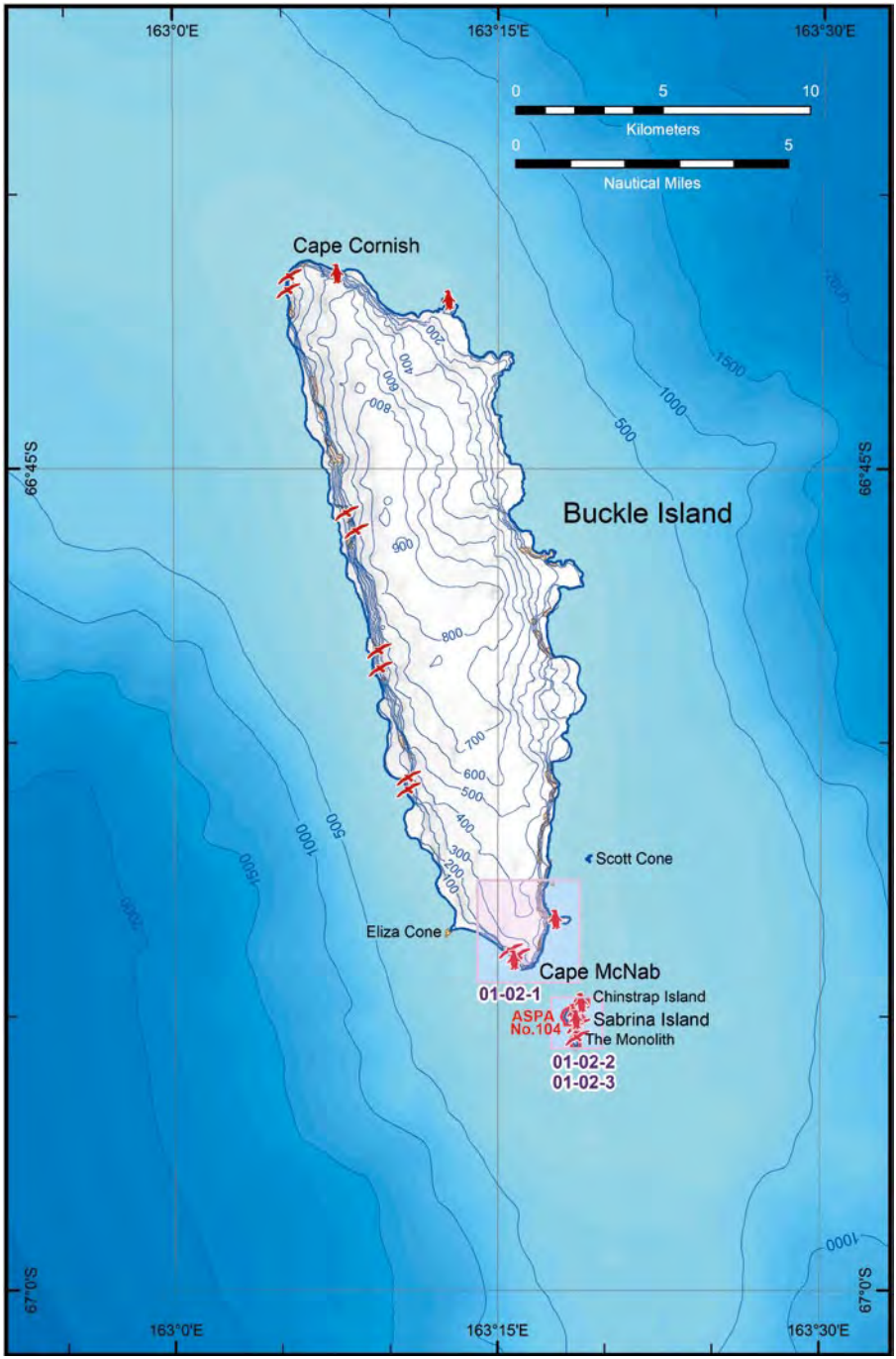
LOCATION: ~5 km SE of Young Island.

DESCRIPTION: Small numbers of Brown and South Polar skua reported at Cape Scoresby, together with Snow petrel and Southern fulmar. Snow petrel and Cape petrel observed on coast in southern part of island near Cape Beale. Weddell seal and a solitary Southern Elephant seal observed in 1965.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

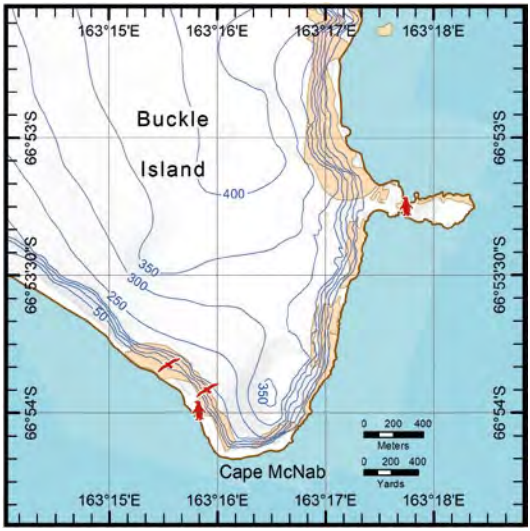
RESTRICTIONS:

INFORMATION SOURCES and DATES:
Hatherton *et al.* 1965. Robertson *et al.*1980.


163°0'E
163°15'E
163°30'E
0 5 10
Kilometers
0 5
Nautical Miles
Cape Cornish
Buckle Island
66°45'S
67°0'S
Scott Cone
Eliza Cone
Cape McNab
01-02-1
Chinstrap Island
ASPA No.104
Sabrina Island
The Monolith
01-02-2
01-02-3

CAPE McNAB
GRID REF
GPS

EAM01-02-1
ELEV FT



LOCATION: Buckle Island, south.

DESCRIPTION: Adélie penguin colony (hundreds of pairs), including 26 Chinstrap penguins and 18 chicks observed near Cape McNab in 2006. Cape petrels also observed. Adélie penguin colony (~890 pairs; 2005) on the SE promontory of Buckle Island.

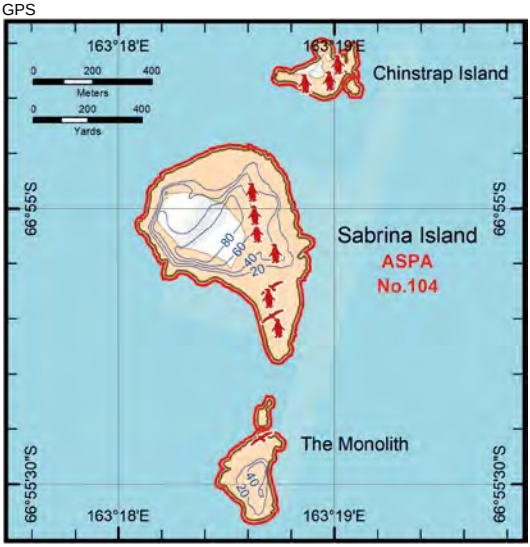
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES: Sharp 2006. Farr Biswell 2007. Antarctica NZ *et al*. 2023.

SABRINA ISLAND
GRID REF
GPS

EAM01-02-2
ELEV ~260 FT



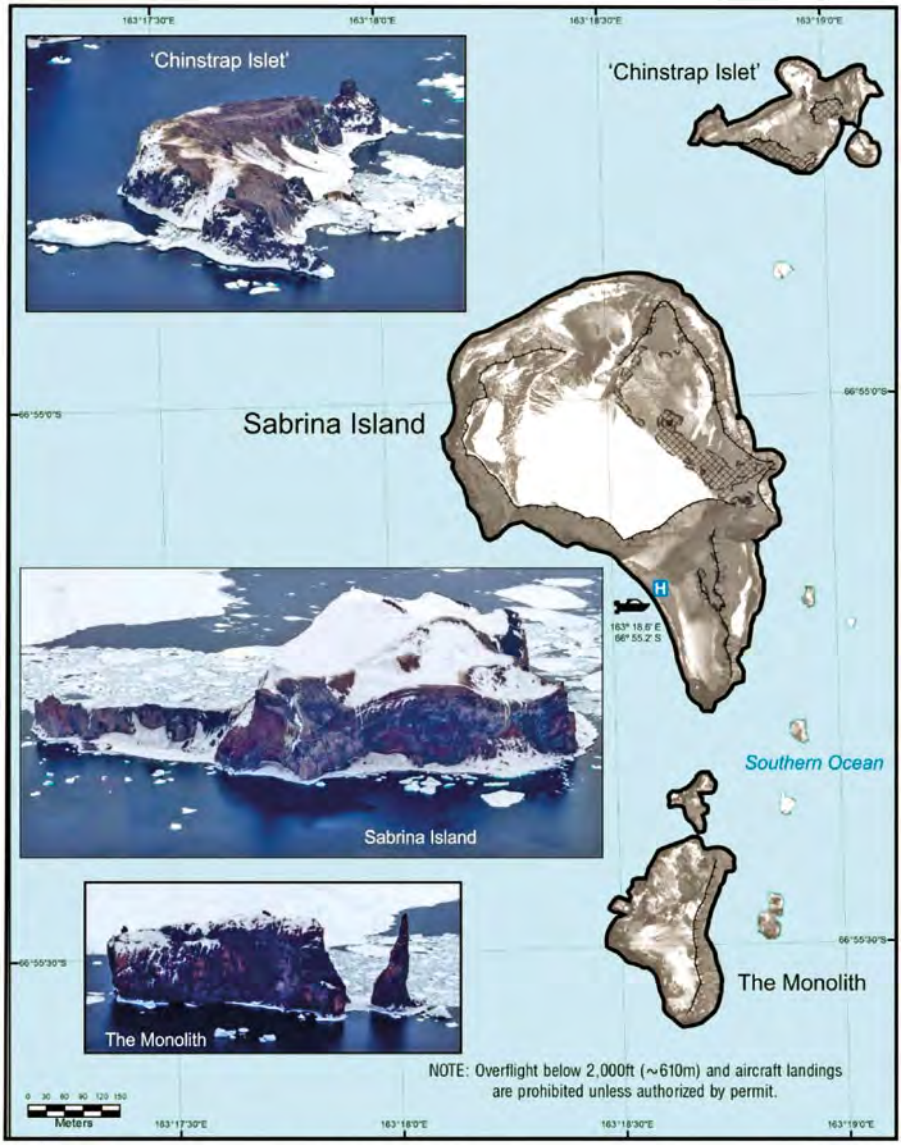
LOCATION: Buckle Island, south.

DESCRIPTION: Adélie (~4844 pairs; 2005) and Chinstrap penguin (202 adults and 109 chicks; 2006) colonies on Sabrina Island. Adélie penguin colony (~3092 pairs; 2005) on Chinstrap Island (formerly 'Chinstrap Islet') with a small number of Chinstrap penguins. Cape petrels observed nesting on Sabrina Island (2006) and southern side of The Monolith (1965).

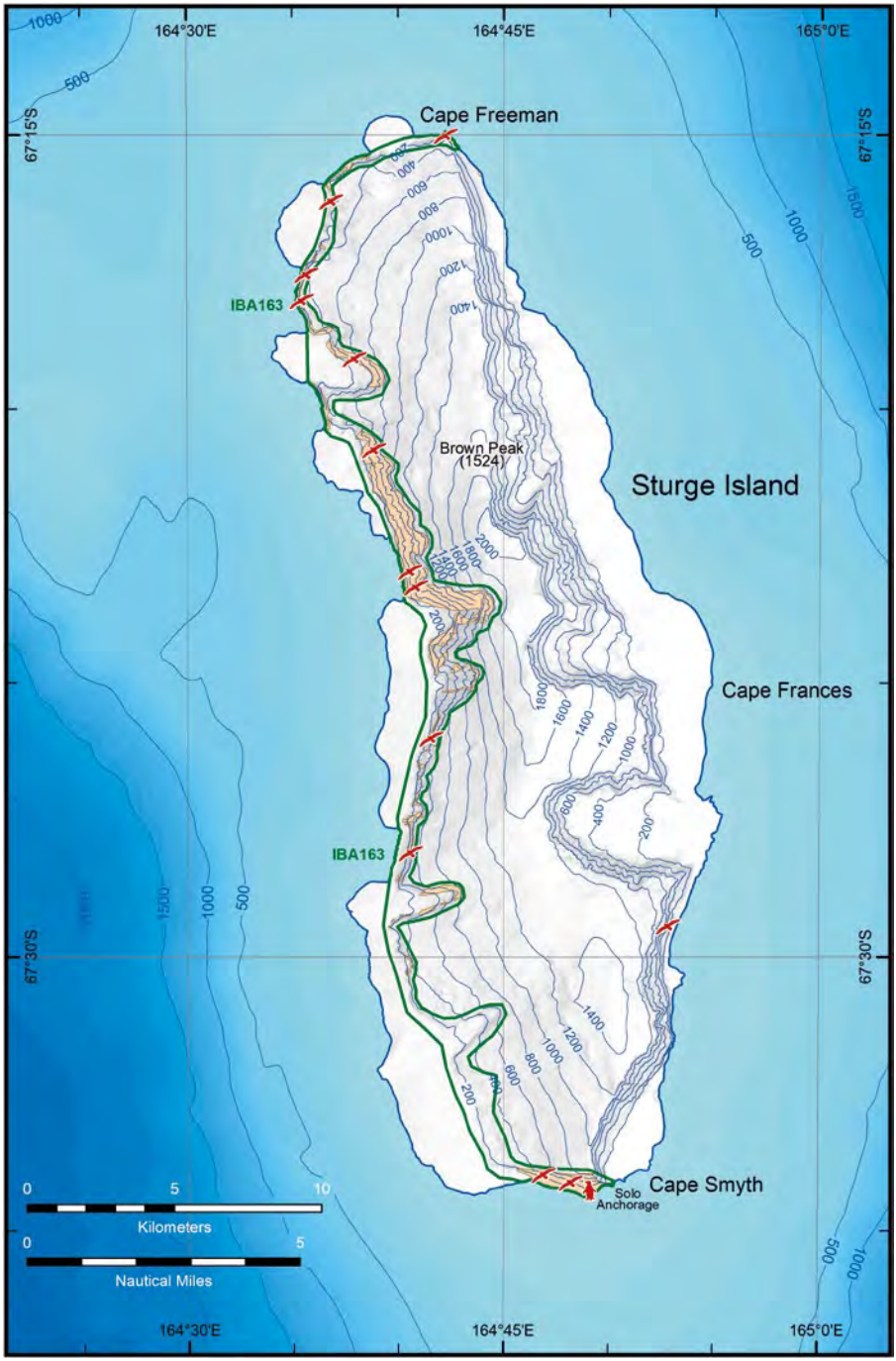
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Entry to ASPA No.104 Sabrina Island, Chinstrap Island & The Monolith prohibited except by permit. **Consult management plan.**

INFORMATION SOURCES and DATES: ASPA No.104 Sabrina Island Management Plan (2021). Sharp 2006. Antarctica NZ *et al*. 2023.

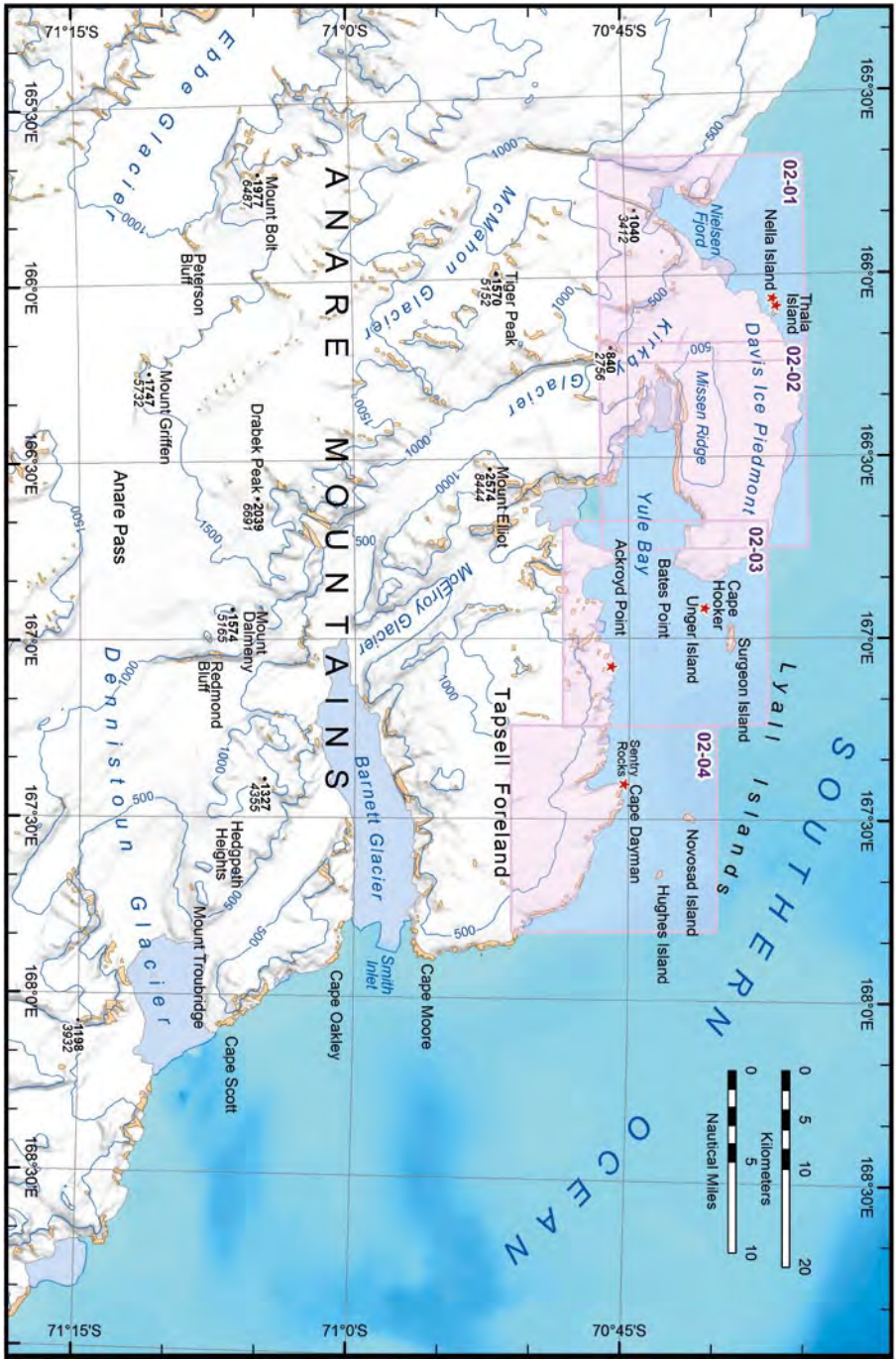


Map 2 from ASPA No.104 Sabrina Island management plan (2021).


164°30'E
164°45'E
165°0'E
67°15'S
67°30'S
Cape Freeman
IBA163
Brown Peak
(1524)
Sturge Island
Cape Frances
IBA163
Cape Smyth
Solo
Anchorage
0 5 10
Kilometers
0 5
Nautical Miles

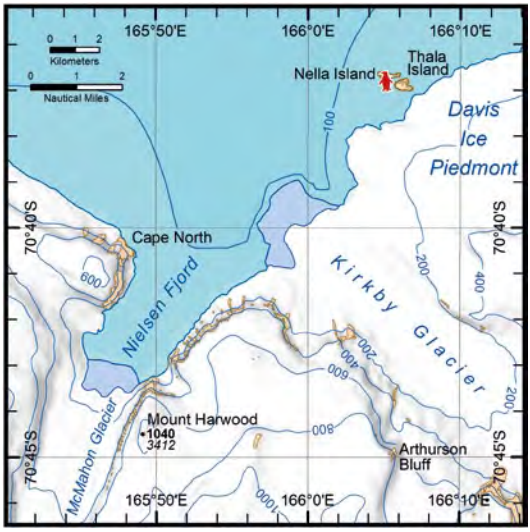
ENVIRONMENTAL AWARENESS MAPS

EAM02: LYALL ISLANDS
ANARE MOUNTAINS


02-01
02-02
02-03
02-04
Nella Island
Thala Island
Davis Ice Piedmont
Nielsen Fjord
Missen Ridge
Kirkby Glacier
McMahon Glacier
Ebbe Glacier
ANARE MOUNTAINS
Mount Bolt
1977
6487
Peterson Bluff
Tiger Peak
1529
5190
1040
3412
840
2756
Mount Elliot
2574
8444
Mount Griffen
1749
5732
Anare Pass
Drabek Peak
2039
6687
McElroy Glacier
Yule Bay
Ackroyd Point
Bates Point
Cape Hooker
Urger Island
Surgeon Island
Lyall Islands
Tapsell Foreland
Mount Dalmeny
1575
5167
Redmond Bluff
Barnett Glacier
Smith Inlet
Sentry Rocks
Cape Dayman
Novosad Island
Hughes Island
Cape Moore
Cape Oakley
Cape Scott
Mount Troubridge
Hedgpeth Heights
1327
4355
Denniston Glacier
1139
3932
SOUTHERN OCEAN
0 5 10 20
Kilometers
0 5 10
Nautical Miles
165°30'E
166°0'E
166°30'E
167°0'E
167°30'E
168°0'E
168°30'E
71°15'S
71°0'S
70°45'S

NELLA ISLAND
GRID REF:
GPS:

EAM02-01
ELEV FT



LOCATION: Nielsen Fjord / western extremity of Davis Ice Piedmont.

DESCRIPTION: Adélie penguin colony (~477 pairs, 2014; ~175 pairs recorded in 1985) on Nella and Thala islands.

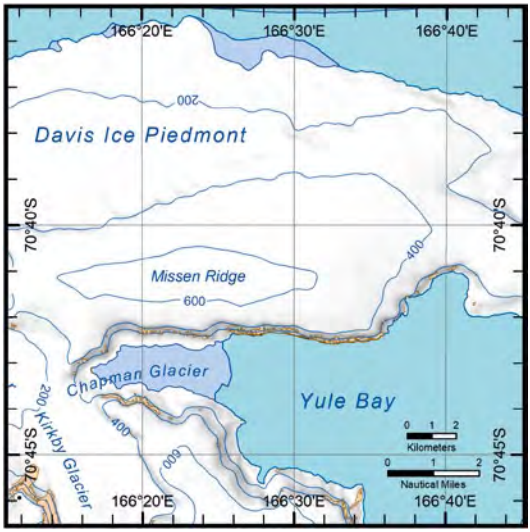
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES: Lynch & LaRue 2014. Antarctica NZ *et al*. 2023.

MISSEN RIDGE
GRID REF:
GPS:

EAM02-02
ELEV FT



LOCATION: Davis Ice Piedmont / Yule Bay.

DESCRIPTION: An ice-covered ridge of ~600 m elevation separating the Davis Ice Piedmont from Yule Bay.

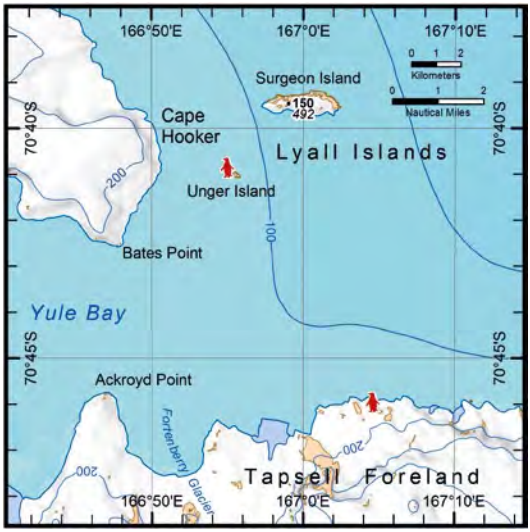
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

UNGER ISLAND
GRID REF:
GPS:

EAM02-03
ELEV FT



LOCATION: Lyall Islands.

DESCRIPTION: Adélie penguin colonies on Unger Island (~305 pairs, 2013; ~138 pairs recorded in 1985) and on northern coast of Tapsell Foreland ~8 km east of Fortenberry Glacier (~342 pairs; 2014).

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES: Lynch & LaRue 2014. Antarctica NZ *et al*. 2023.

CAPE DAYMAN
GRID REF:
GPS:

EAM02-04
ELEV FT

LOCATION: Lyall Islands / Tapsell Foreland.

DESCRIPTION: Adélie penguin colony (~344 pairs, 2014; ~80 pairs recorded in 1985) on Sentry Rocks, Cape Dayman.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

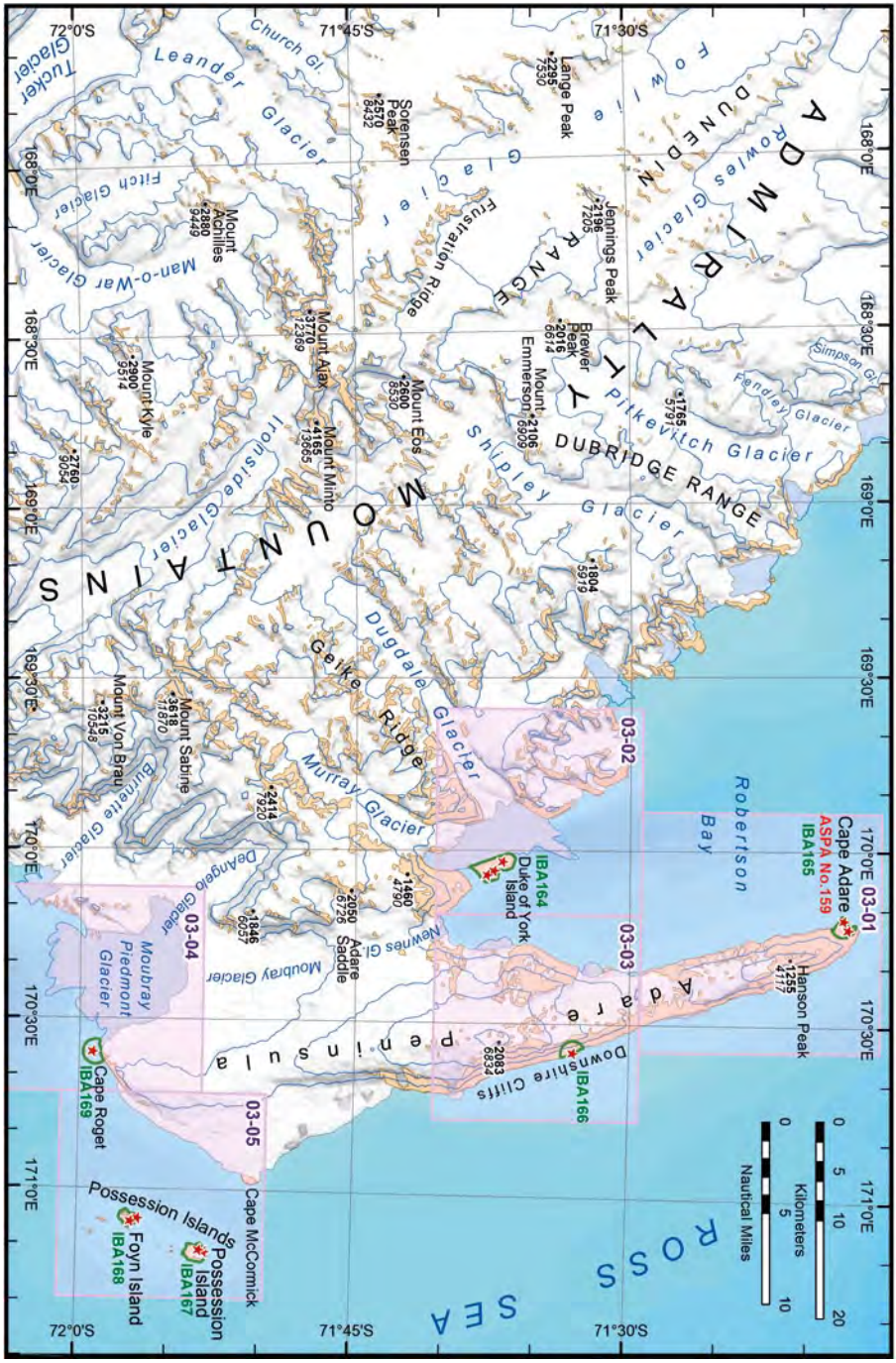
RESTRICTIONS:

INFORMATION SOURCES and DATES: Lynch & LaRue 2014. Antarctica NZ *et al*. 2023.

ENVIRONMENTAL AWARENESS MAPS

EAM03: CAPE ADARE
ADMIRALTY MOUNTAINS
POSSESSION ISLANDS

CAPE ADARE / ADMIRALTY MOUNTAINS OVERVIEW EAM03



CAPE ADARE **EAM03-01**
GRID REF: S 71°18.37' E 170°12.0' Ridley Beach ELEV 10FT
GPS:

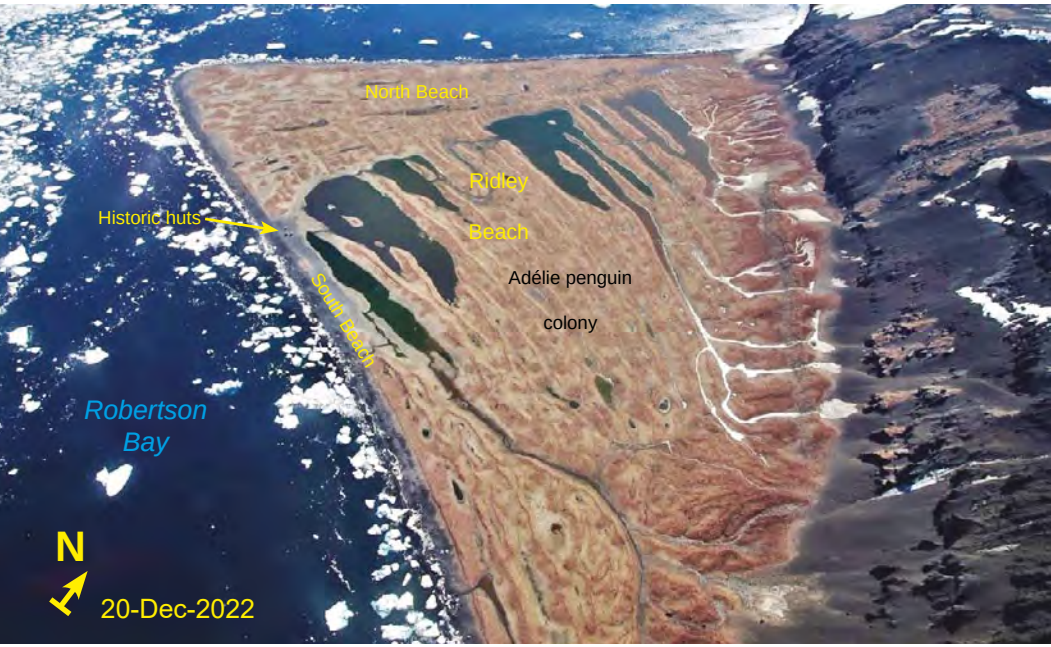
INFORMATION SOURCES and DATES:
ASPA No.159 Cape Adare Management Plan (2021). Antarctica NZ *et al*. 2023.

LOCATION: Adare Peninsula.

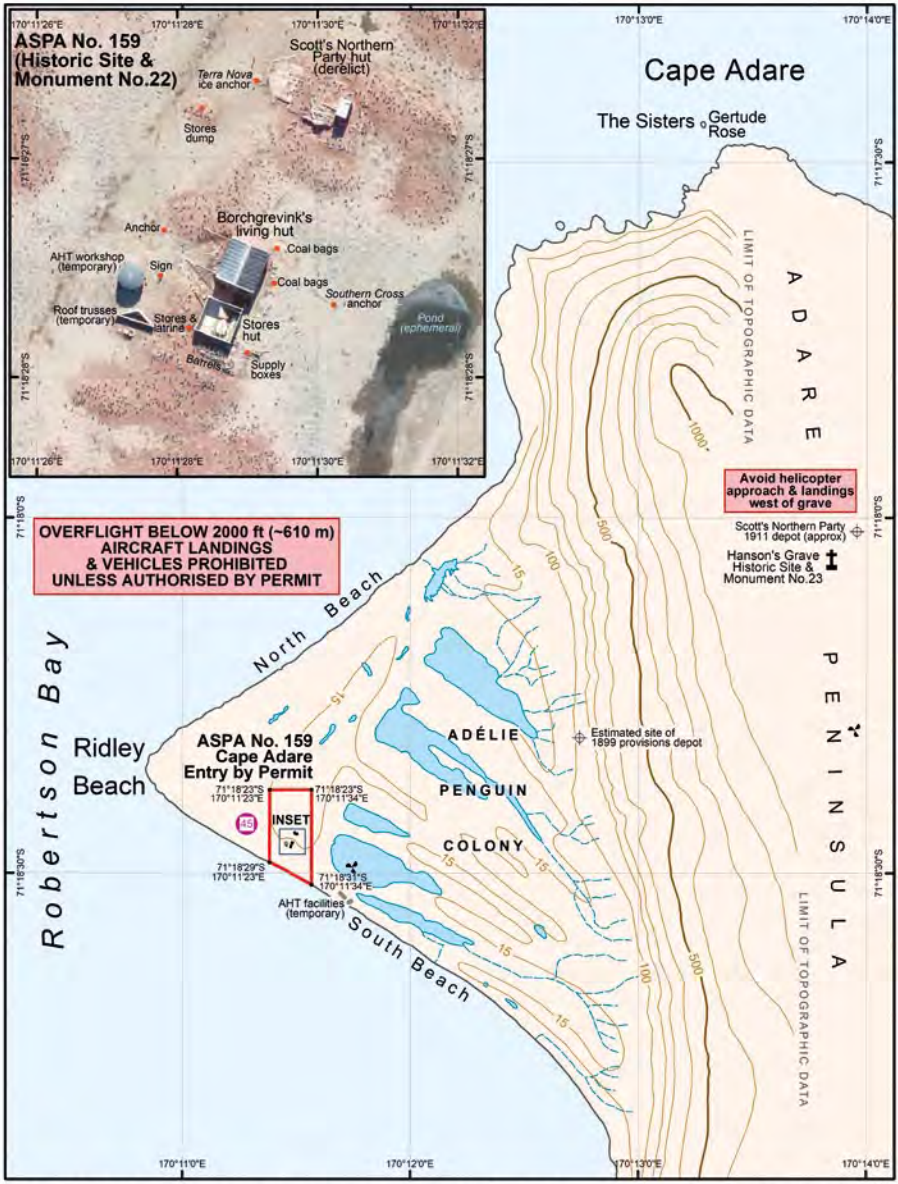
DESCRIPTION: The largest Adélie penguin colony in Antarctica with ~504,332 pairs (2018) on Ridley Beach. ~300 pairs South polar skua. Weddell & Leopard seal frequent Ridley Beach vicinity. Snow petrel may beed in the area. At least three other species of petrel have been observed but are not known to breed.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Visitor Site Guidelines (Site No.45) apply at Ridley Beach. IBA No.165 identified on basis of size of Adélie penguin and South Polar skua colonies. HSM No.22 Borchgrevink's hut at Ridley Beach & HSM No.23 Hanson's grave on Adare Peninsula.

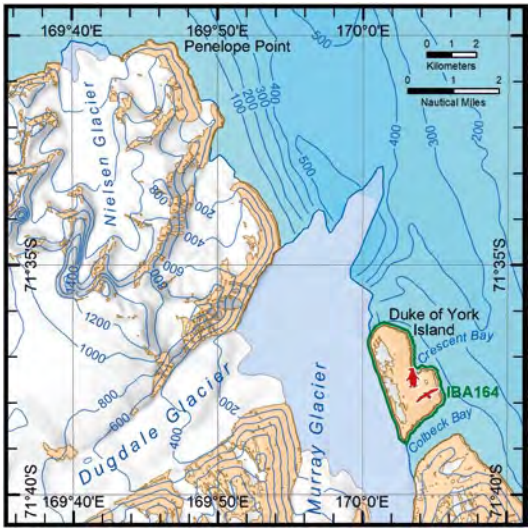
RESTRICTIONS: Entry to ASPA No.159 Cape Adare prohibited except by permit. Landings / overflight restrictions apply. See EAM03-01-1. Aircraft should maintain a horizontal separation of at least 1/4 nautical mile (~460 m) from coastline. **Consult Management plan.**



Ridley Beach, Cape Adare (see EAM03-01-1). Photo KOPRI 20 Dec 2022.


ASPA No. 159
(Historic Site &
Monument No.22)
Scott's Northern
Party hut
(derelict)
Terra Nova
ice anchor
Stores
dump
Anchor
Borchgrevink's
living hut
Coal bags
AHT workshop
(temporary)
Sign
Coal bags
Southern Cross
anchor
Roof trusses
(temporary)
Stores &
latrine
Stores
hut
Pond
(ephemeral)
Barrels
Supply
boxes
Cape Adare
The Sisters
Gertude
Rose
LIMIT OF TOPOGRAPHIC DATA
ADARE
PENINSULA
Avoid helicopter
approach & landings
west of grave
Scott's Northern Party
1911 depot (approx)
Hanson's Grave
Historic Site &
Monument No.23
OVERFLIGHT BELOW 2000 ft (~610 m)
AIRCRAFT LANDINGS
& VEHICLES PROHIBITED
UNLESS AUTHORISED BY PERMIT
North Beach
Robertson Bay
Ridley
Beach
ASPA No. 159
Cape Adare
Entry by Permit
INSET
ADÉLIE
PENGUIN
COLONY
Estimated site of
1899 provisions depot
AHT facilities
(temporary)
South Beach
71°18'23"S
170°11'23"E
71°18'23"S
170°11'34"E
71°18'29"S
170°11'23"E
71°18'31"S
170°11'34"E
170°11'26"E
170°11'28"E
170°11'30"E
170°11'32"E
170°13'0"E
170°14'0"E
170°11'0"E
170°12'0"E
71°16'27"S
71°16'28"S
71°18'0"S
71°19'30"S
71°17'0"S
71°18'0"S
15
100
500
1000
Map 2: ASPA No. 159 Cape Adare - topography & historic features
0 100 200 300 400
Metres
N
24 Oct 2025 (v4.1)
United States Antarctic Program
Antarctica New Zealand
Korea Polar Research Institute
Environmental Research & Assessment
Ocean
Permanent ice
Ice free ground
Pond (ephemeral)
Visitor Site Guidelines
Coastline
Stream (ephemeral)
Contour (500 ft)
Contour (100 ft)
Protected area boundary
Historic building / artefact
Antarctic Heritage Trust (NZ) facilities
Automatic Weather Station
Memorial cross
Historic feature
Projection: Lambert Conformal Conic
Spheroid and horizontal datum: WGS84
Contours indicative: 100 feet (15' on Ridley Beach)
Data sources: topography Antarctica NZ (2019)
Historic features: identified by NZ AHT (2020)
Coast, ponds, streams: digitised from WV2 (Dec 2019)
Orthoimage: Korea Polar Research Institute (Jan 2020)
Geopositioning approximate (~5-10 m)

DUKE OF YORK ISLAND **EAM03-02**
GRID REF: S 71°37' E 170°04'
GPS:
ELEV FT



LOCATION: SW Robertson Bay.

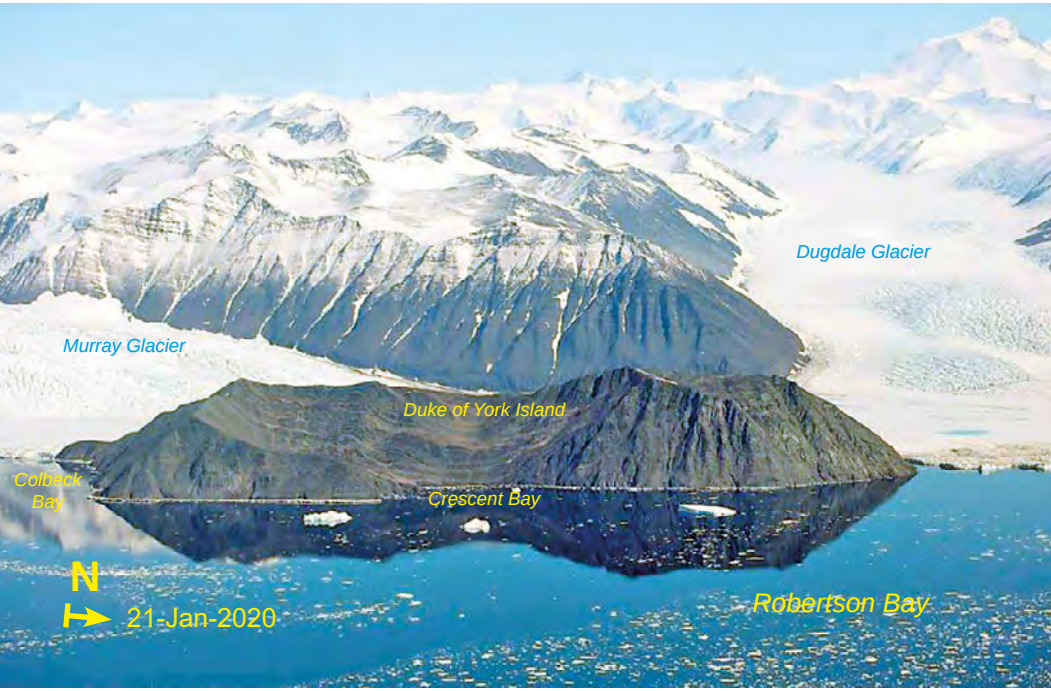
DESCRIPTION: Adélie penguin colony (~10,045 pairs, 2018; 10,153 pairs, 2021/22) at Crescent Bay, Duke of York Island. Snow petrel reported to breed although status uncertain.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBA No.164 identified on basis of size of the Adélie penguin colony.

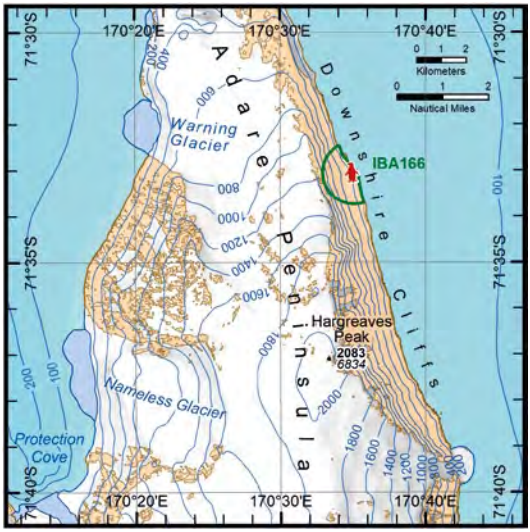
RESTRICTIONS:

INFORMATION SOURCES and DATES: Croxall 1995. Antarctica NZ *et al*. 2023. KOPRI pers. comm. 2024.

Duke of York Island: Admiralty Range in distance. Photo KOPRI 21 Jan 2020.



DOWNSHIRE CLIFFS **EAM03-03**
GRID REF: ELEV:
GPS:



LOCATION: Adare Peninsula, east coast.

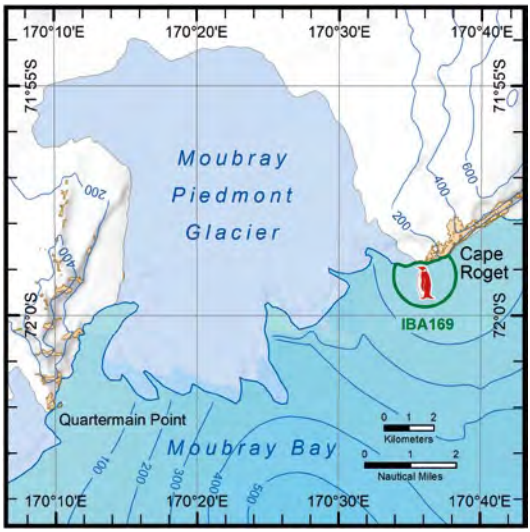
DESCRIPTION: Adélie penguin colony (~35,640 pairs; 2013) at Downshire Cliffs.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBA No.166 identified on basis of size of Adélie penguin colony.

RESTRICTIONS:

INFORMATION SOURCES and DATES: Antarctica NZ *et al*. 2023.

CAPE ROGET **EAM03-04**
GRID REF: ELEV ~0FT
GPS:



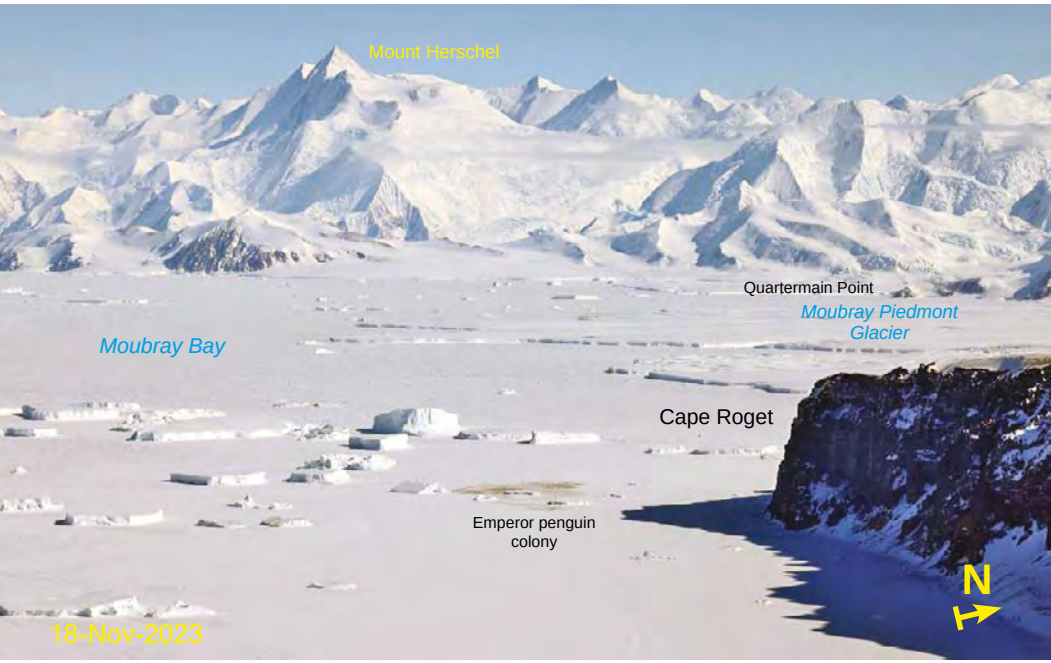
LOCATION: Northern Moubray Bay.

DESCRIPTION: Up to ~8201 breeding pairs Emperor penguin on sea ice near Cape Roget (2021/22). Earlier counts indicated between 3700 - 7300 pairs.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBA No.169 identified on basis of size of Emperor penguin colony.

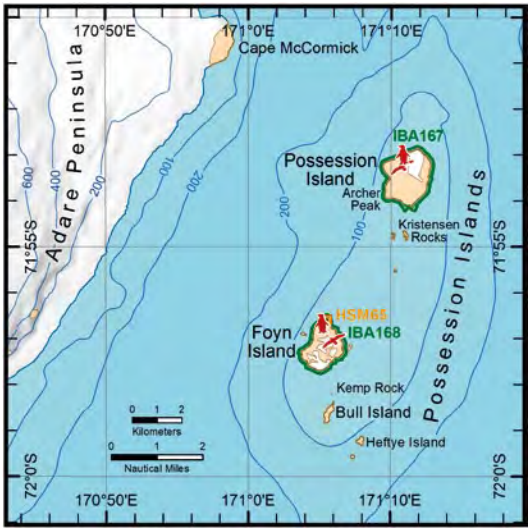
RESTRICTIONS:

INFORMATION SOURCES and DATES: Barber-Meyer *et al*. 2008. Fretwell *et al*. 2012. KOPRI pers. comm. 2024.



Cape Roget: view SW, Emperor penguin colony in middle-foreground. Photo KOPRI 18 Nov 2023.

POSSESSION ISLAND / FOYN ISLAND **EAM03-05**
GRID REF: ELEV FT
GPS:



LOCATION: ~9 km (5 nm) east of southern Adare Peninsula.

DESCRIPTION: Adélie penguin colonies at Possession Island (~177,097 pairs; 2013) and Foyn Island (~59,483 pairs; 2022/23). A colony of ~474 pairs of South Polar skua on Possession Island is the second largest in the Ross Sea, while ~397 pairs were reported on Foyn Island (1982).

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBAs No.167 & No.168 identified on basis of size of Adélie penguin and South Polar skua colonies. HSM65 Message post from ship *Antarctic* in 1895 on Foyn Island.

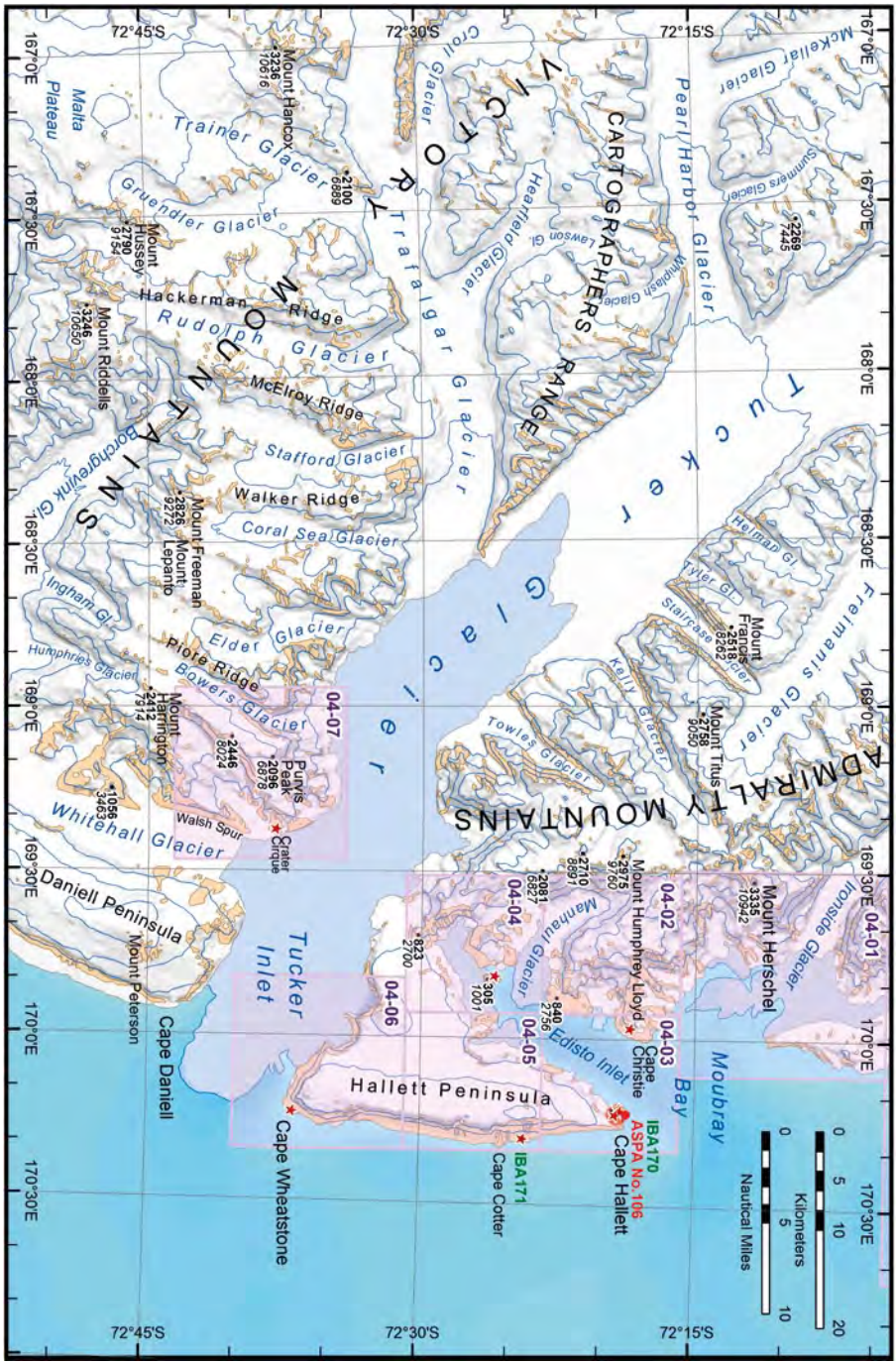
RESTRICTIONS:

INFORMATION SOURCES and DATES: Ainley *et al*. 1986. Antarctica NZ *et al*. 2023. KOPRI pers. comm. 2024.

ENVIRONMENTAL AWARENESS MAPS

EAM04: CAPE HALLETT
TUCKER GLACIER
ADMIRALTY MOUNTAINS
VICTORY MOUNTAINS

CAPE HALLETT / TUCKER GLACIER OVERVIEW EAM04



MOUNT HERSCHEL **EAM04-01**
GRID REF: ELEV FT
GPS:

LOCATION: Admiralty Mountains, southern.

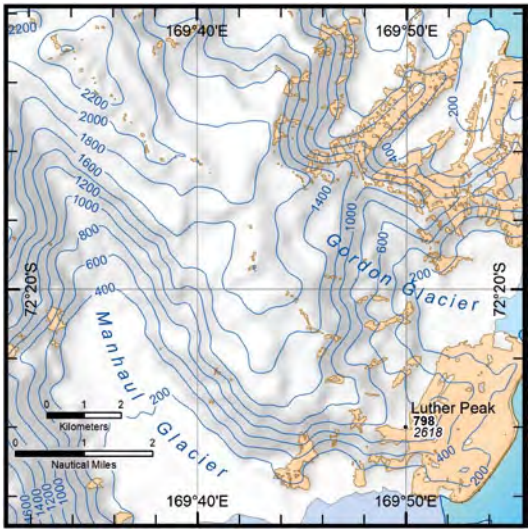
DESCRIPTION: Mount Herschel (3335 m), southern Admiralty Mountains, is one of the highest peaks in the region west of Moubray Bay.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

MANHAUL GLACIER **EAM04-02**
GRID REF: ELEV FT



LOCATION: Moubray Bay, southwest.

DESCRIPTION: Manhaul Glacier flows southward from the flanks of Mount Humphrey Lloyd (2975 m) into Edisto Inlet. The summit of Mount Humphrey Lloyd lies ~2 km west of the glacier.

HAZARDS:
APPROACH / DEPARTURE: .
COMMS:
CONTACT:
REMARKS:

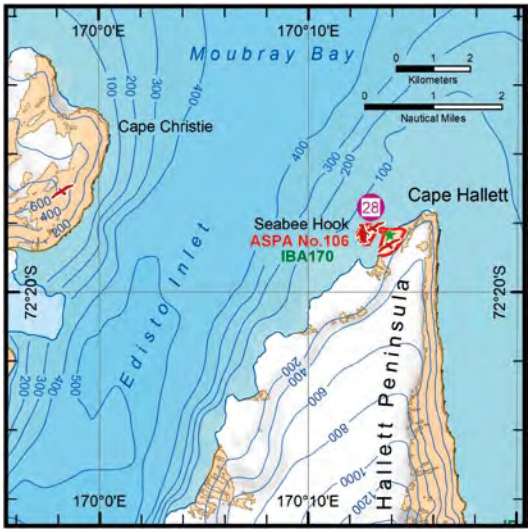
RESTRICTIONS:

INFORMATION SOURCES and DATES:

SEABEE HOOK / CAPE HALLETT **EAM04-03**

GRID REF: ELEV 0 FT

GPS: S 72º 19.686', E 170º 11.46' Primary HLS on sea ice



Below: South Polar skua swoops over breeding Adélie penguins on Seabee Hook, with Mount Herschel in background. Photo: © C. Harris, ERA, 02 Dec 2009.

LOCATION: Moubray Bay, southeast.

DESCRIPTION: Adélie penguin colony (~46,130 pairs; 2017-18) on Seabee Hook. ~37 pairs South Polar skua present. Hallett Field Camp (temporary, KR) located on eastern shore of Willett Cove (see EAM04-03-3). Snow petrel present in region and may breed near Cape Christie. Weddell seal breed around Edisto Inlet. Rich vegetation on eastern shore of Willett Cove.

HAZARDS:

APPROACH / DEPARTURE: See EAM04-03-1 and ASPA No.106 Management Plan.

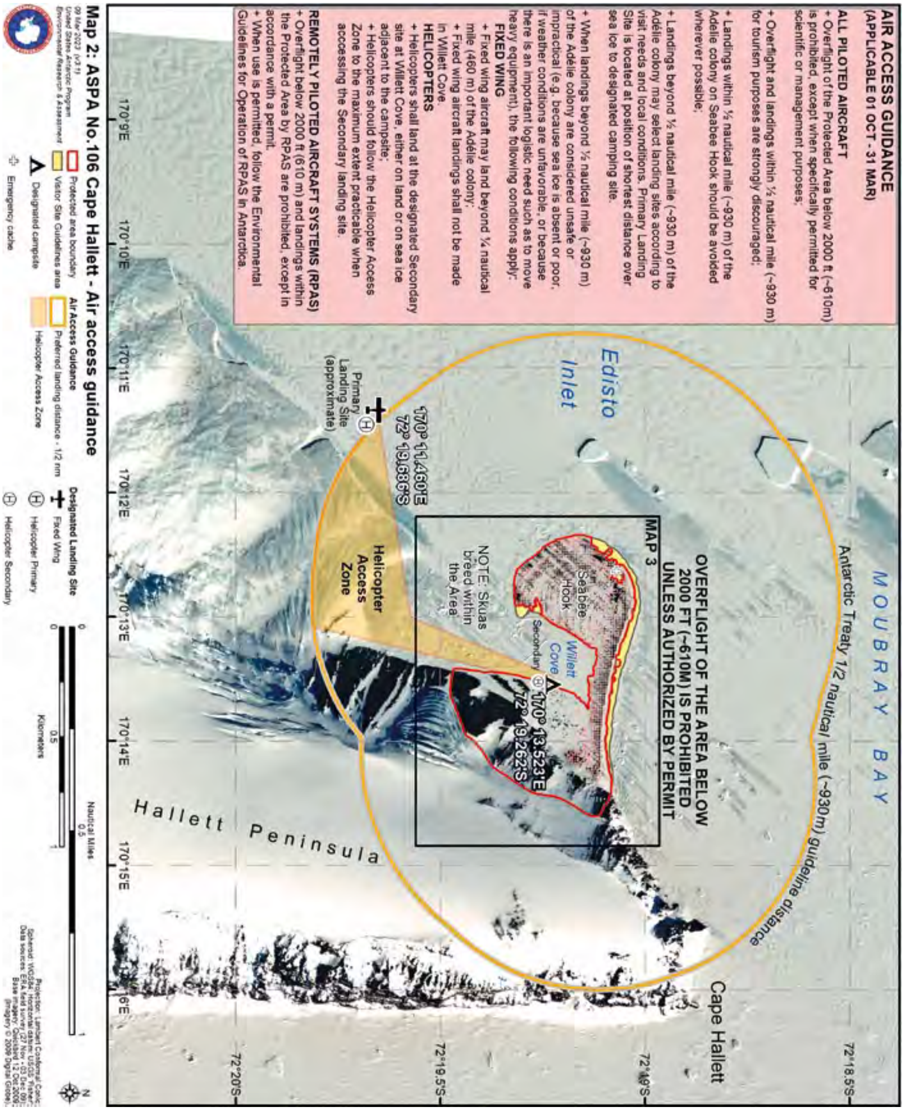
COMMS:

CONTACT:

REMARKS: Visitor Site Guidelines (Site No.28) apply on Seabee Hook coast (see EAM04-03-2). IBA No.170 identified on basis of size of Adélie penguin colony.

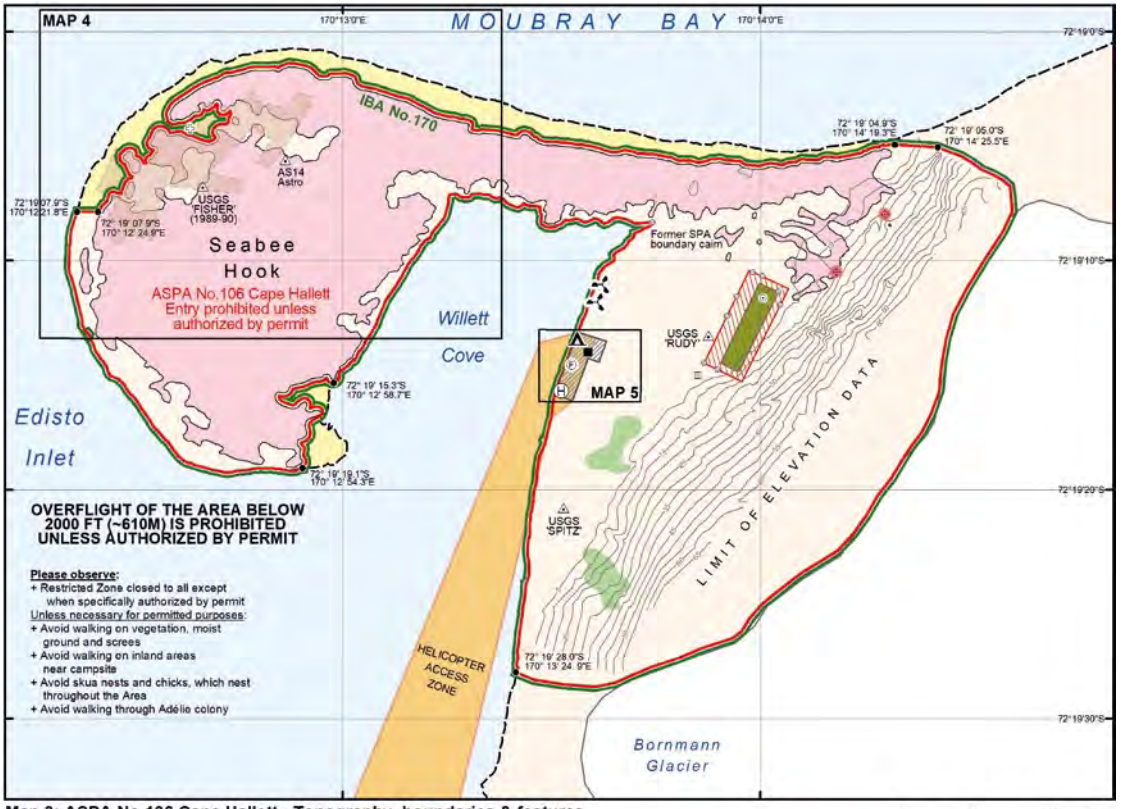
RESTRICTIONS: Entry to ASPA No.106 Cape Hallett prohibited except by permit. Landing / overflight restrictions apply - see EAM04-03-1. Restricted Zone within ASPA. **Consult Management Plan.**

INFORMATION SOURCES and DATES: ASPA No.106 Management Plan (2021). Antarctica NZ *et al*. 2023.



AIR ACCESS GUIDANCE
(APPLICABLE 01 OCT - 31 MAR)
ALL PILOTED AIRCRAFT
+ Overflight of the Protected Area below 2000 ft (~610m) is prohibited, except when specifically permitted for scientific or management purposes;
+ Overflight and landings within ½ nautical mile (~930 m) for tourism purposes are strongly discouraged;
+ Landings within ½ nautical mile (~930 m) of the Adelie colony on Seabee Hook should be avoided wherever possible;
+ Landings beyond ½ nautical mile (~930 m) of the Adélie colony may select landing sites according to visit needs and local conditions. Primary Landing Site is located at position of shortest distance over sea ice to designated camping site.
+ When landings beyond ½ nautical mile (~930 m) of the Adélie colony are considered unsafe or impractical (e.g. because sea ice is absent or poor, if weather conditions are unfavorable, or because there is an important logistic need such as to move heavy equipment), the following conditions apply:
FIXED WING
+ Fixed wing aircraft may land beyond ¼ nautical mile (460 m) of the Adélie colony;
+ Fixed wing aircraft landings shall not be made in Willett Cove.
HELICOPTERS
+ Helicopters shall land at the designated Secondary site at Willett Cove, either on land or on sea ice adjacent to the campsite;
+ Helicopters should follow the Helicopter Access Zone to the maximum extent practicable when acccessing the Secondary landing site.
REMOTELY PILOTED AIRCRAFT SYSTEMS (RPAS)
+ Overflight below 2000 ft (610 m) and landings within the Protected Area by RPAS are prohibited, except in accordance with a permit.
+ When use is permitted, follow the Environmental Guidelines for Operation of RPAS in Antarctica.
MOUBRAY BAY
Antarctic Treaty 1/2 nautical mile (~930m) guideline distance
Cape Hallett
OVERFLIGHT OF THE AREA BELOW 2000 FT (~610M) IS PROHIBITED UNLESS AUTHORIZED BY PERMIT
MAP 3
Edisto Inlet
Seabee Hook
Willett Cove
Secondary
170° 13.523'E
72° 19.262'S
NOTE: Skuas breed within the Area
170° 11.460'E
72° 19.686'S
Primary Landing Site (approximate)
Helicopter Access Zone
Hallett Peninsula
72°18.5'S
72°19'S
72°19.5'S
72°20'S
170°9'E
170°10'E
170°11'E
170°12'E
170°13'E
170°14'E
170°15'E
170°16'E
Map 2: ASPA No.106 Cape Hallett - Air access guidance
09 Mar 2023 (v3.1)
United States Antarctic Program
Environmental Research & Assessment
Protected area boundary
Visitor Site Guidelines area
Designated campsite
Emergency cache
Air Access Guidance
Preferred landing distance - 1/2 nm
Helicopter Access Zone
Designated Landing Site
Fixed Wing
Helicopter Primary
Helicopter Secondary
Nautical Miles
Kilometers
Projection: Lambert Conformal Conic

EAM04-03-2



Map 3: ASPA No.106 Cape Hallett - Topography, boundaries & features

09 Mar 2022 (v1.1)
United States Antarctic Program
Environmental Research & Assessment

Coastline (approx)
Contour (5m)
Permanent ice (approx)
Ice-free ground
Protected area boundary
Important Bird Area (IBA)
Facilities Zone
Restricted Zone
Helicopter Access Zone
Visitor Site Guidelines area
Former extent of station
Adélie colony (2019)
Vegetation monitoring plot
Rich moss vegetation (approx)
Lichen monitoring site
Defined boundary points
Boundary cairn
Secondary helicopter landing site
Fuel storage
Buildings (temporary)
Designated campsite
Survey marker (monumented)
Automatic weather station
Monitoring camera
Husky burial site
Emergency cache

0 100 200 N
Meters

Projection: Lambert Conformal Conic;
Spheroid: WGS84; Horizontal datum: USGS 'Fisher';
Contour interval: 5 m; Facilities & fuel cache (Rep of Korea 2019)
Data sources: Coastline, vegetation, husky site, survey markers, AWS, emergency cache (ERA field survey Dec 2009);
Contours, derived from orthophotos, contour interval 5m.
Adélie colony: digitised ERA from orthophoto (Rep of Korea 2019)

CAPE HALLETT Topography

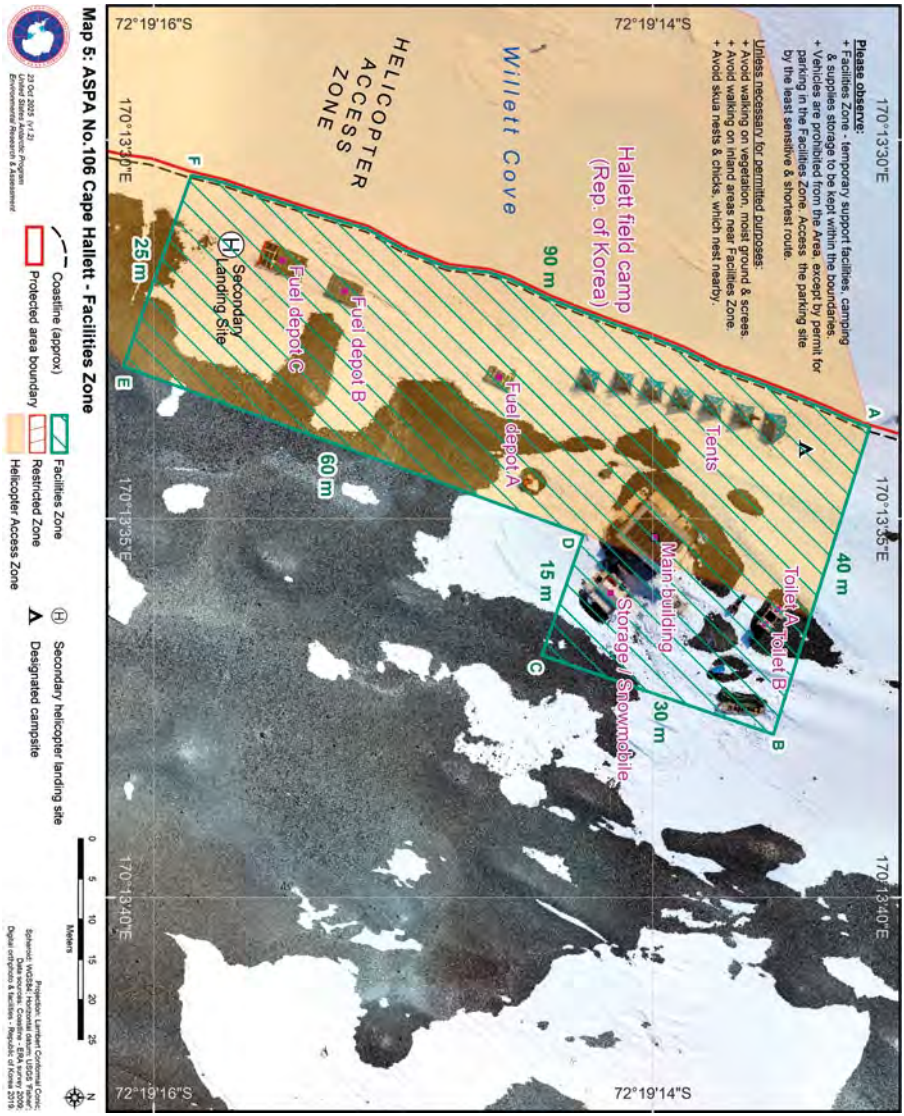
40

FURTHER NOTES ON RESTRICTIONS AT SEABEE HOOK, CAPE HALLETT:

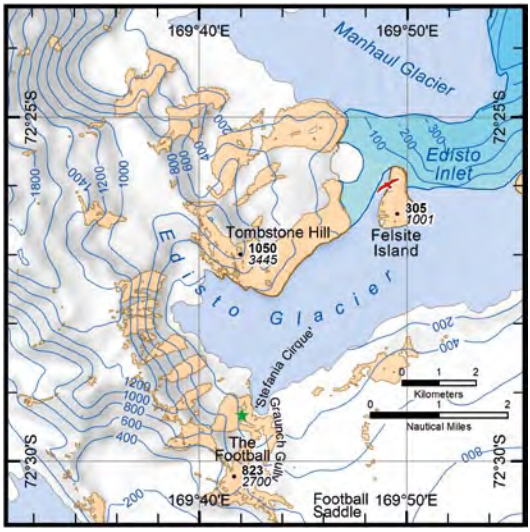
Visitors without a permit may access beach areas shown yellow in EAM04-03-2 (Map 3 of the ASPA plan). These areas are outside of the ASPA, and Visitor Site Guidelines (Site 26) apply. Entry into the ASPA is strictly prohibited except by permit.

The Restricted Zone directly below scree slopes in the northeast of the ASPA is designated to protect a reference site for future comparative vegetation studies. Access to the Restricted Zone (even by those with an ASPA permit) is allowed only for compelling reasons that cannot be served elsewhere in the ASPA. This site is particularly valuable as a scientific resource for monitoring vegetation change in Antarctica, and was first surveyed in 1961/62.

Consult ASPA No.106 Management Plan.


Please observe:
+ Facilities Zone - temporary support facilities, camping & supplies storage to be kept within the boundaries.
+ Vehicles are prohibited from the Area, except by permit for parking in the Facilities Zone. Access the parking site by the least sensitive & shortest route.
Unless necessary for permitted purposes:
+ Avoid walking on vegetation, moist ground & screes.
+ Avoid walking on inland areas near Facilities Zone.
+ Avoid skua nests & chicks, which nest nearby.
170°13'30"E
170°13'35"E
170°13'40"E
72°19'14"S
72°19'16"S
Hallett field camp (Rep. of Korea)
Willett Cove
HELICOPTER ACCESS ZONE
Tents
Toilet A
Toilet B
Main building
Storage / Snowmobile
Fuel depot A
Fuel depot B
Fuel depot C
Secondary Landing Site
40 m
30 m
15 m
90 m
60 m
25 m
A
B
C
D
E
F
Map 5: ASPA No.106 Cape Hallett - Facilities Zone
Coastline (approx)
Protected area boundary
Facilities Zone
Restricted Zone
Helicopter Access Zone
Secondary helicopter landing site
Designated campsite
Meters
Projection: Lambert Conformal Conic
Spheroid; WGS84; Horizontal datum: USGS 'Parker'
Data sources: Coastline - ERA survey 2006;
Digital orthophoto & facilities - Republic of Korea 2018

FELSITE ISLAND **EAM04-04**
GRID REF: S 72°26', E 169°49'
GPS:
ELEV:



LOCATION: Edisto Inlet, south

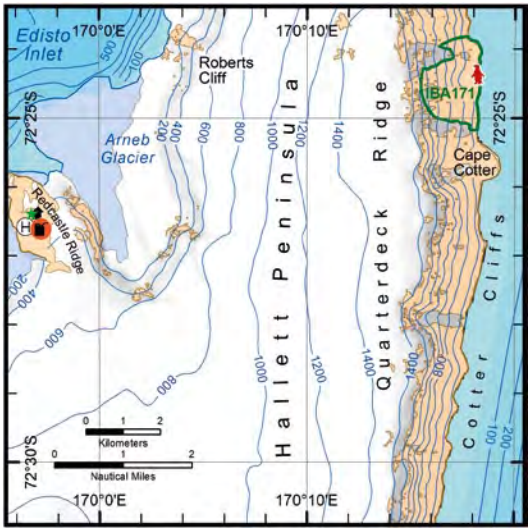
DESCRIPTION: Numerous Snow petrel present near Felsite Island and may breed in vicinity. Rich vegetation in 'Stefania Cirque' below The Football with at least 20 lichen species present.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES: . Croxall *et al*. 1995. Castello 2003.

CAPE COTTER / REDCASTLE RIDGE **EAM04-05**
GRID REF:
GPS:
ELEV:



LOCATION: Edisto Inlet / Hallett Peninsula, central.

DESCRIPTION: Adélie penguin colony (~46,800 pairs; 2017-18) ~2 km north of Cape Cotter. Field camps (IT & NZ; 2023) located on Redcastle Ridge, where there is rich lichen vegetation present.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Fuel caches (IT, NZ) located at Redcastle Ridge. IBA No.171 near Cape Cotter identified on basis of size of Adélie penguin colony.

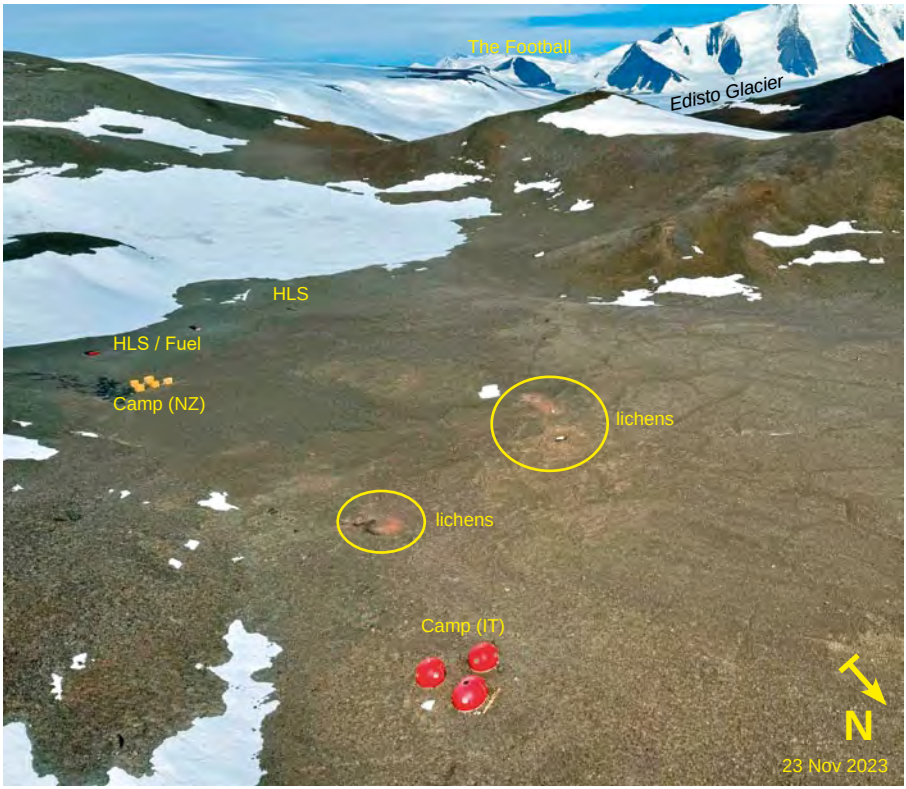
RESTRICTIONS: Avoid landing helicopters and walking on areas of sensitive vegetation at Redcastle Ridge**. See photos following page.**

INFORMATION SOURCES and DATES: Cannone (2006). Cannone *et al*. (2021). Antarctica NZ *et al.* 2023.

Redcastle Ridge, Edisto Inlet / Hallett Peninsula

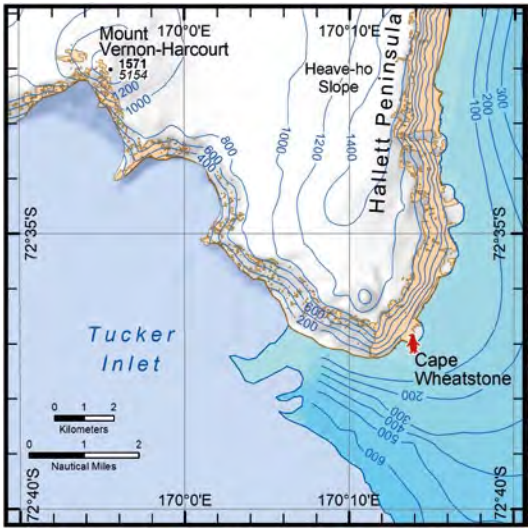
Above: Helicopter landing site, view NW. Photo: PNRA 2023.

Above: Rich lichens, view SE. **Below**: Camp & landing site, view SW. Photos: PNRA 2023.



CAPE WHEATSTONE
GRID REF: S 72°37', E 170°14'
GPS:

EAM04-06
ELEV: FT



LOCATION: Hallett Peninsula, southeast coast.

DESCRIPTION: Adélie penguin colony (~1859 pairs; 2017-18) at Cape Wheatstone.

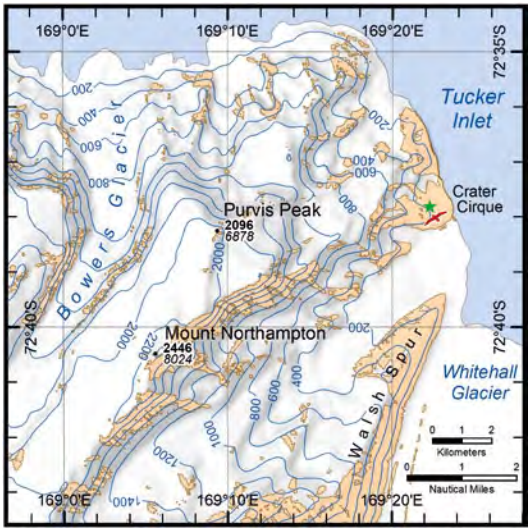
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:
Antarctica NZ *et al.* 2023.

CRATER CIRQUE
GRID REF: S 72°38', E 169°22'
GPS:

EAM04-07
ELEV: ~650 FT



LOCATION: Tucker Inlet, south.

DESCRIPTION: Snow petrel observed to breed in Crater Cirque (Ricker 1964). Rich vegetation in Crater Cirque, with at least 22 lichen species present.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

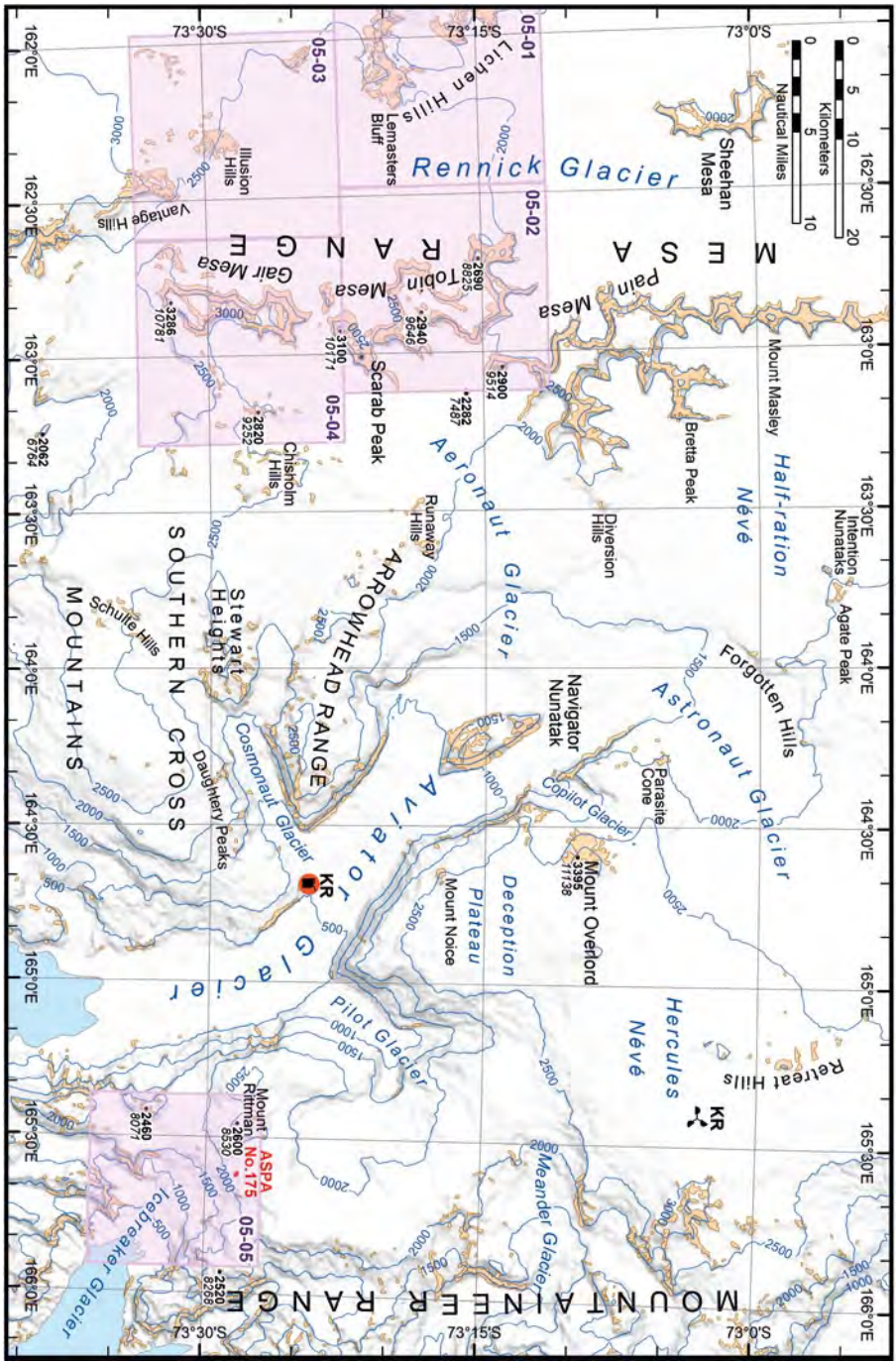
RESTRICTIONS:

INFORMATION SOURCES and DATES:
Ricker 1964: cited in Croxall *et al*. 1995. Castello 2003. Castello pers. comm. 2024.

ENVIRONMENTAL AWARENESS MAPS

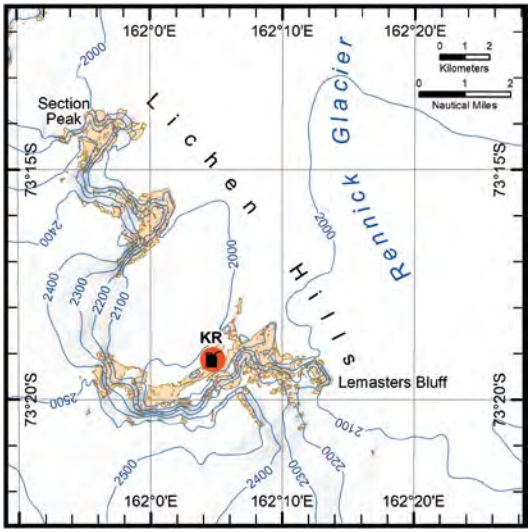
EAM05: AVIATOR GLACIER
MESA RANGE

AVIATOR GLACIER / MESA RANGE OVERVIEW EAM05



LICHEN HILLS
GRID REF
GPS

EAM05-01
ELEV FT



LOCATION: 18 km (~ 10 nm) west of Mesa Range.

DESCRIPTION: A range of hills between 2000 - 2500 m on the western margin of the upper reaches of the Rennick Glacier.

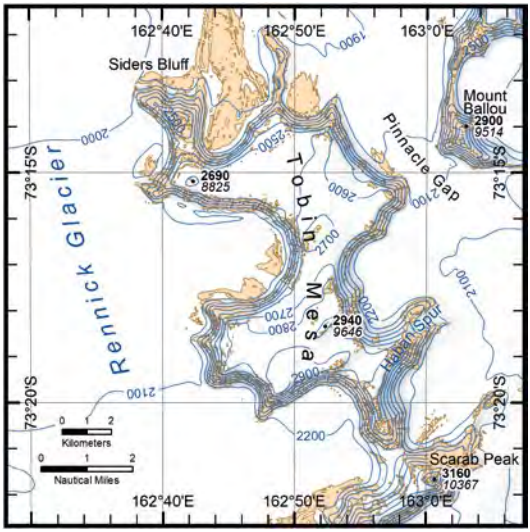
HAZARDS:
APPROACH / DEPARTURE:.
COMMS:
CONTACT:
REMARKS: Fuel depot (KR) in Lichen Hills ~5 km west of Lemasters Bluff

RESTRICTIONS:

INFORMATION SOURCES and DATES: KOPRI 2023.

TOBIN MESA
GRID REF
GPS

EAM05-02
ELEV FT



LOCATION: Mesa Range, central.

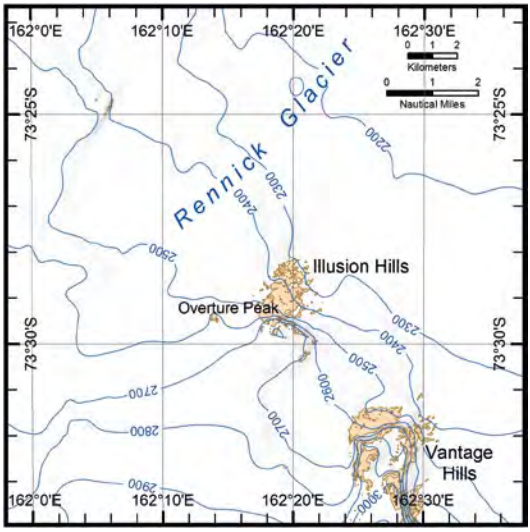
DESCRIPTION: An elevated mesa rising to ~2900 m on the eastern margin of the upper reaches of the Rennick Glacier.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

ILLUSION HILLS **EAM05-03**
GRID REF ELEV FT
GPS



LOCATION: ~15 km (~8.5 nm) west of Mesa Range.

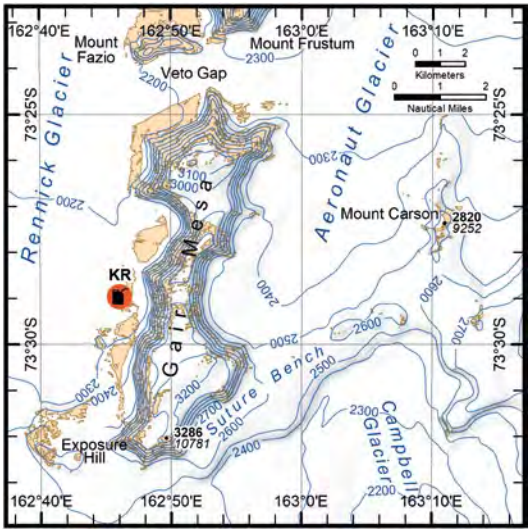
DESCRIPTION: A small range of hills rising to ~2700 m in the upper reaches of the Rennick Glacier.

HAZARDS:
APPROACH / DEPARTURE:.
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

GAIR MESA **EAM05-04**
GRID REF ELEV FT
GPS



LOCATION: Mesa Range, south.

DESCRIPTION: An elevated partly ice-covered mesa rising to ~3200 m between the Aeronaut and Rennick glaciers.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Fuel depot (KR) on ice plateau, below central western slopes of Gair Mesa.

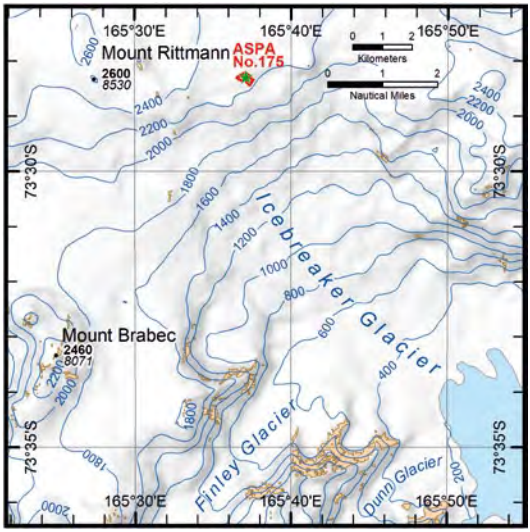
RESTRICTIONS:

INFORMATION SOURCES and DATES:
KOPRI 2022.

MOUNT RITTMANN **EAM05-05**

GRID REF ELEV ~7280 FT

GPS: 73° 28.2942' S 165° 37.2039' E at NW boundary corner



LOCATION: Icebreaker Glacier, upper.

DESCRIPTION: Sensitive geothermal site with vegetation near summit of Mount Rittmann.

HAZARDS: The ASPA site is a steep unstable slope surrounded by glacial ice. Geothermal activity, heated ground.

APPROACH / DEPARTURE:.

COMMS:

CONTACT:

REMARKS: See EAM05-05-1 for detailed site map (source: ASPA management plan).

RESTRICTIONS: Entry to ASPA No.175 prohibited except by permit. **Consult Management Plan.**

INFORMATION SOURCES and DATES: ASPA No.175 High Altitude Geothermal Sites management plan (2024).

MOUNT RITTMANN AIR ACCESS (See EAM05-05-1)**:**

- Helicopter landings are prohibited within the ASPA boundaries.
- Helicopters shall only land, where it is safe to do so, on glacial ice.
- When landing a helicopter **in front of the slope**, to the maximum extent practical (and that is safe), helicopters should not land within 100 m of the site boundary.
- When landing a helicopter **above the slope**, to the maximum extent practical (and that is safe), helicopters should not land within 25 m of the site boundary (caldera rim).
- Helicopter overflights or hovering over any ice-free area within the ASPA boundary should be avoided, except for essential scientific or management purposes when helicopters shall in no instance fly lower than 50 m above the ground surface.

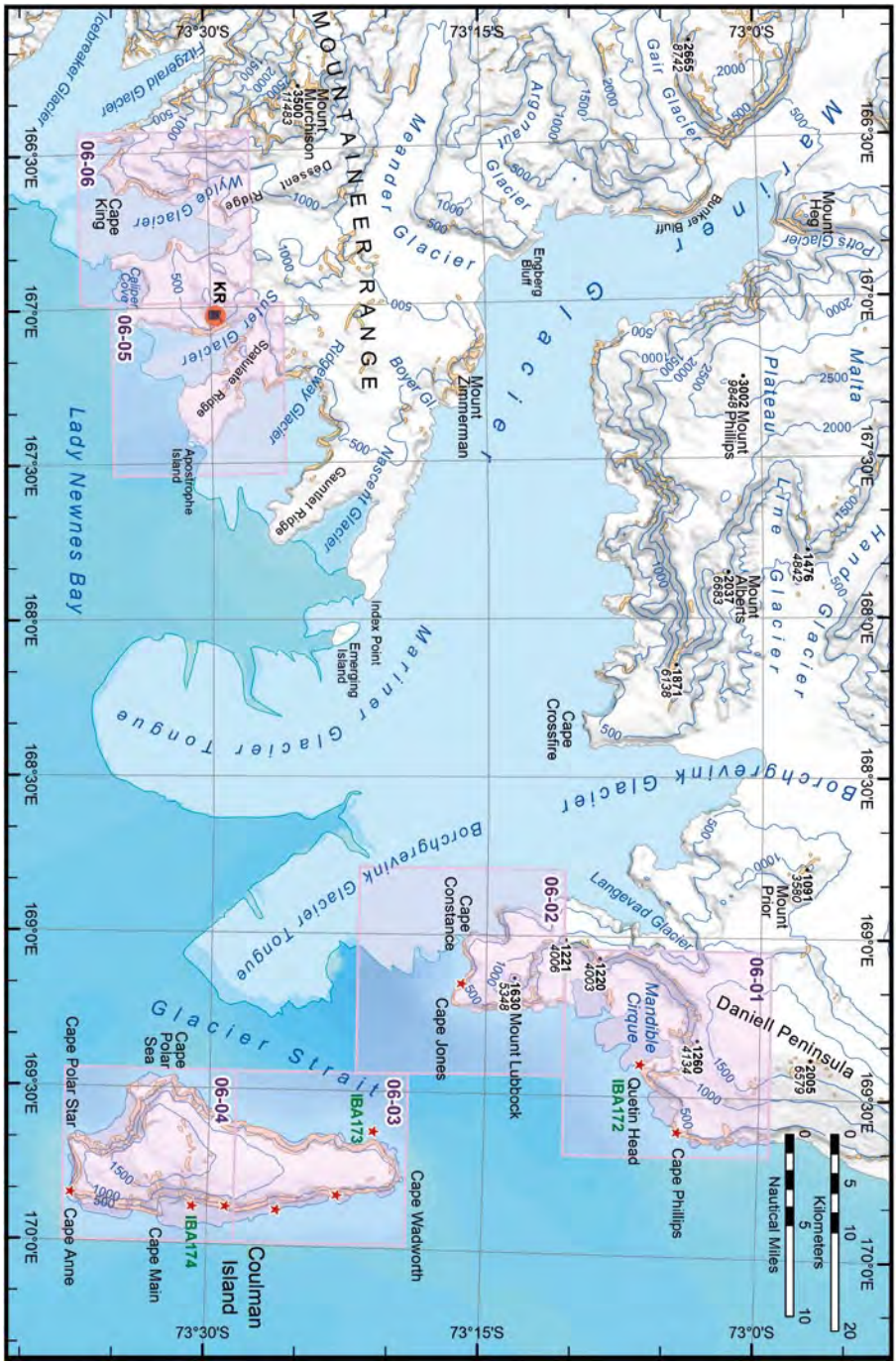
MOUNT RITTMANN: view east across ASPA No.175 looking towards the Mountaineer Range and Mount Murchison (~3500 m) in the distance. Photo: KOPRI 06 Dec 2022.

Survey Mark Table of Coordinates
Point Latitude Longitude
MR01 73° 28' 20.402" S 165° 37' 19.232" E
MR02 73° 28' 20.098" S 165° 37' 31.624" E
ASPA Boundary Table of Coordinates
Point Latitude Longitude
A 73° 28' 18.797" S 165° 36' 43.851" E
B 73° 28' 16.818" S 165° 36' 54.698" E
C 73° 28' 16.290" S 165° 37' 00.114" E
D 73° 28' 16.405" S 165° 37' 04.438" E
E 73° 28' 17.655" S 165° 37' 12.235" E
F 73° 28' 18.024" S 165° 37' 14.468" E
G 73° 28' 19.823" S 165° 37' 16.943" E
H 73° 28' 20.628" S 165° 37' 20.089" E
I 73° 28' 21.530" S 165° 37' 21.567" E
J 73° 28' 22.015" S 165° 37' 23.817" E
K 73° 28' 23.436" S 165° 37' 20.540" E
L 73° 28' 22.414" S 165° 37' 17.302" E
M 73° 28' 20.945" S 165° 37' 13.936" E
N 73° 28' 19.430" S 165° 37' 08.865" E
O 73° 28' 18.598" S 165° 37' 03.457" E
P 73° 28' 18.722" S 165° 36' 56.296" E
Q 73° 28' 19.778" S 165° 36' 50.065" E
PROHIBITED ZONE
MR01
MR02
0 25 50 100
metres
Inset: Site Photograph
Photograph taken looking north toward Mount Rittmann remnant caldera.
Map A3 - ASPA 175: High Altitude Geothermal Sites of the Ross Sea Region
Mount Rittmann Topographical Map
Map Information:
Version 1.5 - 9 May 2014 (final).
Horizontal Datum: WGS84, UTM Zone 58 Projection.
Vertical Datum: WGS84.
Satellite Imagery: orthorectified with limited ground-truthing.
Data Sources:
Survey Data: Obtained by field survey 16 November 2012.
Main Map & Overview Diagram Imagery: Digital Globe WorldView-1 Satellite (0.5 m resolution).
Site Photograph: Antarctica New Zealand.
Survey Mark
ASPA Boundary Point (unmarked)
ASPA Boundary
Prohibited Zone Boundary
Contour – 10-metre interval
Contour – 2-metre interval
Geothermally Heated Ground (approx. & subject to change)
N

ENVIRONMENTAL AWARENESS MAPS

EAM06: MARINER GLACIER COULMAN ISLAND

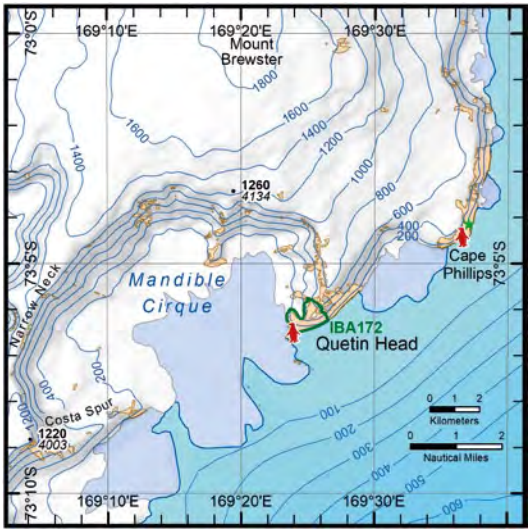
MARINER GLACIER / COULMAN ISLAND OVERVIEW EAM06



QUETIN HEAD / CAPE PHILLIPS

GRID REF:
GPS:

EAM06-01
ELEV FT



LOCATION: Mandible Cirque, ~27 km (~15 nm) north of Coulman Island.

DESCRIPTION: Adélie penguin colonies at Quetin Head (~23,957 pairs; 2017-18) and at Cape Phillips (~15,685 pairs; 2017). Rich vegetation present at Cape Phillips with at least 18 lichen species present.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBA No.172 identified on basis of size of Adélie penguin colony at Quetin Head.

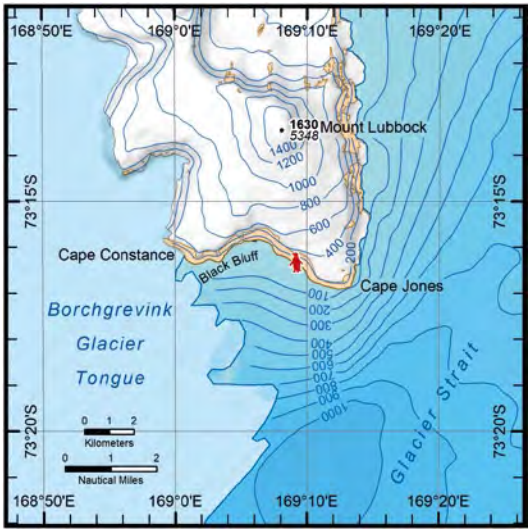
RESTRICTIONS:

INFORMATION SOURCES and DATES:
Cannone 2006. Antarctica NZ *et al*. 2023.

CAPE JONES

GRID REF:
GPS:

EAM06-02
ELEV FT



LOCATION: Glacier Strait, at the foot of Mount Lubbock.

DESCRIPTION: A small Adélie penguin colony (~36 pairs; 2017-18) is located ~2 km west of Cape Jones.

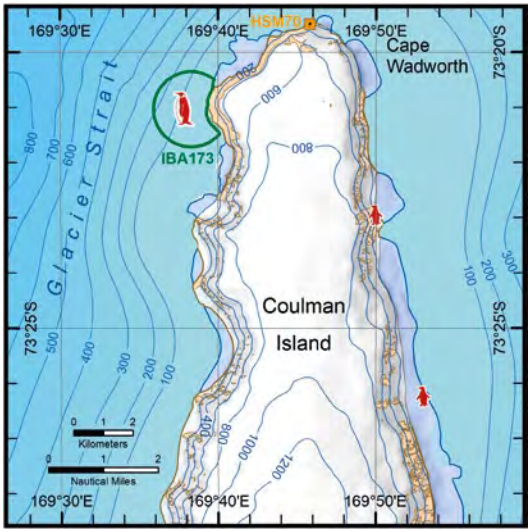
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:
Antarctica NZ *et al*. 2023.

Quetin Head, Mandible Cirque: The Adélie penguin colony at Quetin Head is identified as IBA No.172 (EAM06-01). View north. Photo: KOPRI 20 Nov 2022.

CAPE WADWORTH **EAM06-03**
GRID REF: ELEV FT
GPS:



LOCATION: Coulman Island, north.

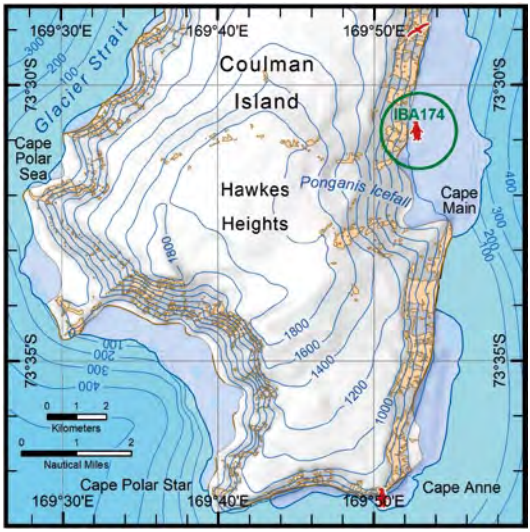
DESCRIPTION: One of the largest Emperor penguin colonies in Antarctica (~25,298 pairs; 2009) breeds on sea ice southwest of Cape Wadworth. Adélie penguin breed in three main colonies on the west coast of Coulman Island: ~3128 pairs (2017) in northern colony; ~13,355 pairs (2017-18) in middle colony; and ~32,191 pairs (2017-18) at southern colony near Cape Main (see EAM06-04).

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBA No.173 identified on basis of size of Emperor penguin colony. HSM70 Scott's 1902 message post at Cape Wadworth.

RESTRICTIONS:

INFORMATION SOURCES and DATES: Fretwell *et al*. 2012. Antarctica NZ *et al*. 2023.

CAPE MAIN / CAPE ANNE **EAM06-04**
GRID REF: ELEV FT
GPS:



LOCATION: Coulman Island, south.

DESCRIPTION: Adélie penguin colony (~32,191 pairs; 2017-18) 3 km (~1.5 nm) NW of Cape Main. A smaller group of ~205 pairs (2018) breed at Cape Anne, SE Coulman Island. South Polar skua breed on coast near Cape Main.

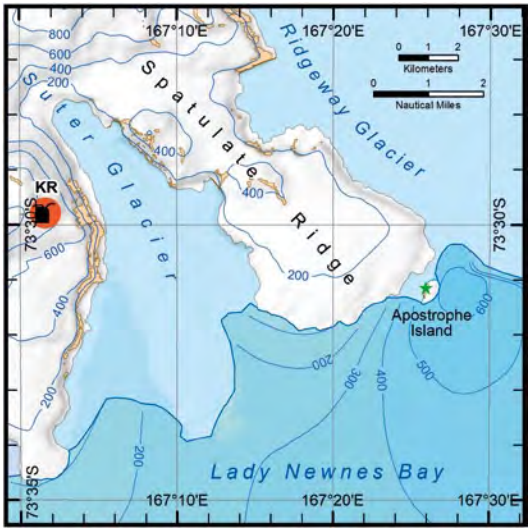
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBA No.174 identified on basis of size of Adélie penguin colony.

RESTRICTIONS:

INFORMATION SOURCES and DATES: Ainley *et al*. 1986. Antarctica NZ *et al*. 2023.

APOSTROPHE ISLAND
GRID REF:
GPS:

EAM06-05
ELEV FT



LOCATION: Lady Newnes Bay / Ridgeway Glacier, south.

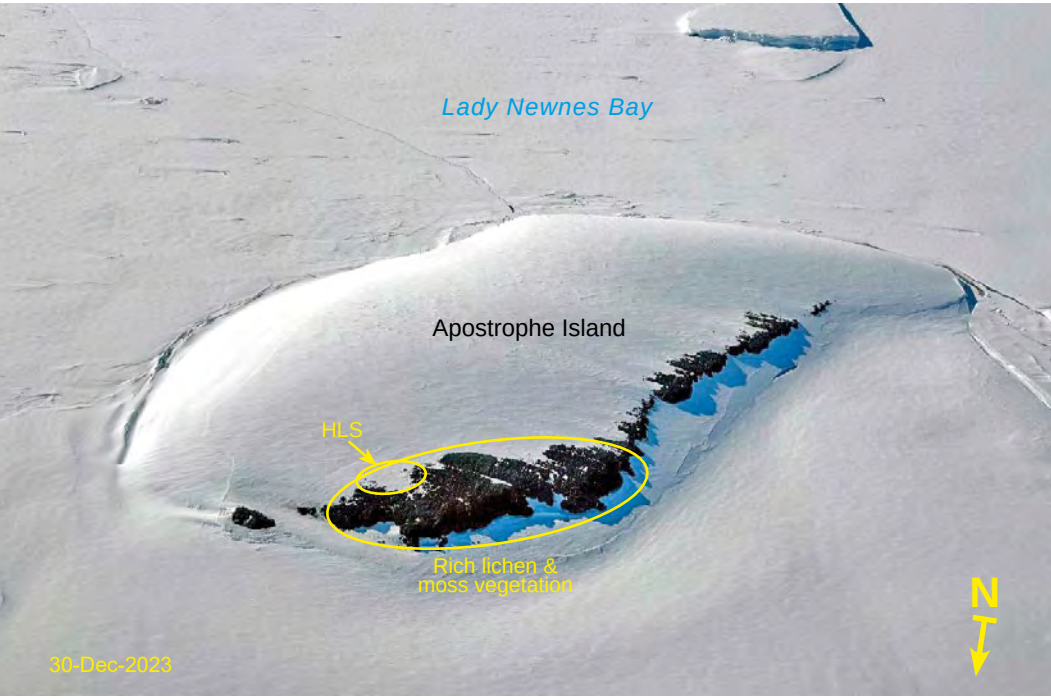
DESCRIPTION: Apostrophe Island is ~1 km in length. Rich vegetation occurs on Apostrophe Island, with at least 20 lichen species present.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Fuel cache (KR) located on ridge between Suter and Wylde glaciers at ~900 m elevation (see also EAM06-06).

RESTRICTIONS: Avoid helicopter landings on / trampling sensitive lichen and moss vegetation on Apostrophe Island.

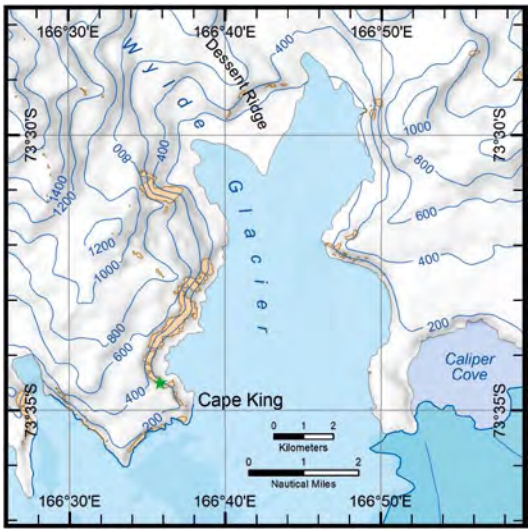
INFORMATION SOURCES and DATES: Castello 2003. Cannone 2006. KOPRI 2023.

Apostrophe Island: view south. Helicopter landings should avoid vegetated ground.
Photo: L. Armstrong, HSI / PNRA 2023.



CAPE KING
GRID REF:
GPS:

EAM06-06
ELEV FT



LOCATION: Lady Newnes Bay / Wylde Glacier, south.

DESCRIPTION: Rich vegetation occurs at Cape King, with at least 26 lichen species present (precise location of vegetation to be confirmed).

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Fuel depot located on ridge above Caliper Cove (see EAM06-05).

RESTRICTIONS: Avoid helicopter landings on / trampling sensitive lichen vegetation sites.

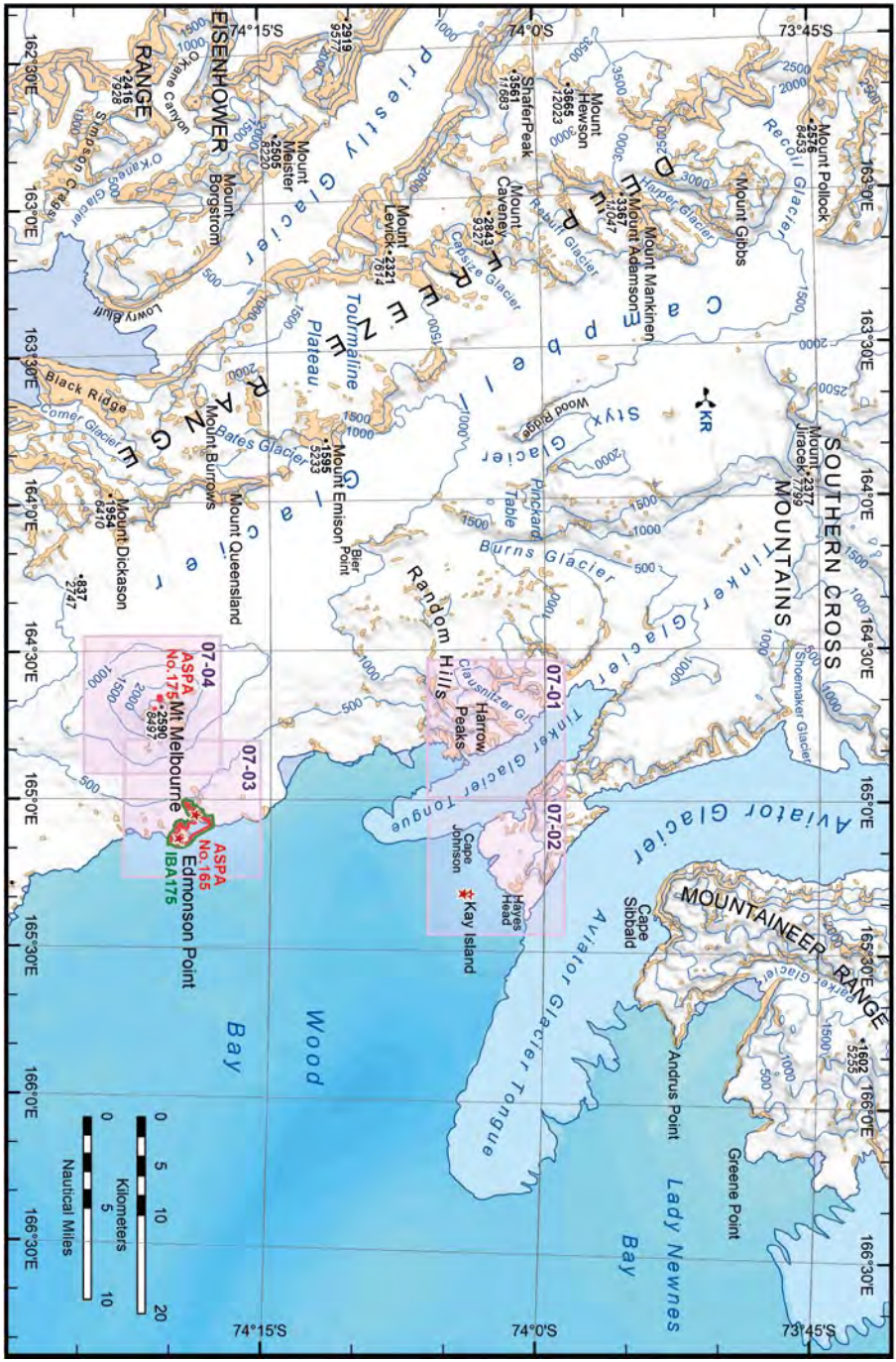
INFORMATION SOURCES and DATES: Castello 2003. Cannone 2006.

Cape King: Mount Murchison (~3500 m), Mountaineer Range, lies 20 km northwest of Cape King (close to right photo limit). Photo: © C. Harris, ERA, 25 Nov 2009.

ENVIRONMENTAL AWARENESS MAPS

EAM07: CAMPBELL GLACIER
EDMONSON POINT
MOUNT MELBOURNE

CAMPBELL GLACIER / MOUNT MELBOURNE OVERVIEW EAM07



HARROW PEAKS
GRID REF:
GPS:

EAM07-01
ELEV FT

LOCATION: Tinker Glacier / Random Hills, east.

DESCRIPTION: Rich vegetation occurs in Harrow Peaks with at least 26 lichen species present.

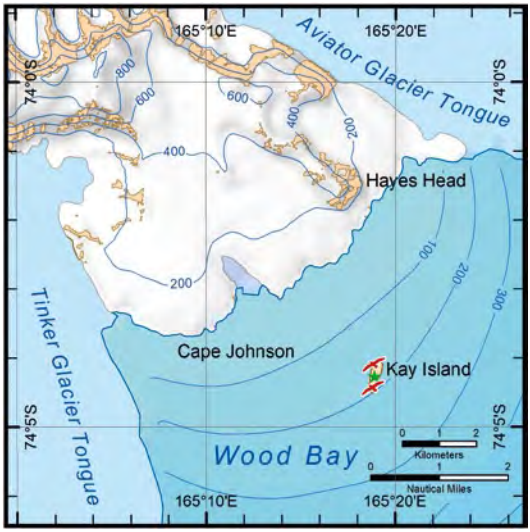
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Avoid trampling sensitive lichen vegetation sites.

RESTRICTIONS:

INFORMATION SOURCES and DATES: Castello 2003. Cannone 2006.

KAY ISLAND
GRID REF:
GPS:

EAM07-02
ELEV FT



LOCATION: Wood Bay, between Aviator Glacier Tongue and Tinker Glacier Tongue.

DESCRIPTION: Kay Island is one of the most diverse vegetation sites in Victoria Land, with at least 33 lichen species present. Skua and Snow petrel breed on the island. Weddell seal commonly haul out to breed on nearby sea ice early season, especially along leads.

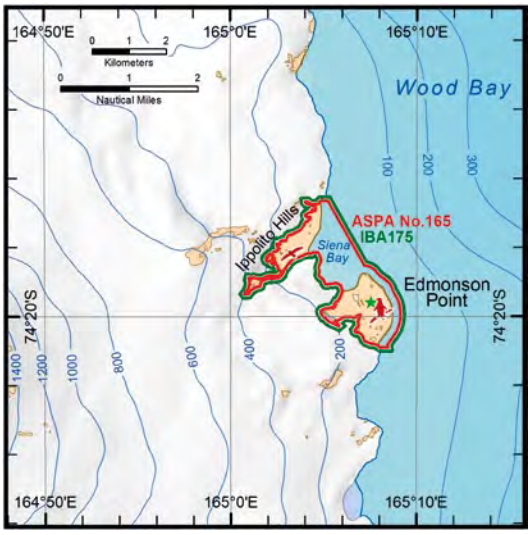
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Avoid trampling sensitive lichen vegetation sites.

RESTRICTIONS:

INFORMATION SOURCES and DATES: Castello 2003. Cannone 2006. Ubaldi, C. pers. comm. 2024.

Kay Island, Wood Bay: view north. Helicopter landing site near summit. South Polar skua and Snow petrel are present, and the island is colonised by rich lichen and moss vegetation, with at least 33 species present. Weddell seals are common along sea ice leads.
Photo: L. Armstrong, HSI / PNRA 2023.

EDMONSON POINT **EAM07-03**
GRID REF: ELEV: FT
GPS:



LOCATION: Wood Bay. Lower eastern slopes of Mount Melbourne.

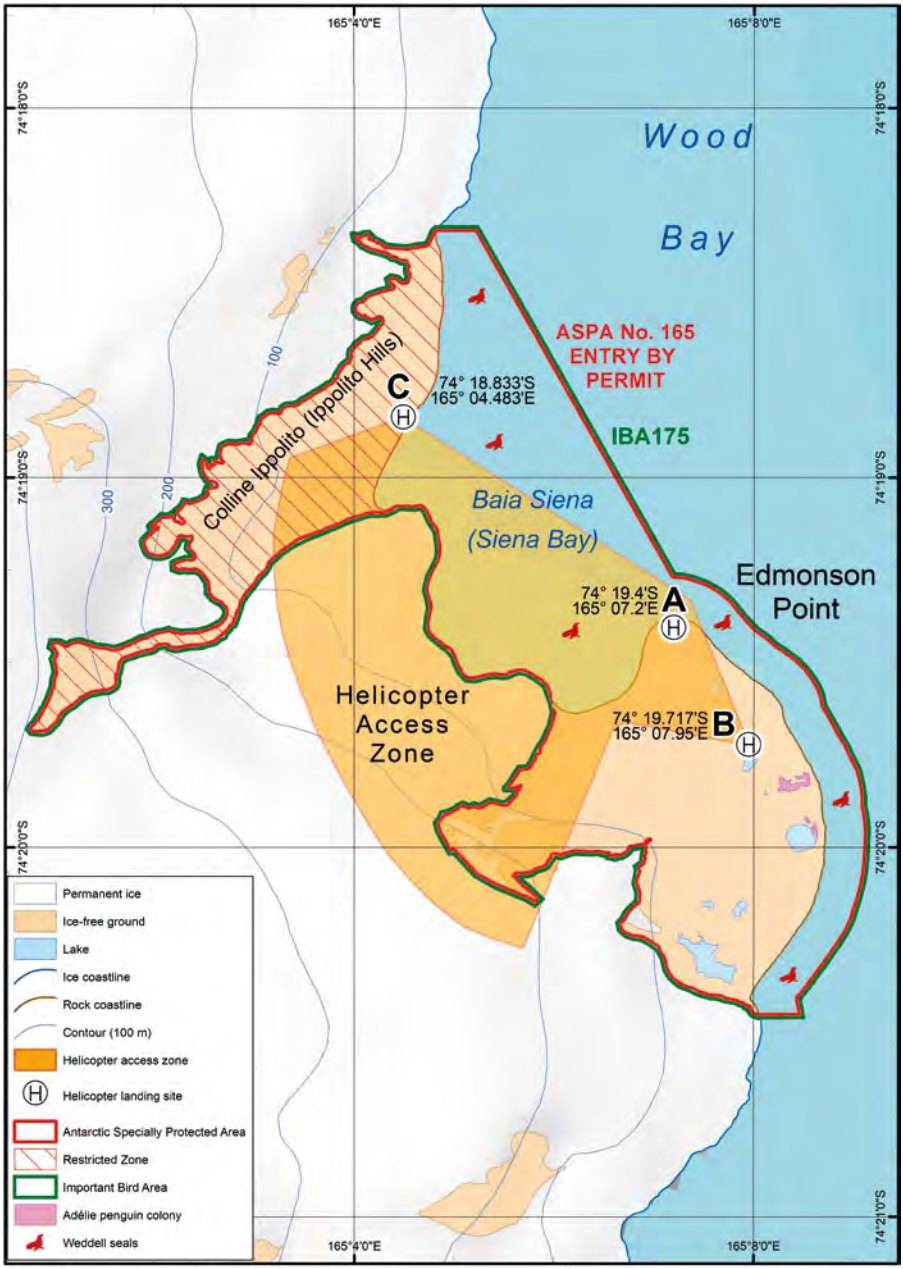
DESCRIPTION: Adélie penguin colony (2989 pairs; 2017-18) at Edmonson Point. ~120 pairs South Polar skua. Weddell seal common on coastal sea ice. Extensive moss / lichen communities, sensitive soils.

HAZARDS:
APPROACH / DEPARTURE: See EAM07-03-1 and ASPA No.165 Management Plan.
COMMS:
CONTACT:
REMARKS: IBA No.175 identified on basis of size of South Polar skua colony. Avoid trampling sensitive vegetation sites.

RESTRICTIONS: Entry to ASPA No.165 prohibited except by permit. Landing / overflight restrictions apply - see EAM07-03-1. **Consult Management Plan**.

INFORMATION SOURCES and DATES:
ASPA No.165 Edmonson Point Management Plan (2023). Pezzo *et al*. 2001. Antarctica NZ *et al*. 2023.

Edmonson Point: view north. (Refer EAM07-03-1,2). Photo: PNRA 2024.



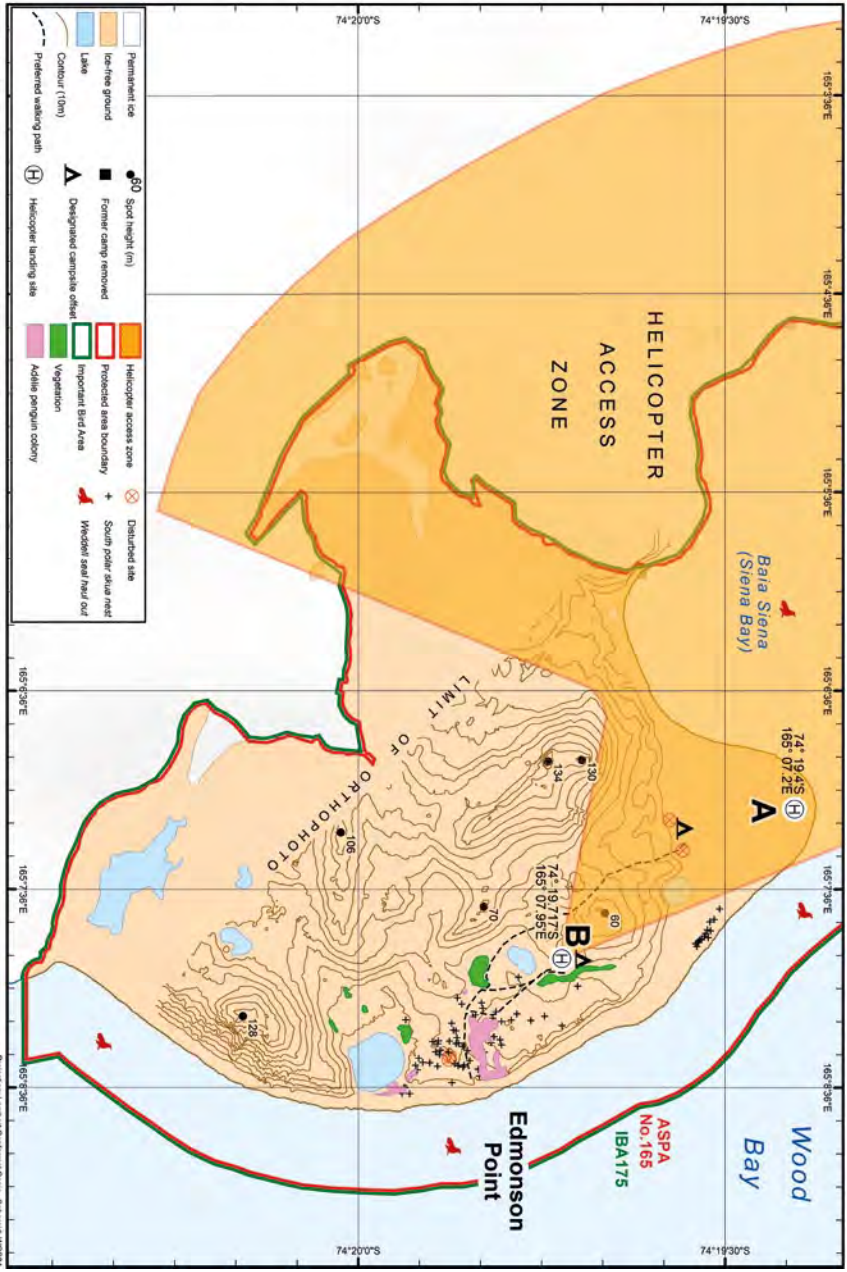
EAM07-03-1: Edmonson Point air access

Environmental Research & Assessment 2025

Projection: Lambert Conformal Conic
Spheroid: WGS84
Horizontal error: ± 10 m
Ice-free area from Quickbird satellite image (04 Apr 2004; Source: PNRA)

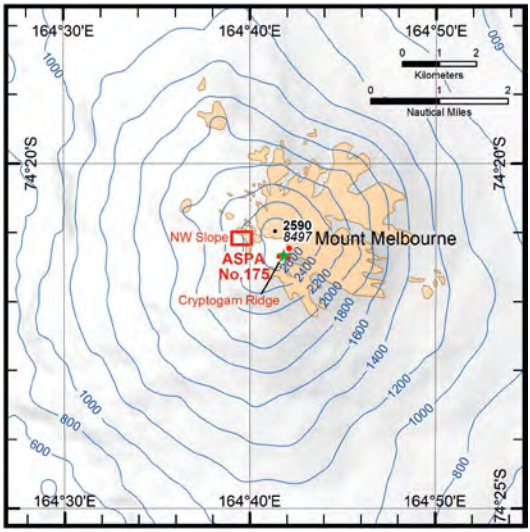
EDMONSON POINT Topography

EAM07-03-2



MOUNT MELBOURNE
GRID REF:
GPS:

EAM07-04
ELEV FT



LOCATION: East of Campbell Glacier. Wood Bay / Terra Nova Bay vicinity.

DESCRIPTION: Sensitive geothermal soils, vegetation and microbial environment near summit of Mount Melbourne.

HAZARDS: Radio antennae at summit. Geothermal activity, heated ground.

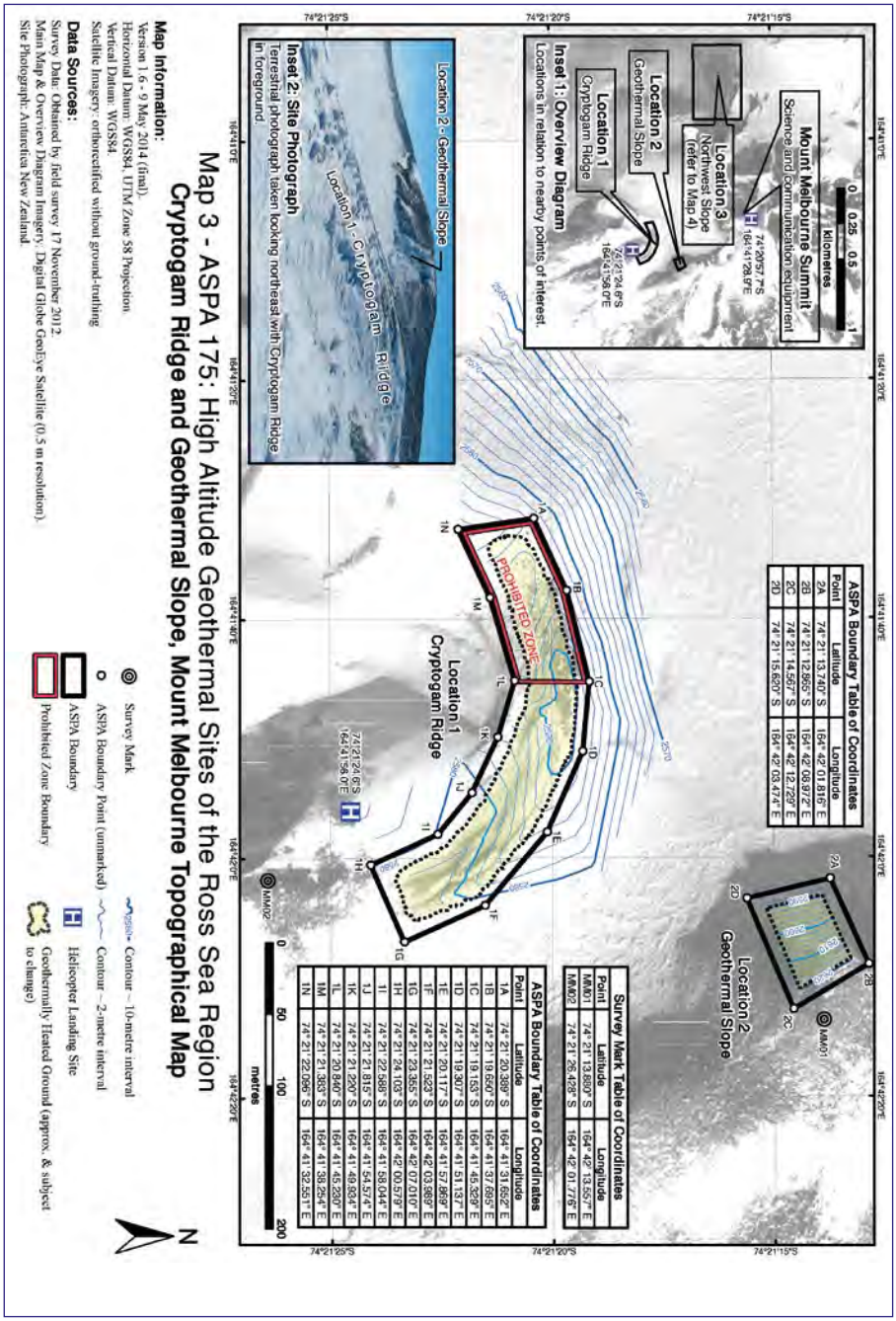
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Entry to ASPA No.175 prohibited except by permit. Landing / overflight restrictions apply. **Consult Management Plan**. See EAM07-04-1 / EAM07-04-2.

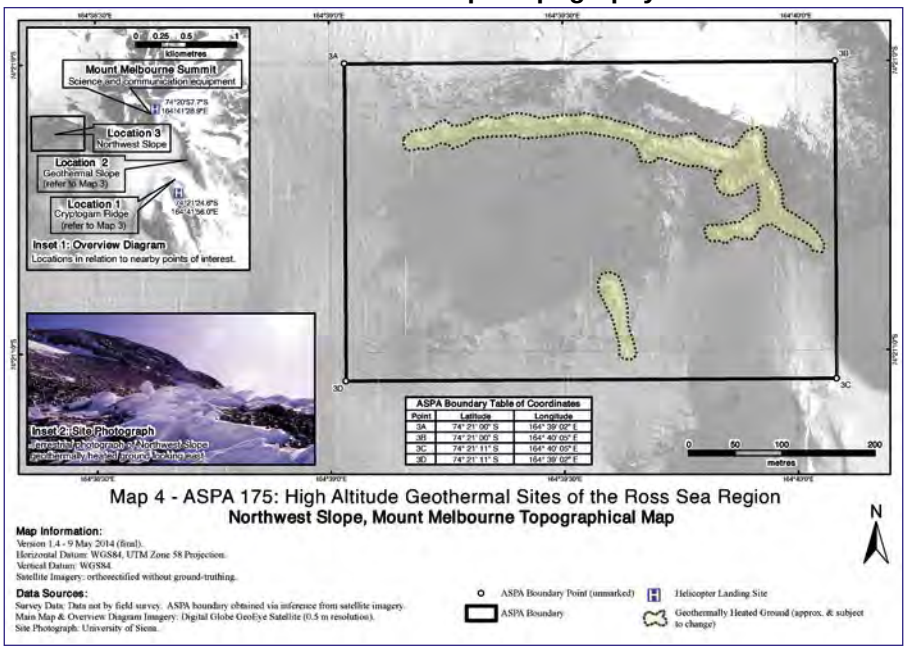
INFORMATION SOURCES and DATES: ASPA No.175 High Altitude Geothermal Sites Management Plan (2024).

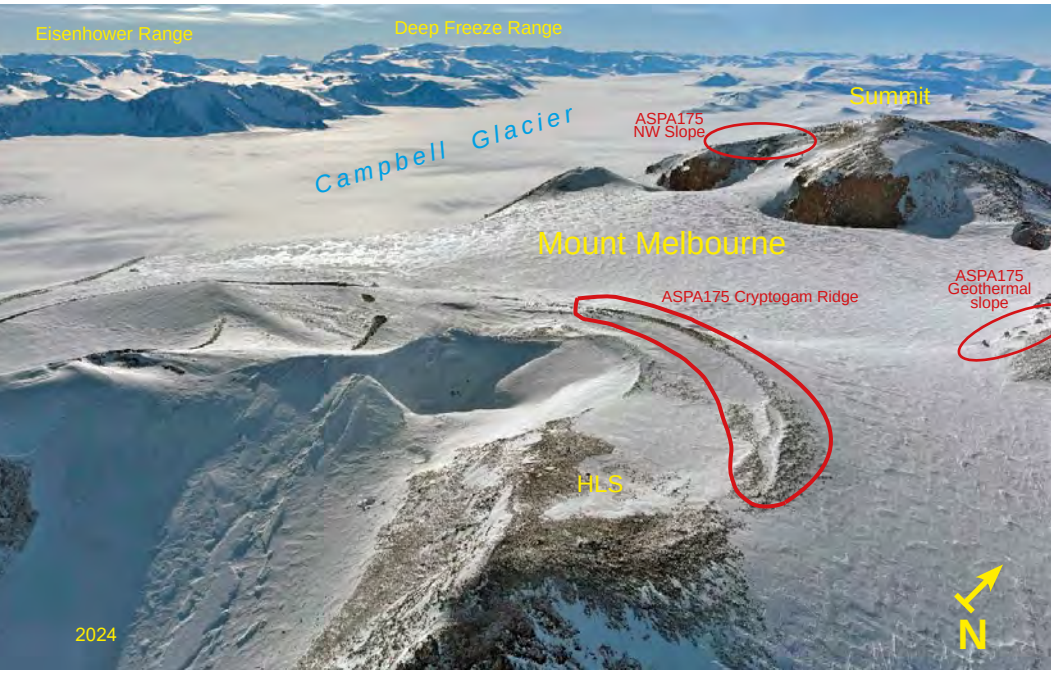
Mount Melbourne summit; equipment / helicopter landing site. Photo: G. Bonanno, PNRA, 24 Oct 2025.

MOUNT MELBOURNE Cryptogam Ridge Topography EAM07-04-1



MOUNT MELBOURNE Northwest Slope Topography EAM07-04-2

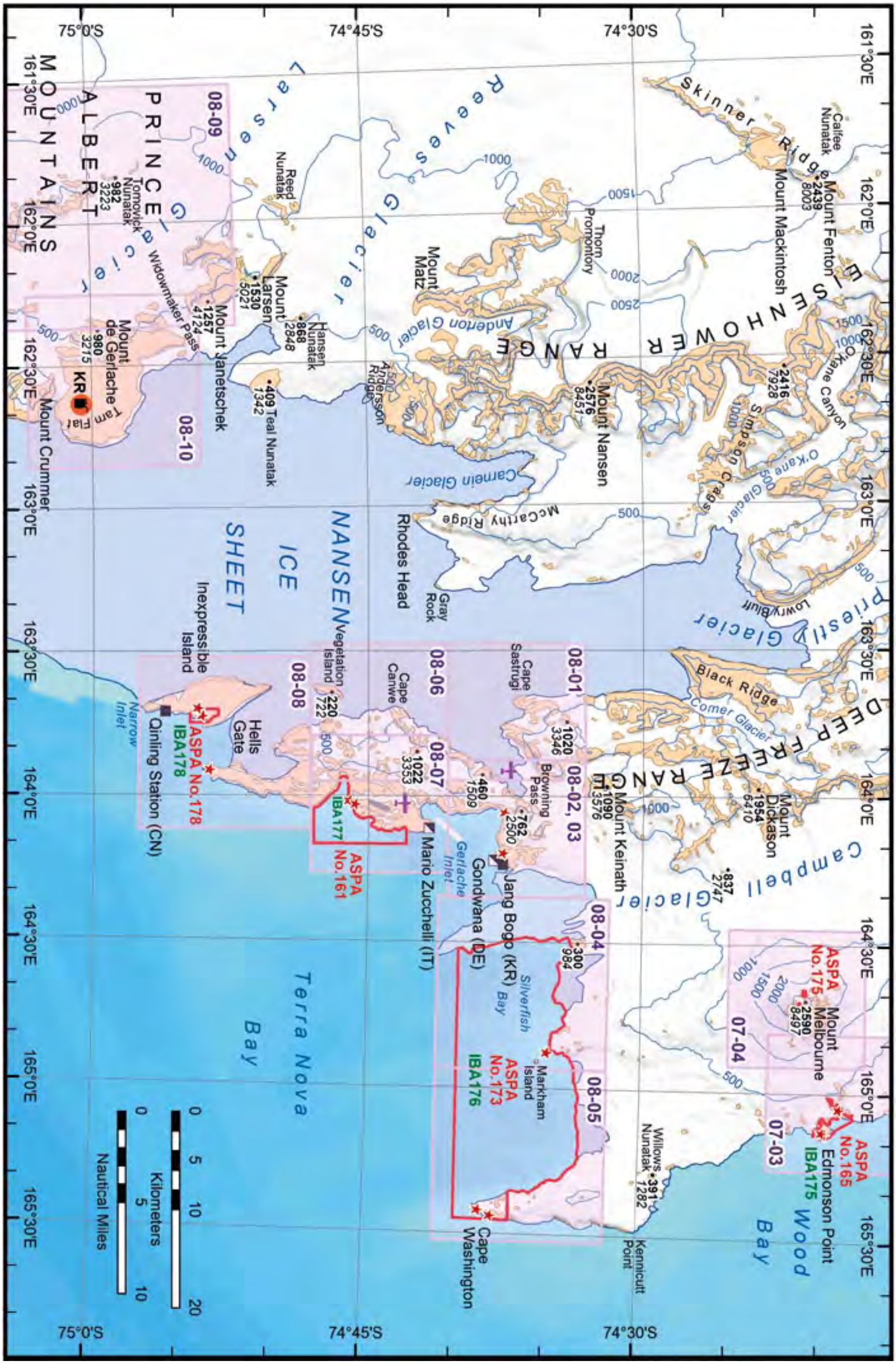




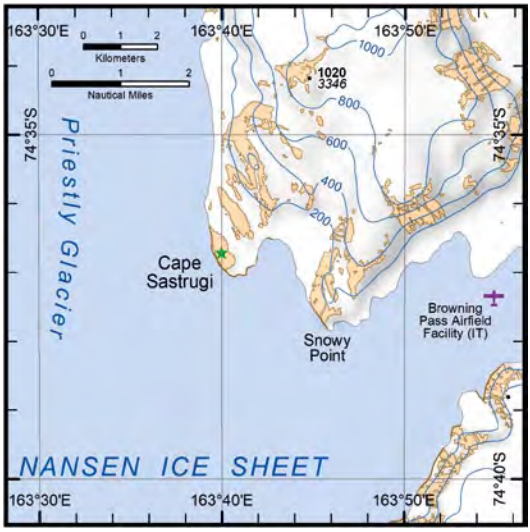
Mount Melbourne summit; Cryptogam Ridge (see EAM07-04-1) and Northwest slope (EAM07-04-2). Photo: PNRA, 2024.

ENVIRONMENTAL AWARENESS MAPS

EAM08: TERRA NOVA BAY
CAPE WASHINGTON
INEXPRESSIBLE ISLAND


75°0'S
74°45'S
74°30'S
161°30'E
162°0'E
162°30'E
163°0'E
163°30'E
164°0'E
164°30'E
165°0'E
165°30'E
PRINCE ALBERT MOUNTAINS
Larsen Glacier
Reeves Glacier
Skinner Ridge
Mount Mackintosh
Mount Fenton
Thorn Promontory
Mount Matz
Reed Nunatak
Tomovick Nunatak
Widowmaker Pass
Mount Janetschek
Mount Larsen
Hansen Nunatak
Mount de Gerlache
Tarn Flat
Mount Crummer
Teal Nunatak
Andersson Ridge
Anderton Glacier
EISENHOWER RANGE
Mount Nansen
O'Kane Canyon
Simpson Crags
O'Kane Glacier
Carnein Glacier
McCarthy Ridge
NANSEN ICE SHEET
Rhodes Head
Gray Rock
Lowry Bluff
Priestley Glacier
Black Ridge
Comer Glacier
DEEP FREEZE RANGE
Mount Keinath
Mount Dickason
Campbell Glacier
Inexpressible Island
Hells Gate
Vegetation Island
Cape Canwe
Cape Sastrugi
Browning Pass
Narrow Inlet
Qinling Station (CN)
ASPA No.178
IBA178
ASPA No.161
IBA177
Mario Zucchelli (IT)
Gerlache Inlet
Gondwana (DE)
Jang Bogo (KR)
Silverfish Bay
Markham Island
ASPA No.173
IBA176
Cape Washington
Willows Nunatak
Kennicutt Point
Mount Melbourne
ASPA No.175
ASPA No.165
IBA175
Edmonson Point
Wood Bay
Terra Nova Bay
08-01
08-02, 03
08-04
08-05
08-06
08-07
08-08
08-09
08-10
07-03
07-04
Kilometers
Nautical Miles

BROWNING PASS AIRFIELD **EAM08-01**
GRID REF: ELEV 558 FT
GPS: 74° 37.3744' S, 163° 54.9103' E Browning Pass Skiway



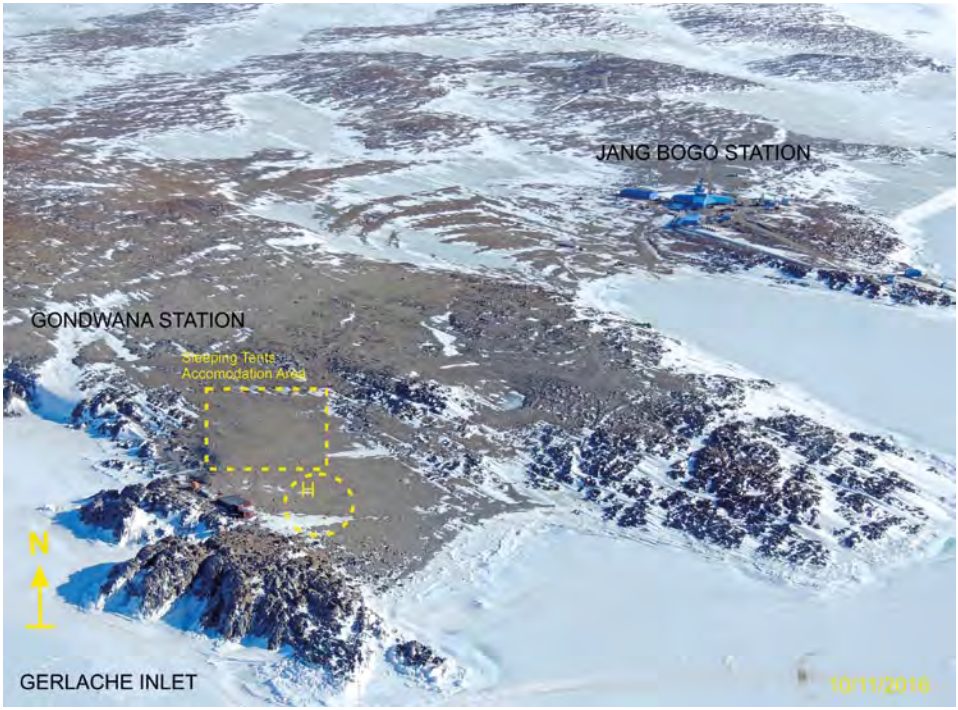
LOCATION: Northern Nansen Ice Sheet.

DESCRIPTION: Browning Pass Airfield Facility (IT; seasonal) located on Nansen Ice Sheet ~4.5 km east of Snowy Point at the southern extremity of the Deep Freeze Range.

HAZARDS:
APPROACH / DEPARTURE: Refer AFIM.
COMMS: Terra Nova Ops VHF 118.1 / 129.7 MHz; HF 5.371 / 8.245 MHz.
CONTACT: Station Commander, Mario Zucchelli Station (IT).
REMARKS: At least 18 species of lichen present at Cape Sastrugi.

RESTRICTIONS:

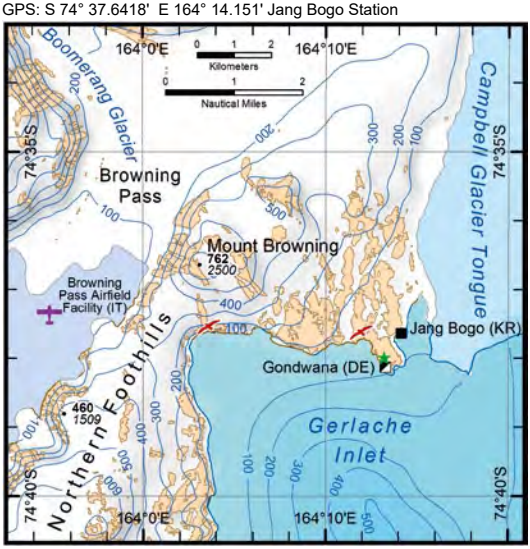
INFORMATION SOURCES and DATES:
Castello 2003. Cannone 2006.



Gondwana Station (DE) & **Jang Bogo Station** (KR): Photo: Andreas Läufer, AWI, 10 Nov 2016.

JANG BOGO STATION (KR)
GRID REF:
GPS: S 74° 37.6418' E 164° 14.151' Jang Bogo Station

EAM08-02
ELEV ~33FT



LOCATION: Gerlache Inlet, opposite Campbell Glacier Tongue.

DESCRIPTION: Jang Bogo Station operated year-round by Republic of Korea. Gondwana Station (DE) 1 km to SW. Browning Pass Airfield Facility (IT; seasonal) located on Nansen Ice Sheet ~9.5 km west of Jang Bogo Station. South Polar skua breed at various locations around ice-free coast of Gerlache Inlet.

HAZARDS: Aerials ~500 m and tower ~900 m north of main station building.
APPROACH / DEPARTURE:
COMMS: VHF Channel 156.800 MHz.
CONTACT: Station Commander.
REMARKS:

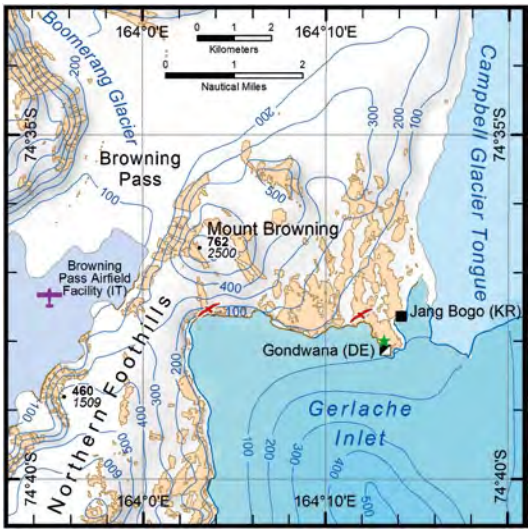
RESTRICTIONS:

INFORMATION SOURCES and DATES:
Ainley *et al*. 1986.

Jang Bogo Station (KR), view east towards Gerlache Inlet. Photo: KOPRI (2015).

Jang Bogo Station (KR): helicopter landing sites circled. Photo KOPRI (2023).

GONDWANA STATION (DE) **EAM08-03**
GRID REF: ELEV ~60FT
GPS: S 74° 38.1301' E 164°13.2729' Gondwana Station



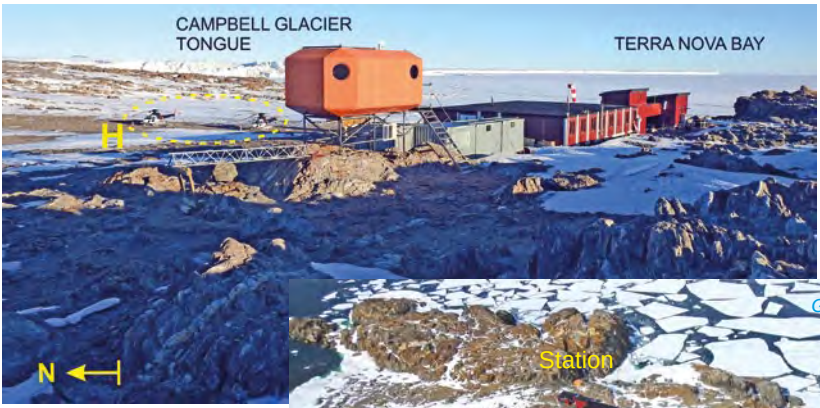
LOCATION: Gerlache Inlet, north.

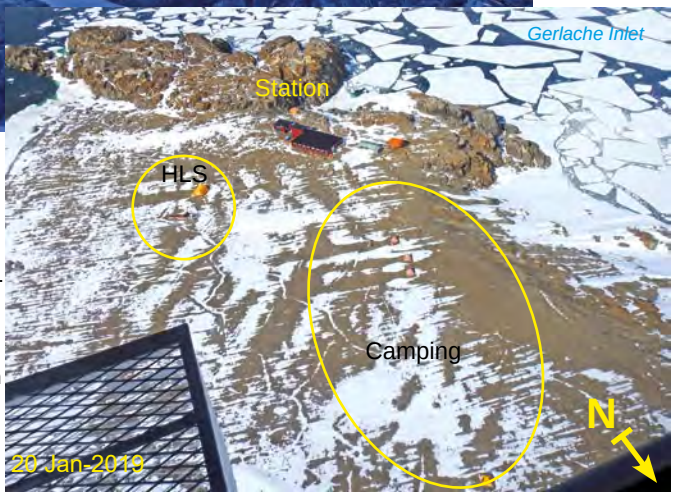
DESCRIPTION: Gondwana Station operated seasonally by Germany. Located near shoreline ~1 km SW of Jang Bogo Station (KR). Browning Pass Airfield Facility (IT; seasonal) located on Nansen Ice Sheet ~9.2 km west of Gondwana Station. South Polar skua breed at various locations around ice-free coast of Gerlache Inlet.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT: Station Commander.
REMARKS: Rich vegetation present near Gondwana Station, with ~20 lichen species.

RESTRICTIONS:

INFORMATION SOURCES and DATES: Ainley *et al*. 1986. Castello 2003. Cannone 2006.





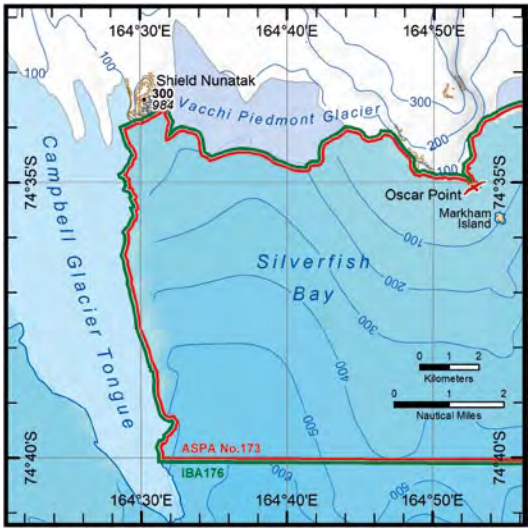
Gondwana Station (DE)

Above: station buildings, looking east toward Campbell Glacier Tongue (18 Nov 2018).

Right: station, HLS & camp site from the air, looking south toward Gerlache Inlet (20 Jan 2019).

Photos: Andreas Läufer, AWI.

SILVERFISH BAY **EAM08-04**
GRID REF: ELEV FT
GPS:



LOCATION: East of Campbell Glacier Tongue.

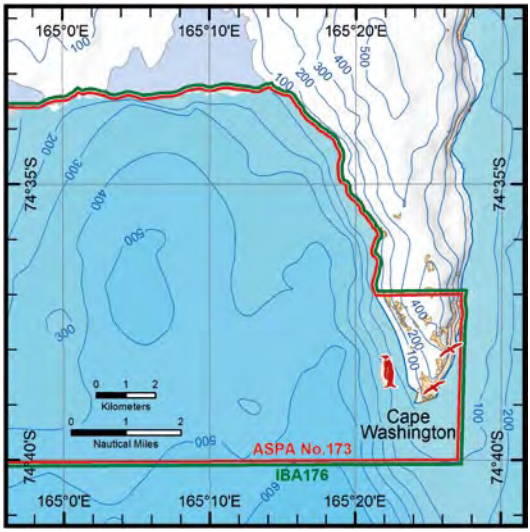
DESCRIPTION: Silverfish Bay protected as an important nursery for Antarctic silverfish and site of on-going scientific research.

HAZARDS:
APPROACH / DEPARTURE: See EAM08-05-1 and ASPA No.173 Management Plan.
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Entry to ASPA No.173 prohibited except by permit. Landing / overflight restrictions apply - see EAM08-05-1. **Consult Management Plan**.

INFORMATION SOURCES and DATES: ASPA No.173 Cape Washington & Silverfish Bay Management Plan (2024).

CAPE WASHINGTON **EAM08-05**
GRID REF: ELEV FT
GPS:



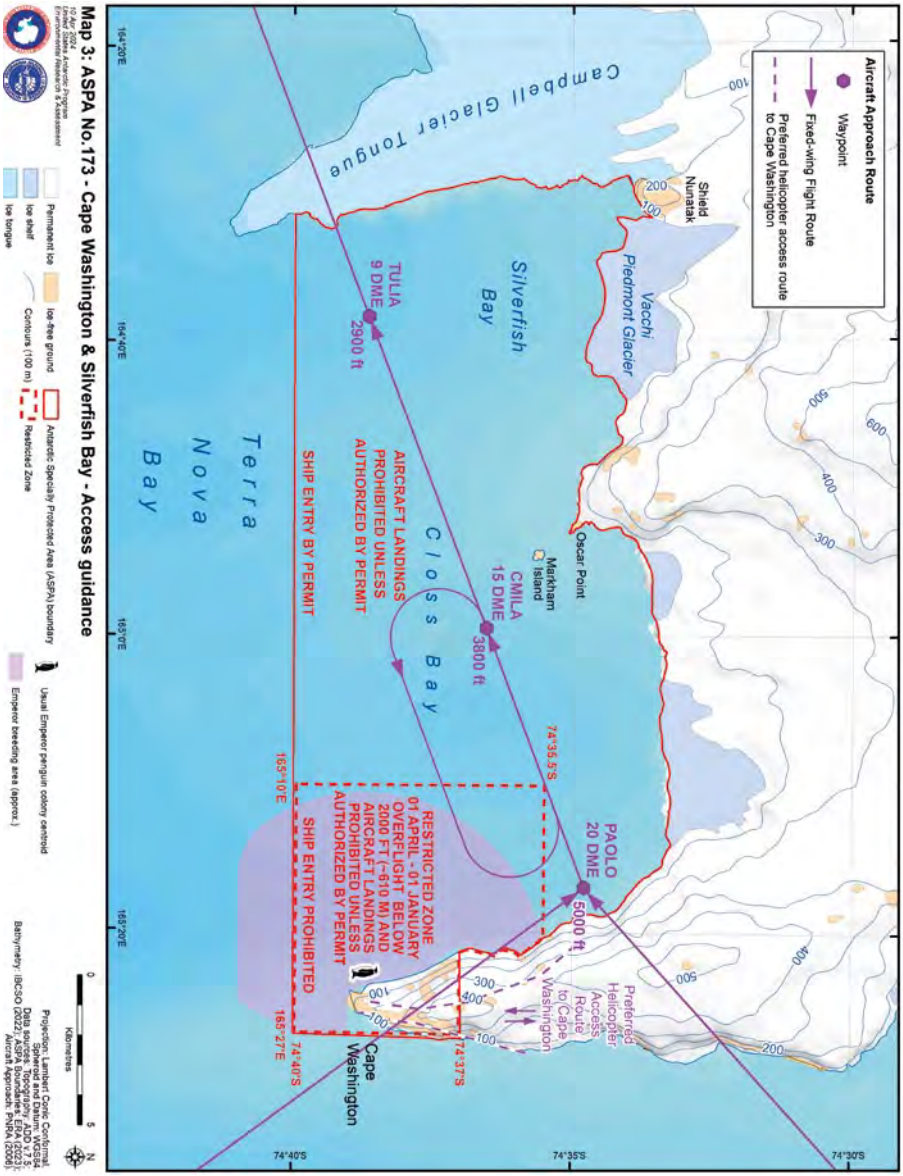
LOCATION: Terra Nova Bay, north.

DESCRIPTION: ~17,000 pairs Emperor penguin breed on sea ice near the SW coast of Cape Washington. South Polar skua breed on Cape Washington and Snow petrel may breed along cliffs.

HAZARDS:
APPROACH / DEPARTURE: See EAM08-05-1 and ASPA No.173 Management Plan.
COMMS:
CONTACT:
REMARKS: IBA No.176 identified on basis of size of Emperor penguin colony.

RESTRICTIONS: Entry to ASPA No.173 prohibited except by permit. Landing / overflight restrictions apply - see EAM08-05-1. **Consult Management Plan**.

INFORMATION SOURCES and DATES: ASPA No.173 Cape Washington & Silverfish Bay Management Plan (2024).

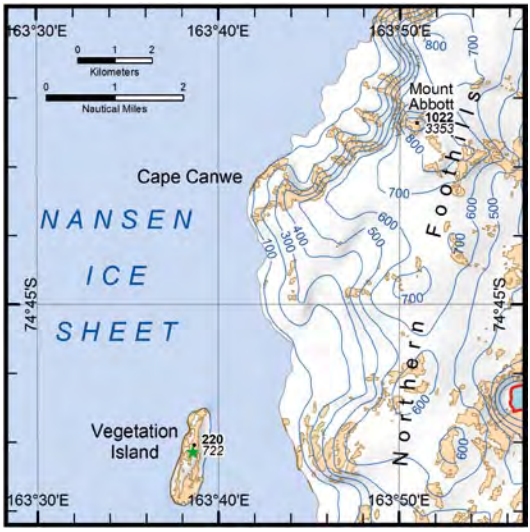


Map 3: ASPA No.173 - Cape Washington & Silverfish Bay - Access guidance

10 Apr 2024
Polar Regions Department
Environmental Research & Assessment

VEGETATION ISLAND
GRID REF:
GPS:

EAM08-06
ELEV:



LOCATION: Nansen Ice Sheet, ~3 km (~1 nm) west of Northern Foothills.

DESCRIPTION: At least 22 lichen species have been recorded on Vegetation Island.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

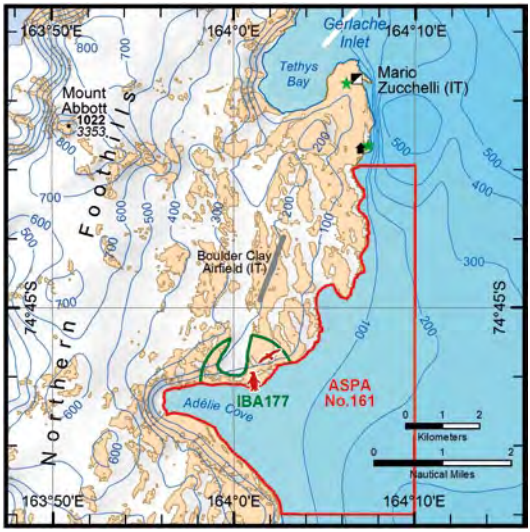
RESTRICTIONS: Avoid helicopter landings on / trampling sensitive lichen vegetation sites on Vegetation Island.

INFORMATION SOURCES and DATES:
Castello 2003.

Vegetation Island: view west across Nansen Ice Sheet to Eisenhower Range.
Photo: L. Armstrong, HSI / PNRA 2024.

MARIO ZUCCHELLI STATION (IT)
GRID REF:
GPS: S 74° 41.6063' E 164° 6.75' MZS HLS

EAM08-07
ELEV MZS HLS ~49FT



LOCATION: Northern Foothills / Gerlache Inlet.

DESCRIPTION: Mario Zucchelli Station operated seasonally by Italy. Sea ice runway seasonal. Gravel runway at Boulder Clay operational (2024). Adélie penguin colony (~13,095 pairs; 2017-18) at Adélie Cove. ASPA No.161 covers nearshore marine environment south of station. Large skua colony near station and especially ~3 km south at 'Icarus Camp' ('Campo Icaro'). Rich lichen flora present near 'Icarus Camp'.

HAZARDS: Aerials in central station area.
APPROACH / DEPARTURE: Refer AFIM.
COMMS: Terra Nova Ops VHF 118.1 / 129.7 MHz; HF 5.371 / 8.245 MHz.
CONTACT: Station Commander.
REMARKS: IBA No.177 identified on basis of size of Adélie colony.

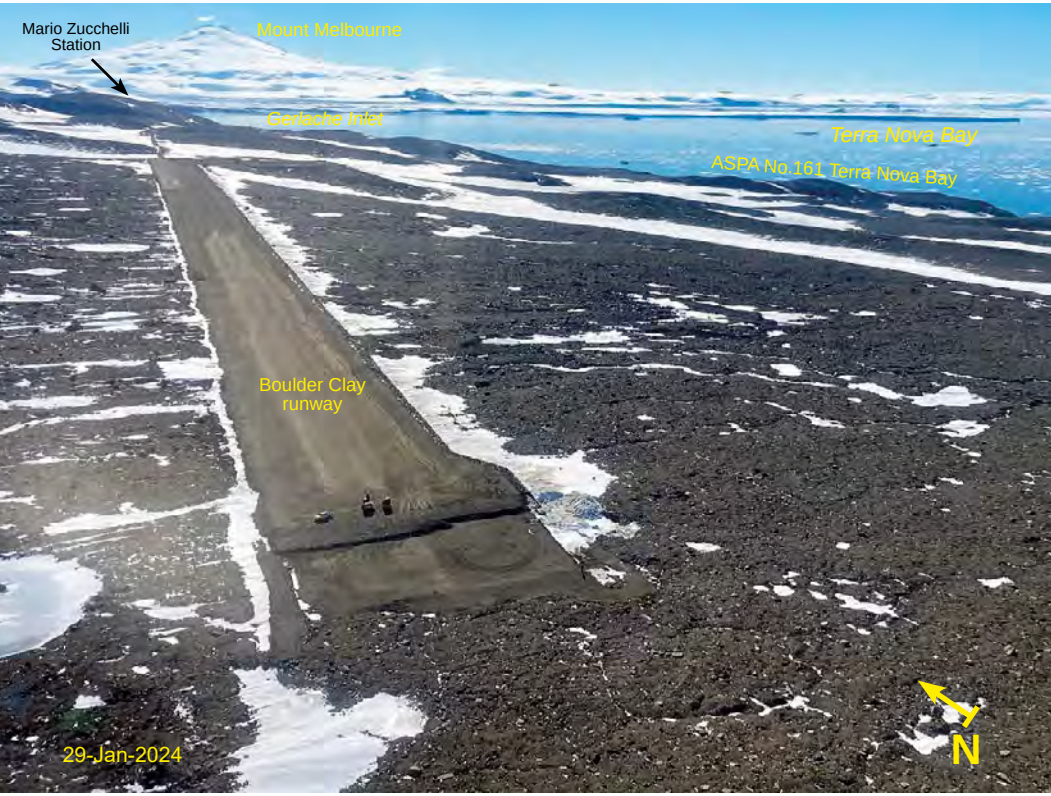
RESTRICTIONS: Entry to ASPA No.161 prohibited except by permit.**Consult Management Plan**.

INFORMATION SOURCES and DATES: Castello 2003. ASPA No.161 Terra Nova Bay Management Plan (2019). Antarctica NZ *et al*. 2023.

Mario Zucchelli Station (IT): view northeast, showing helicopter landing sites. Photo: PNRA 2024.

Mario Zucchelli Station (IT): showing helicopter landing sites. Source: PNRA / AFIM 2023.

Boulder Clay airfield (IT): view northeast from Adélie Cove. Photo: PNRA 2024.



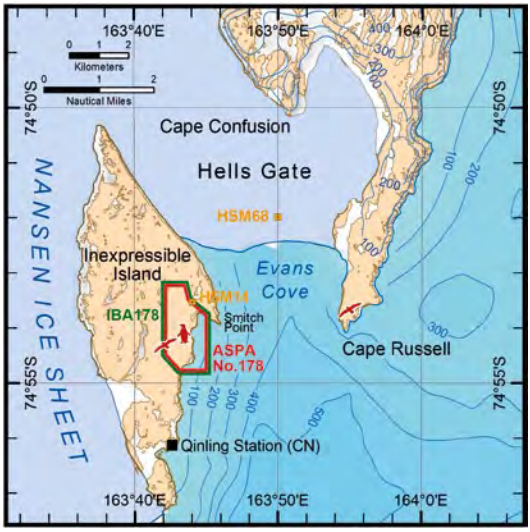
Boulder Clay airfield (IT): view northeast towards Mario Zucchelli Station. Photo: PNRA 2024.

INEXPRESSIBLE I. / QINLING STN. **EAM08-08**

GRID REF:

GPS: S 74° 56.15', E 163° 42.5' Qinling Station (CN)

ELEV:



LOCATION: Nansen Ice Sheet / Hells Gate.

DESCRIPTION: Adélie penguin colony (~30,934 pairs; 2017-19) at Seaview Bay. China opened Qinling Station on 07 Feb 2024, which operates year-round on southern Inexpressible Island ~2.6 km south of ASPA No.178. South Polar skua (~29 pairs) breed near the Adélie colony, and are also present at Cape Russell. Weddell seal frequently haul out near coast.

HAZARDS:

APPROACH / DEPARTURE:

COMMS:

CONTACT:

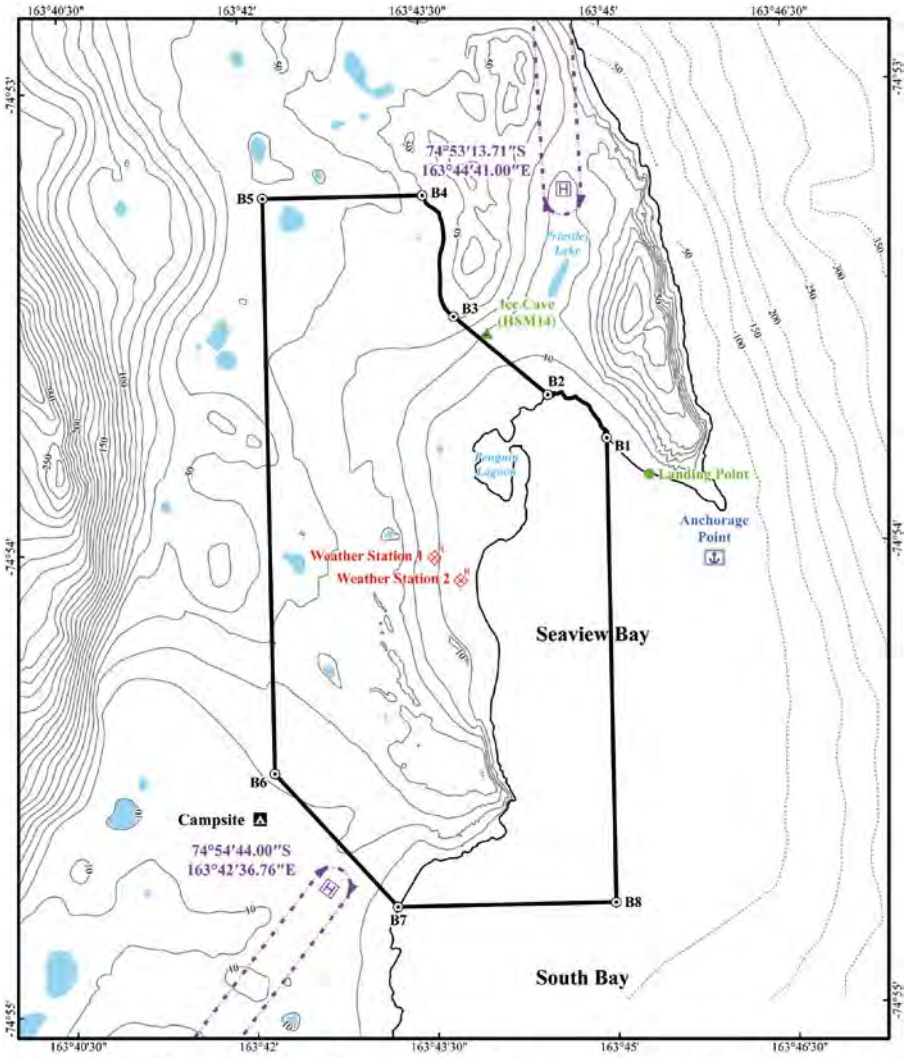
REMARKS: IBA No.178 was identified on the basis of the size of the Adélie penguin and South Polar skua colonies.

RESTRICTIONS: Entry to ASPA No.178 prohibited except by permit. Landing / overflight restrictions apply. See EAM08-08-1. **Consult Management Plan**.

INFORMATION SOURCES and DATES:

ASPA No.178 Inexpressible Island and Seaview Bay Management Plan (2021). Ainley *et al*. 1986. Antarctica NZ *et al*. 2023.

Inexpressible Island: view northeast. Qinling Station (CN) ~2.6 km south of ASPA No.178 Inexpressible Island & Seaview Bay. Photo: L. Armstrong, HSI / PNRA 2024.

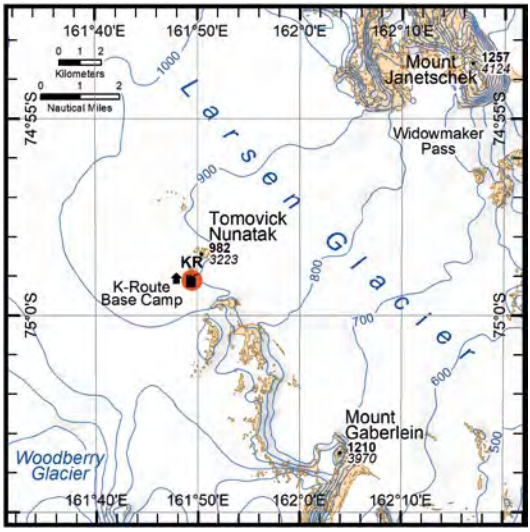


Map2:ASPA 178 –Seaview Bay and South Bay – topographic map with access guidance and bathymetry

Source: ASPA No.178 Inexpressible Island and Seaview Bay Management Plan (2021).

TOMOVICK NUNATAK
GRID REF:
GPS:

EAM08-09
ELEV FT



LOCATION: Larsen Glacier.

DESCRIPTION: K-Route Base Camp (KR) location.

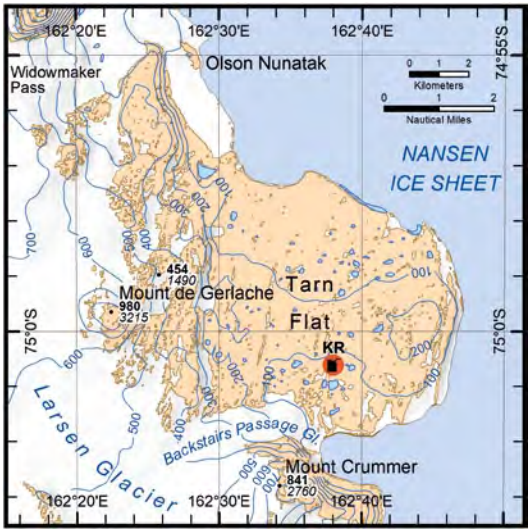
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Fuel cache (KR) located at camp.

RESTRICTIONS:

INFORMATION SOURCES and DATES:
KOPRI 2023.

TARN FLAT
GRID REF:
GPS:

EAM08-10
ELEV FT



LOCATION: Western Nansen Ice Sheet / Larsen Glacier.

DESCRIPTION: Numerous freshwater tarns distributed over wide, flat area of moraine below Mount de Gerlache.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Fuel cache (KR) located in the southern area of Tarn Flat.

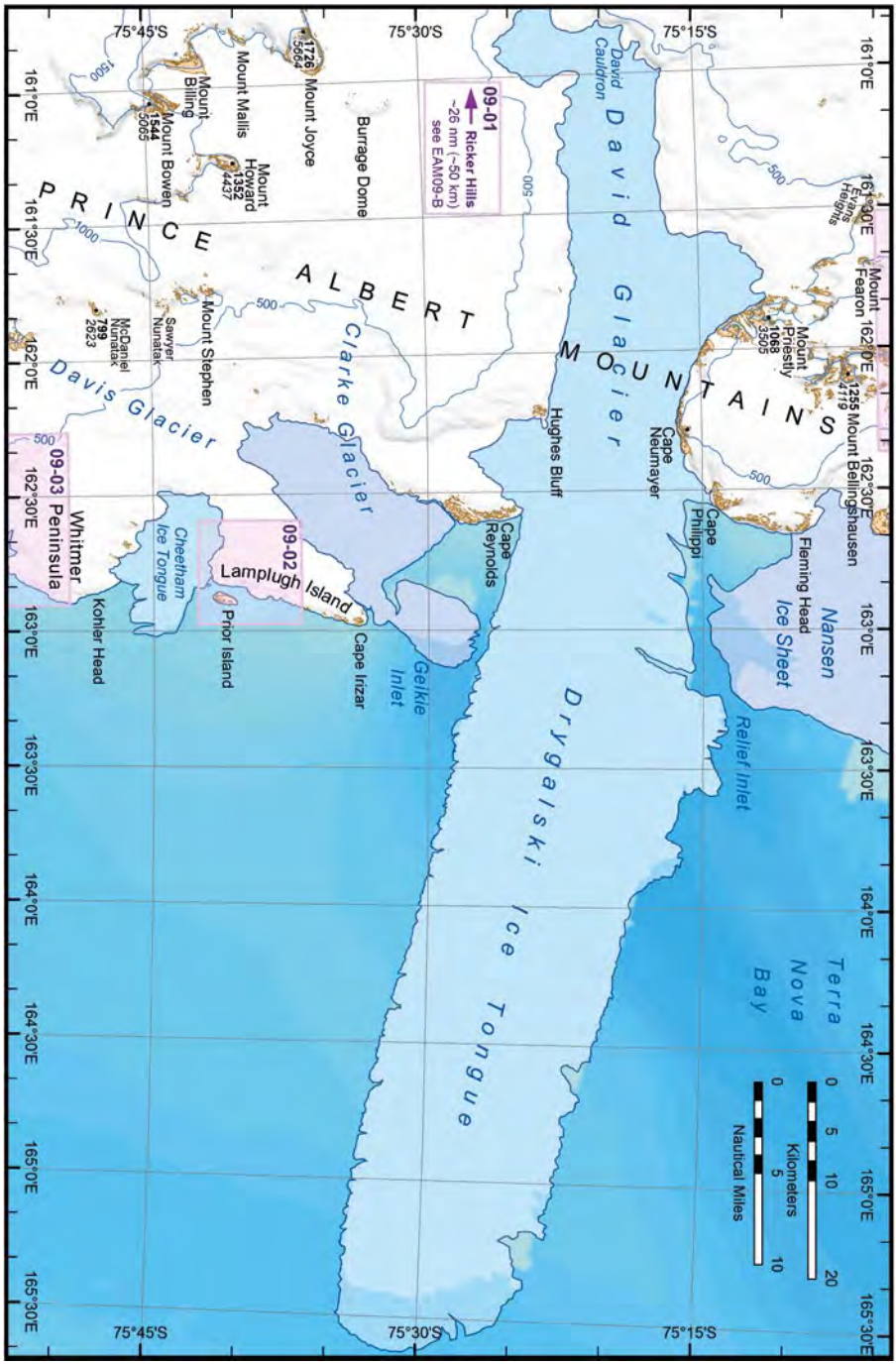
RESTRICTIONS:

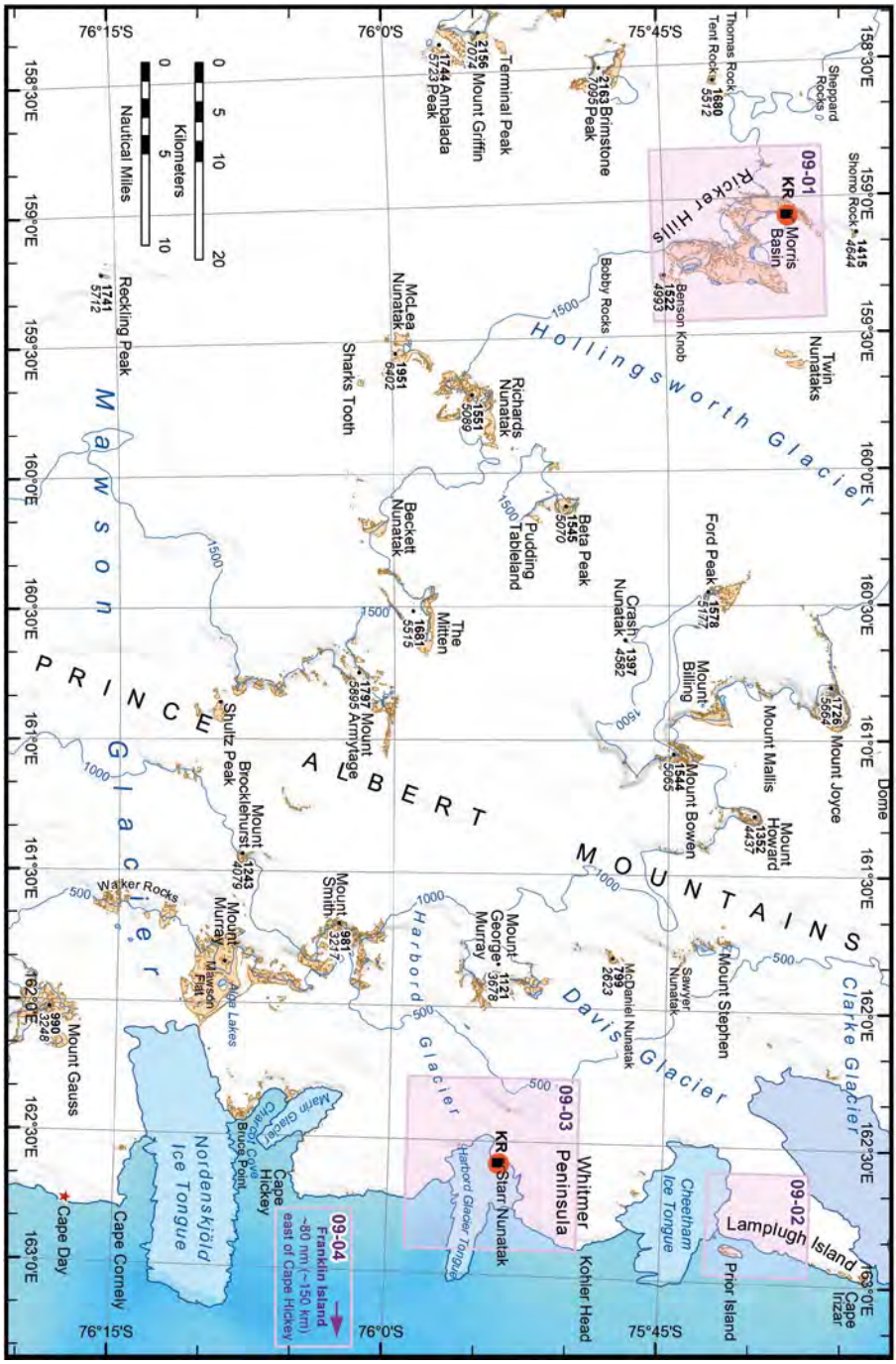
INFORMATION SOURCES and DATES:
KOPRI 2023.

ENVIRONMENTAL AWARENESS MAPS

EAM09: DAVID GLACIER
DRYGALSKI ICE TONGUE
MAWSON GLACIER

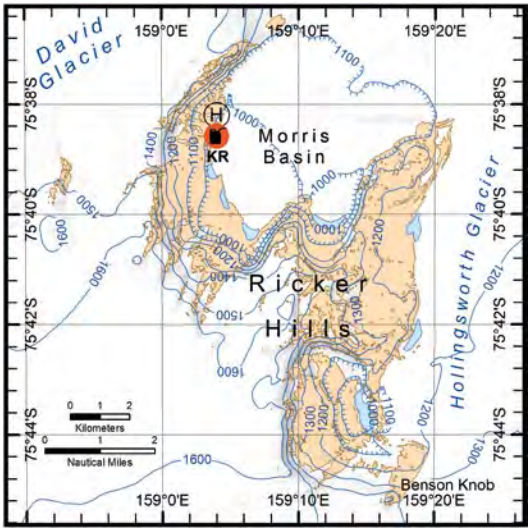
DAVID GLACIER / DRYGALSKI ICE TONGUE OVERVIEW EAM09-A




09-01
KR
Morris Basin
Rieker Hills
09-02
Lamplugh Island
09-03
Whitmer Peninsula
KR
Starr Nunatak
09-04
Franklin Island
~80 nm (~150 km)
east of Cape Hickey
Hollingsworth Glacier
Mawson Glacier
Harbord Glacier
Davis Glacier
Clarke Glacier
Marin Glacier
Nordenskjold Ice Tongue
Cheetham Ice Tongue
Harbord Glacier Tongue
PRINCE ALBERT MOUNTAINS
Terminal Peak
Mount Griffin
Ambalada Peak
Brimstone Peak
Thomas Rock
Tent Rock
Sheppard Rocks
Shomo Rock
Twin Nunataks
Benson Knob
Bobby Rocks
McLea Nunatak
Sharks Tooth
Richards Nunatak
Beckett Nunatak
Pudding Tableland
Beta Peak
Ford Peak
Crash Nunatak
Mount Billing
Mount Mallis
Mount Joyce
Mount Howard
Mount Bowen
The Mitten
Mount Armytage
Shultz Peak
Brocklehurst
Mount Murray
Walker Rocks
Mawson Flat
Mount Smith
Mount George Murray
McDaniel Nunatak
Sawyer Nunatak
Mount Stephen
Mount Gauss
Cape Hickey
Bruce Point
Cape Day
Cape Comely
Kohler Head
Prior Island
Cape Irizar
Dome
Reckling Peak
Nautical Miles
Kilometers

RICKER HILLS
GRID REF
GPS:

EAM09-01
ELEV FT



LOCATION: David Glacier, south / Hollingsworth Glacier, west.

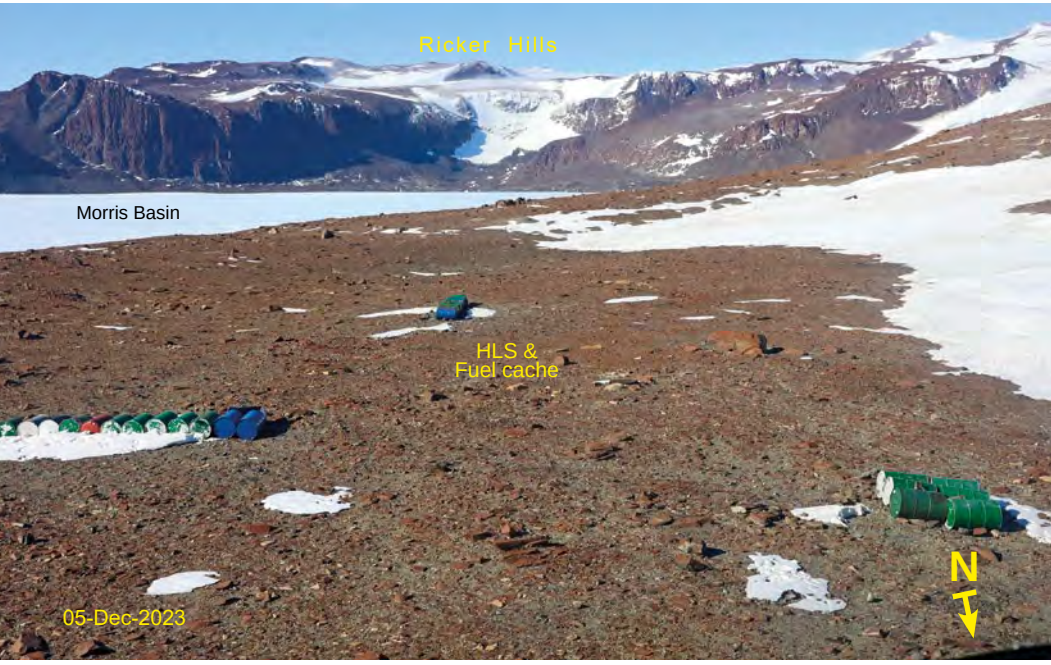
DESCRIPTION: The Ricker Hills are characterised by several depressions (e.g. Morris Basin), which are of geological interest.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: HLS and fuel cache on western ice-free slopes of Morris Basin.

RESTRICTIONS:

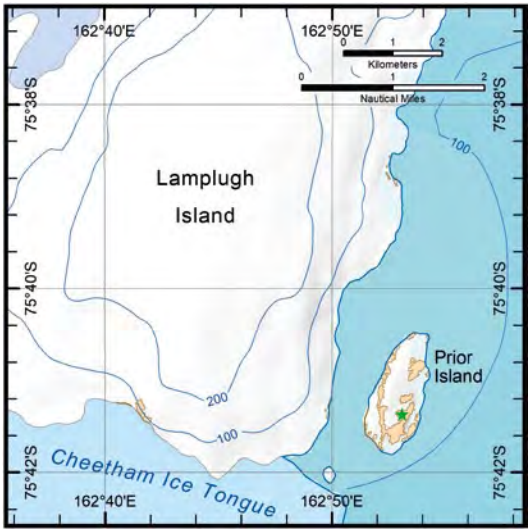
INFORMATION SOURCES and DATES:
KOPRI 2024.

Morris Basin, Ricker Hills: HLS and fuel cache. Photo: KOPRI 05 Dec 2023.



PRIOR ISLAND
GRID REF
GPS:

EAM09-02
ELEV FT



LOCATION: ~1 km east of Lamplugh Island, ~26 km south of Drygalski Ice Tongue.

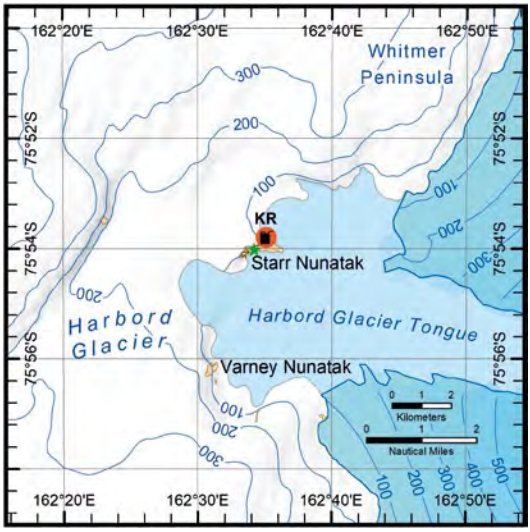
DESCRIPTION: A small, partially ice-free, island ~1 km east of southern Lamplugh Island.
HAZARDS:
APPROACH / DEPARTURE:.
COMMS:
CONTACT:
REMARKS: Rich vegetation occurs on Prior Island, with over 20 species of lichen present.

RESTRICTIONS: Avoid helicopter landings on / trampling sensitive lichen vegetation sites.

INFORMATION SOURCES and DATES: Castello 2003, Cannone 2006.

STARR NUNATAK
GRID REF:
GPS:

EAM09-03
ELEV FT



LOCATION: Harbord Glacier / Whitmer Peninsula.

DESCRIPTION: An ice-free outcrop immediately north of the Harbord Glacier Tongue.

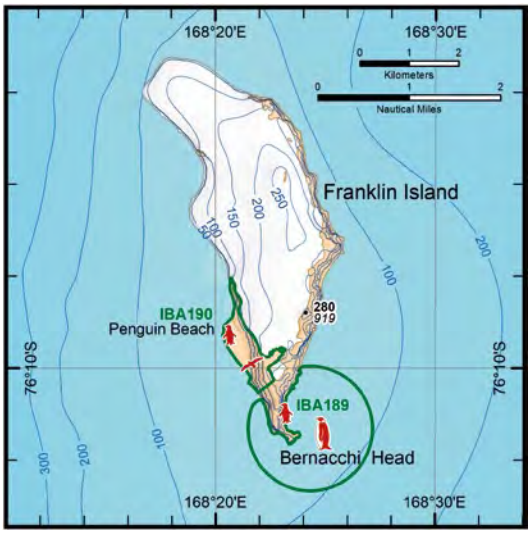
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Rich vegetation occurs at Starr Nunatak with at least 18 species of lichen present. A fuel depot (KR) is present.

RESTRICTIONS: Avoid helicopter landings on / trampling sensitive lichen vegetation sites.

INFORMATION SOURCES and DATES: Castello 2003, Cannone 2006. KOPRI 2023.

FRANKLIN ISLAND
GRID REF:
GPS:

EAM09-04
ELEV FT



LOCATION: Southern Ross Sea, ~150 km east of Cape Hickey, Victoria Land.

DESCRIPTION: ~3000-5000 pairs Emperor penguin breed on sea ice ~500 m east of Bernacchi Head. Adélie penguin colonies at Penguin Beach (~80,514 pairs; 2005-07) and on SE coast (~1628 pairs; 2005-07). ~184 pairs South Polar skua at Penguin Beach.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBA No.189 identified on basis of size of Emperor penguin colony. IBA No.190 identified on basis of size of Adélie penguin and South Polar skua colonies.

RESTRICTIONS:

INFORMATION SOURCES and DATES: Ainley *et al*. 1986. Barber-Meyer *et al*. 2008. Antarctica NZ *et al*. 2023.

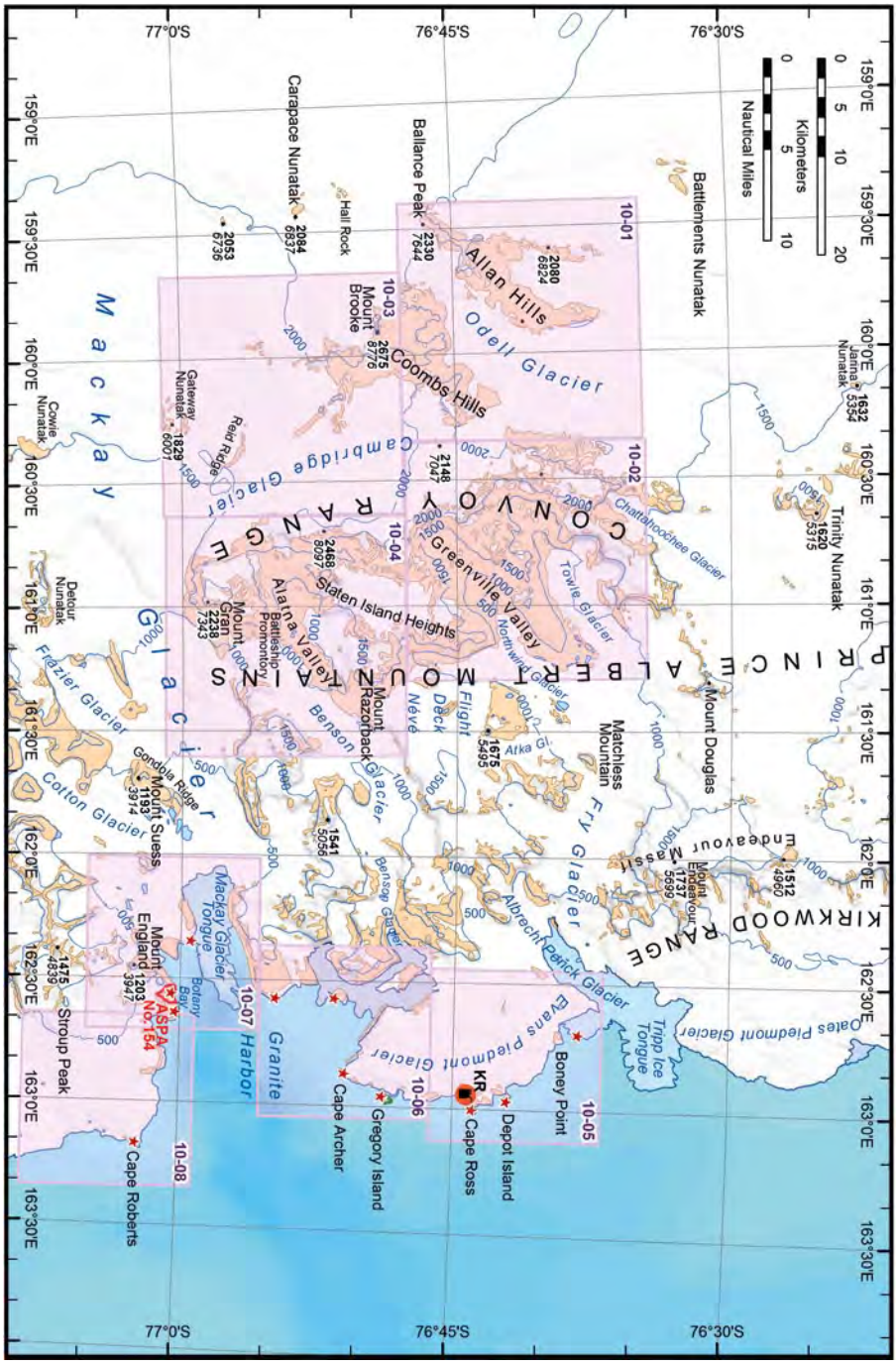
Penguin Beach, Franklin Island: view south towards Bernacchi Head.
Photo: C. Poirot, Antarctica New Zealand, 21 Feb 2016.

ENVIRONMENTAL AWARENESS MAPS

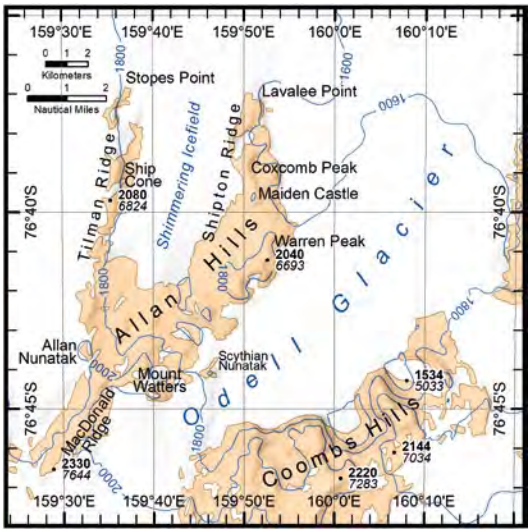
EAM10: CONVOY RANGE
McKAY GLACIER

CONVOY RANGE OVERVIEW

EAM10



ALLAN HILLS **EAM10-01**
GRID REF: ELEV FT
GPS:



LOCATION: Odell Glacier / Convoy Range.

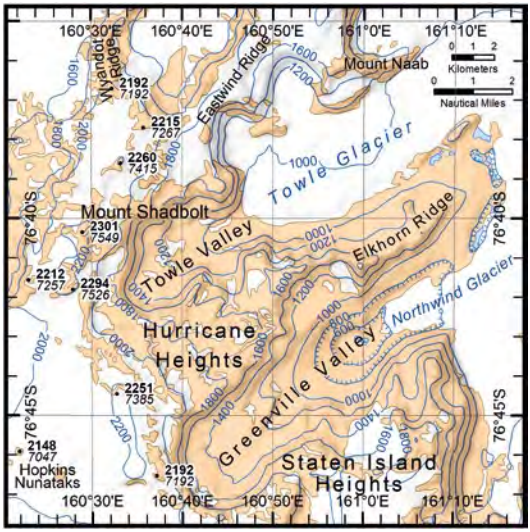
DESCRIPTION: A range of hills NW of Odell Glacier and Coombs Hills.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:
ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

HURRICANE HEIGHTS **EAM10-02**
GRID REF: ELEV FT
GPS:



LOCATION: Convoy Range.

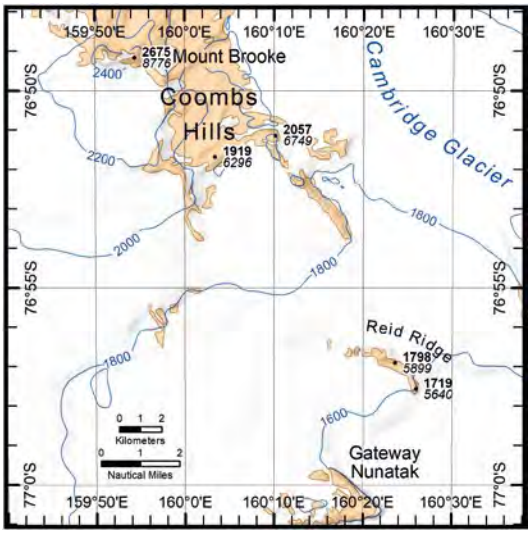
DESCRIPTION: Elevated ice-free plateau between Greenville and Towle valleys, ~8 km NW of Staten Island Heights.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:
ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

CAMBRIDGE GLACIER **EAM10-03**
GRID REF: ELEV FT
GPS:



LOCATION: Coombs Hills / Convoy Range.

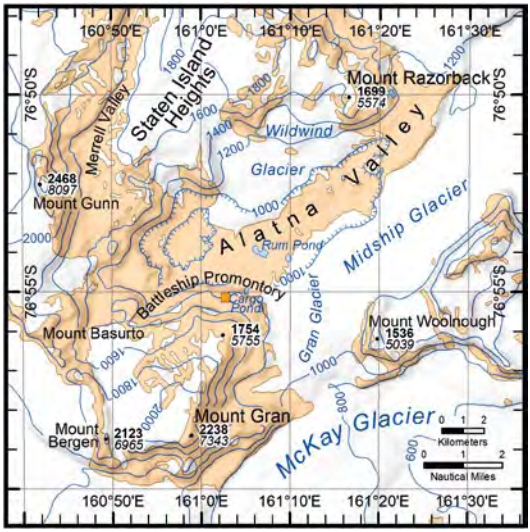
DESCRIPTION: Cambridge Glacier drains the valley between Coombs Hills and Hurricane Heights and flows into the MacKay Glacier.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:
ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

ALATNA VALLEY **EAM10-04**
GRID REF: ELEV FT
GPS:



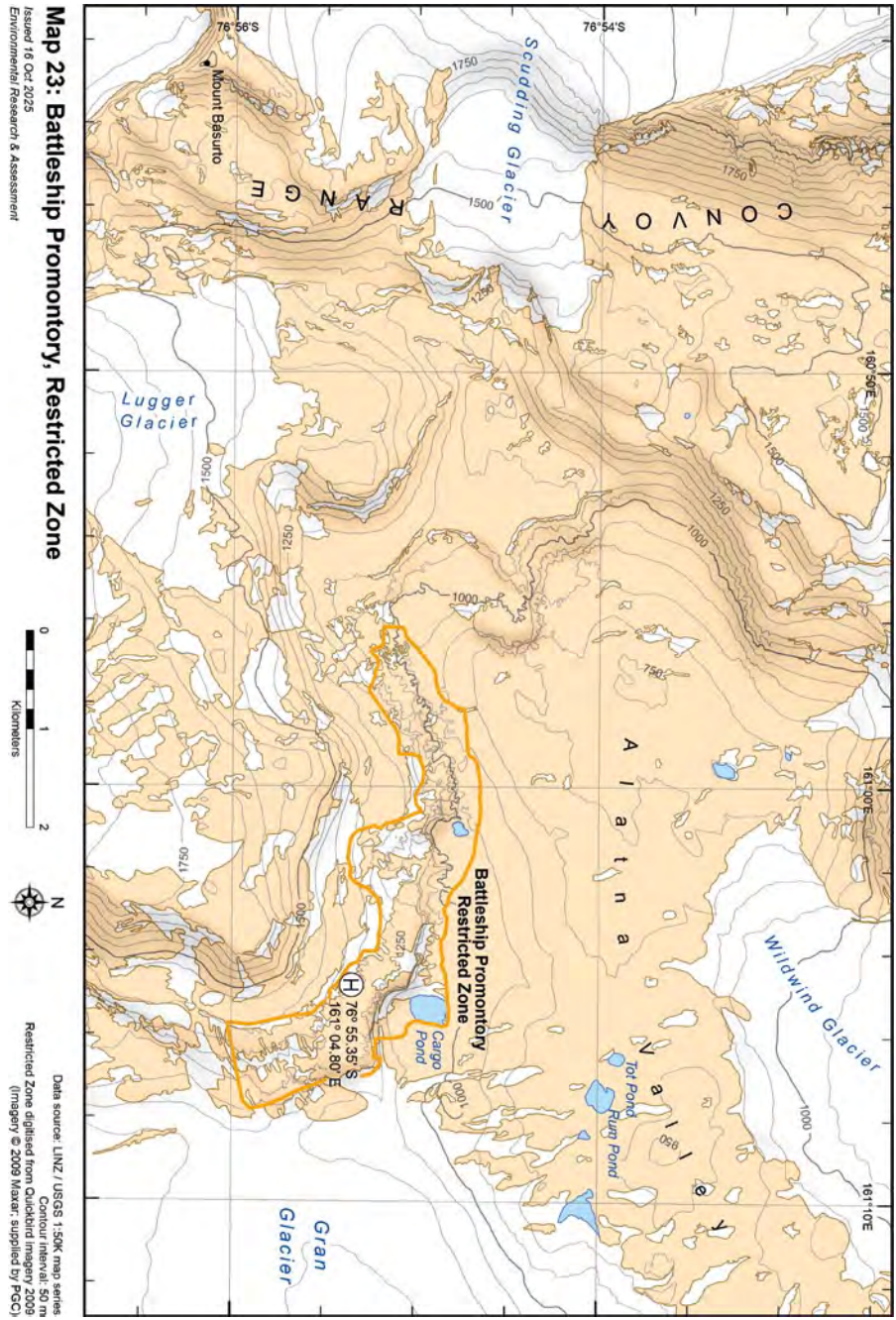
LOCATION: South of Mount Razorback, Convoy Range.

DESCRIPTION: Ice-free valley immediately north of Battleship Promontory, Gran Glacier and Midship Glacier.

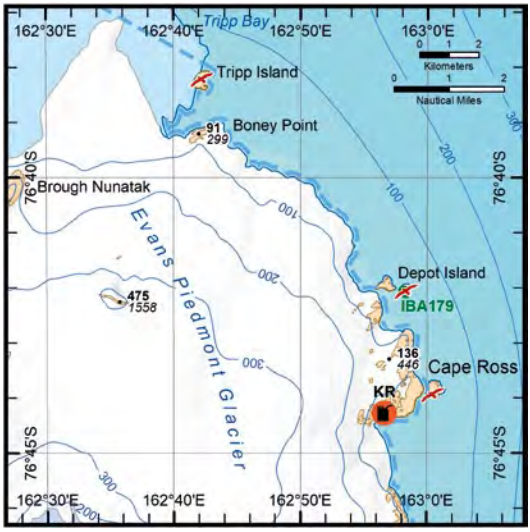
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Prior permission required for entry to Battleship Promontory Restricted Zone (see detail in EAM10-04-1).

INFORMATION SOURCES and DATES:
ASMA No.2 McMurdo Dry Valleys Management Plan (2015).


Map 23: Battleship Promontory, Restricted Zone
Issued 16 Oct 2025
Environmental Research & Assessment
Battleship Promontory Restricted Zone
Cargo Pond
Tot Pond
Rum Pond
Wildwind Glacier
Gran Glacier
Lugger Glacier
Scudding Glacier
Mount Basurto
RANGE
CONVOY
Alatna Valley
76° 55.35' S
161° 04.80' E
76°56'S
76°54'S
160°50'E
161°00'E
161°10'E
0
1
2
Kilometers
N
Data source: LINZ / USGS 1:50K map series
Contour interval: 50 m
Restricted Zone digitised from Quickbird imagery 2009
(Imagery © 2009 Maxar: supplied by PGC)

CAPE ROSS / DEPOT ISLAND **EAM10-05**
GRID REF: ELEV FT
GPS:



LOCATION: Evans Piedmont Glacier.

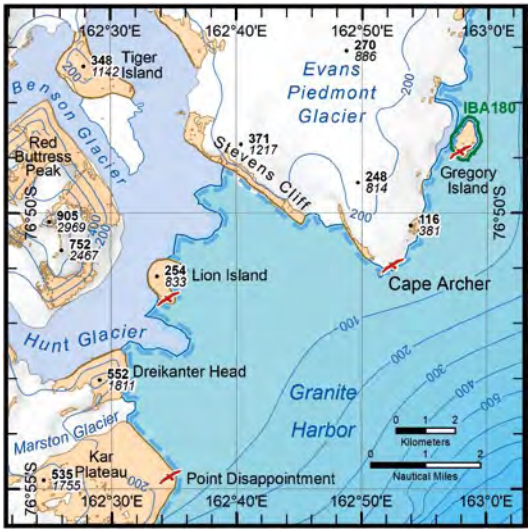
DESCRIPTION: South Polar skua breed on Tripp Island (~9 pairs), Depot Island (~72 pairs) and Cape Ross (~48 pairs). At least 13 species of lichen found on Tripp Island.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Fuel cache (KR) located near the south coast of Cape Ross. IBA No.179 identified at Depot Island on basis of size of South Polar skua colony.

RESTRICTIONS:

INFORMATION SOURCES and DATES: Ainley *et al*. 1986. Castello 2003. ASMA No.2 McMurdo Dry Valleys Management Plan (2015). KOPRI 2023.

CAPE ARCHER / GREGORY ISLAND **EAM10-06**
GRID REF: ELEV FT
GPS:



LOCATION: Granite Harbour, north.

DESCRIPTION: South Polar skua breed on Gregory Island (~119 pairs), Cape Archer (~6 pairs), Lion Island (~3 pairs) and Point Disappointment (~44 pairs).

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBA No.180 identified at Gregory Island on basis of size of South Polar skua colony.

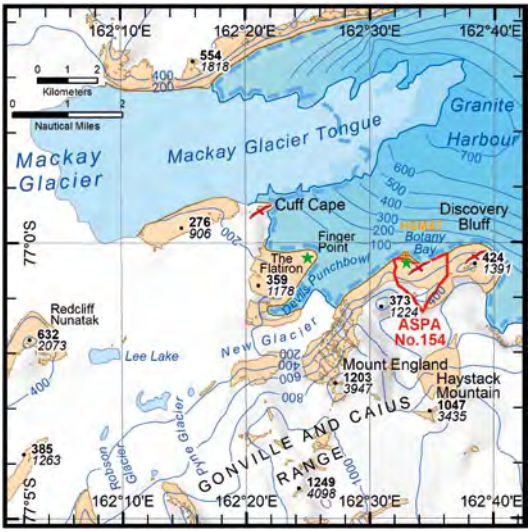
RESTRICTIONS:

INFORMATION SOURCES and DATES: Ainley *et al*. 1986. ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

BOTANY BAY **EAM10-07**

GRID REF: ELEV 20FT

GPS: S 77° 0.347', E 162° 31.795' ASPA154 Botany Bay HLS



ASPA No.154 Botany Bay campsite, looking west to The Flatiron and Devils Punchbowl. Lichens colonise foreground rocks. Photo: © C. Harris, ERA, Dec 1993.

LOCATION: Granite Harbour, south.

DESCRIPTION: South Polar skua breed around Discovery Bluff (~124 pairs), Botany Bay (~40 pairs) and at Cuff Cape (~3 pairs). ASPA No.154 Botany Bay has one of the most diverse vegetation communities in Antarctica with 29 lichen, 9 moss and 1 liverwort species.

HAZARDS:

APPROACH / DEPARTURE: Over sea ice preferred when present, overland via New Glacier or Mount England. See EAM10-07-1 / EAM10-07-3.

COMMS:

CONTACT:

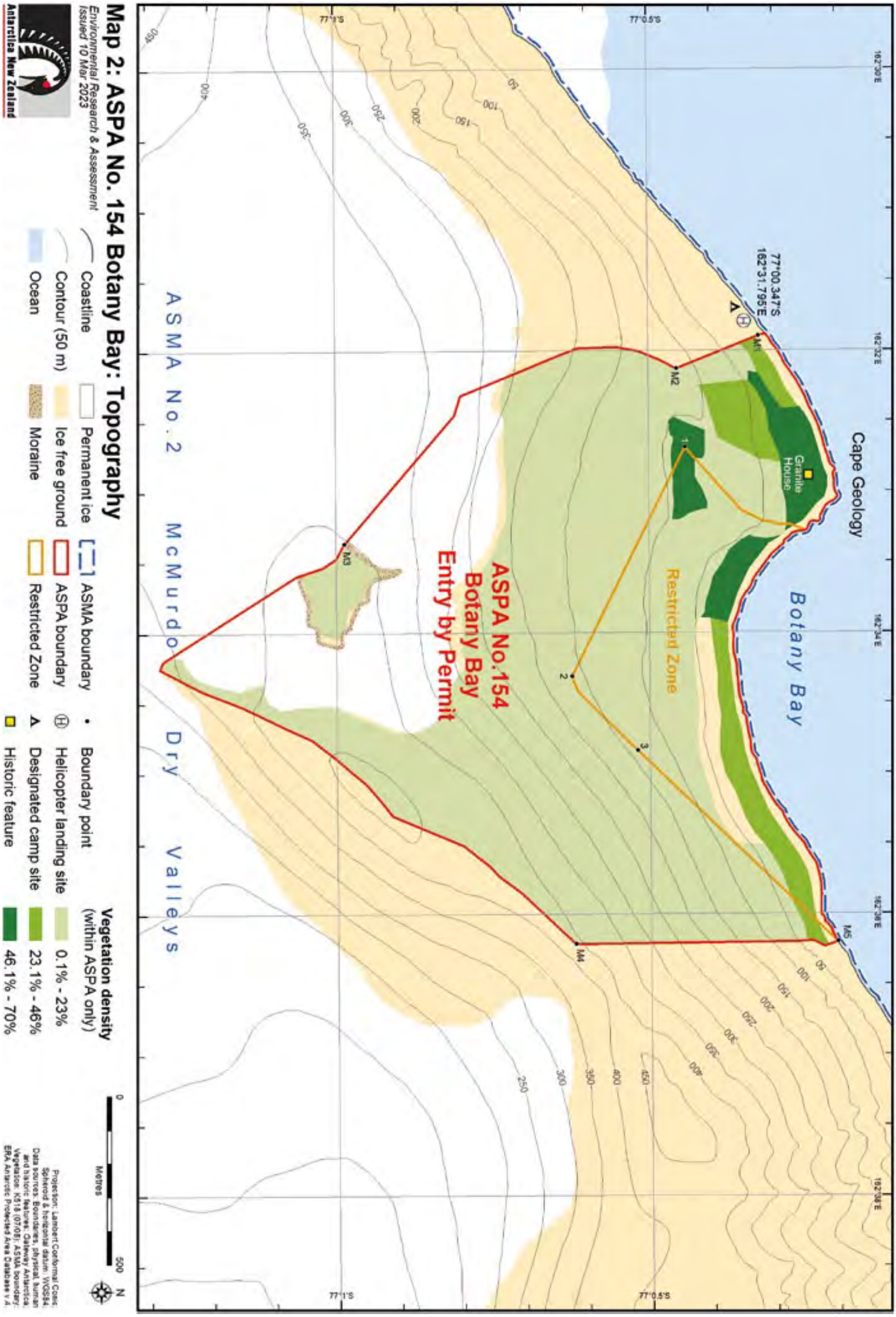
REMARKS: Finger Point also has ~19 lichen species present. HSM67 'Granite House' rock shelter at Cape Geology.

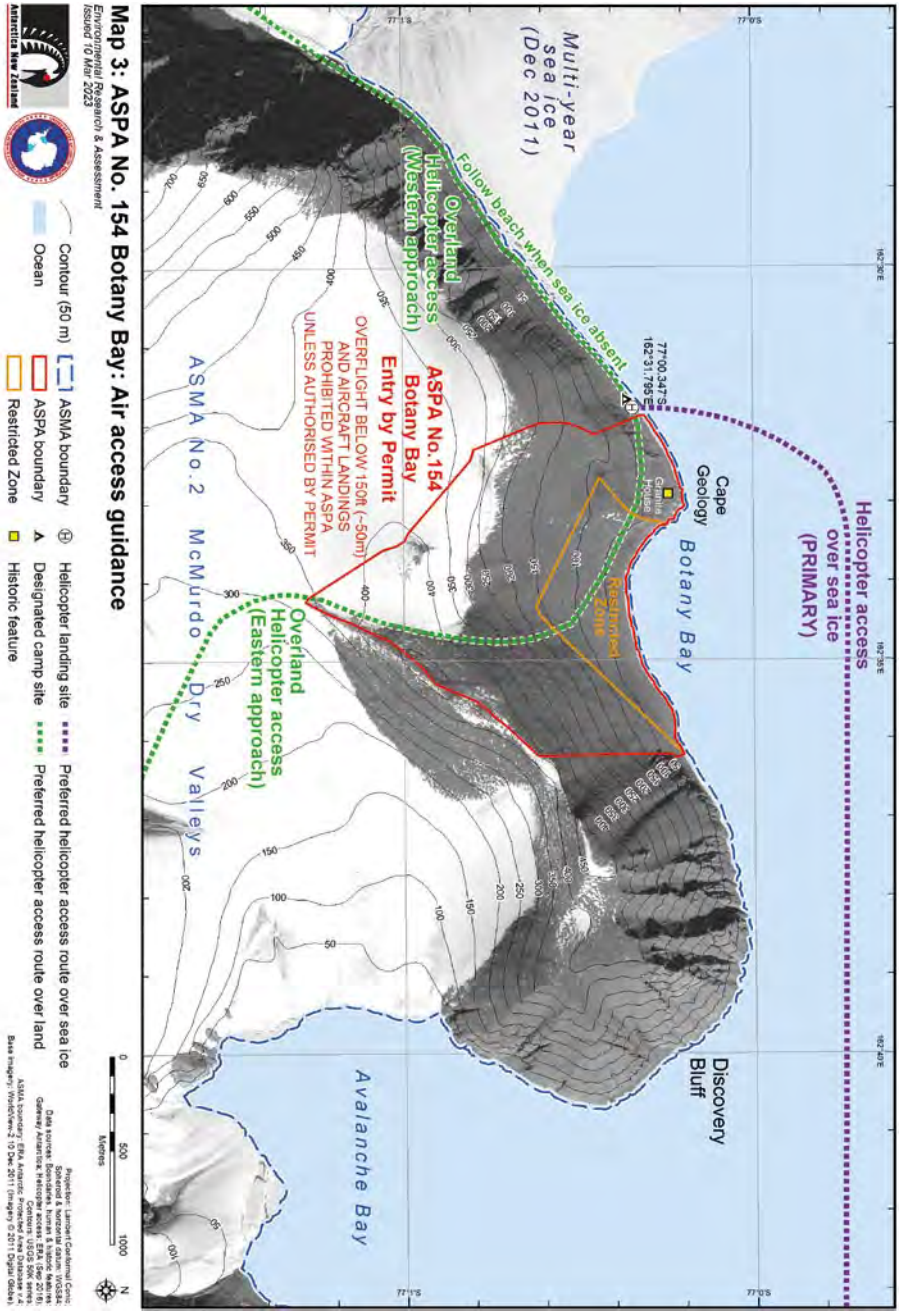
RESTRICTIONS: Entry to ASPA No.154 prohibited except by permit. Overflight / landing restrictions apply. Landings prohibited within Restricted Zone. **Consult Management Plan**.

INFORMATION SOURCES and DATES: ASPA No.154 Botany Bay Management Plan (2019). Ainley *et al*. 1986. Cannone 2006. ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

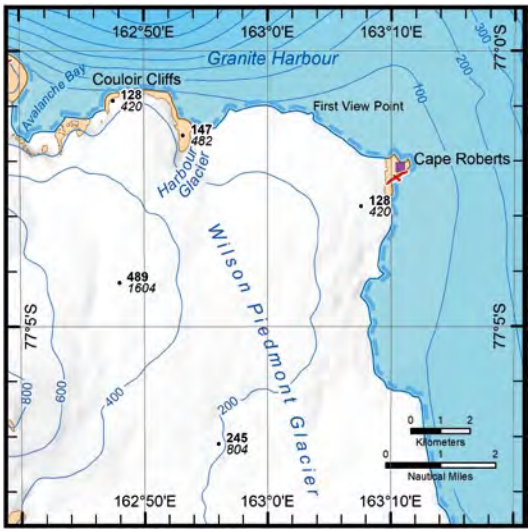
BOTANY BAY, GRANITE HARBOUR Overview

EAM10-07-1


Map 2: ASPA No. 154 Botany Bay: Topography
Environmental Research & Assessment
Issued 10 Mar 2023
Antarctica New Zealand
Coastline
Contour (50 m)
Ocean
Permanent ice
Ice free ground
Moraine
ASMA boundary
ASPA boundary
Restricted Zone
Boundary point
Helicopter landing site
Designated camp site
Historic feature
Vegetation density
(within ASPA only)
0.1% - 23%
23.1% - 46%
46.1% - 70%
Cape Geology
Botany Bay
Granite House
Restricted Zone
ASPA No.154
Botany Bay
Entry by Permit
ASMA No.2 McMurdo Dry Valleys
77°00.347'S
162°31.795'E
M1
M2
M3
M4
M5
1
2
3
Metres
0
500
N


Map 3: ASPA No. 154 Botany Bay: Air access guidance
Environmental Research & Assessment
Issued 10 Mar 2023
Antarctica New Zealand
Helicopter access over sea ice (PRIMARY)
Cape Geology
Botany Bay
Discovery Bluff
Avalanche Bay
Granite House
77°00.347'S
162°31.795'E
Multi-year sea ice (Dec 2011)
Follow beach when sea ice absent
Overland Helicopter access (Western approach)
ASPA No.154
Botany Bay
Entry by Permit
OVERFLIGHT BELOW 150ft (~50m) AND AIRCRAFT LANDINGS PROHIBITED WITHIN ASPA UNLESS AUTHORISED BY PERMIT
Restricted Zone
Overland Helicopter access (Eastern approach)
ASMA No.2 McMurdo Dry Valleys
Contour (50 m)
Ocean
ASMA boundary
ASPA boundary
Restricted Zone
Helicopter landing site
Designated camp site
Historic feature
Preferred helicopter access route over sea ice
Preferred helicopter access route over land
0
500
1000
Metres
N

CAPE ROBERTS **EAM10-08**
GRID REF: ELEV FT
GPS:



LOCATION: Granite Harbour, SE entrance.

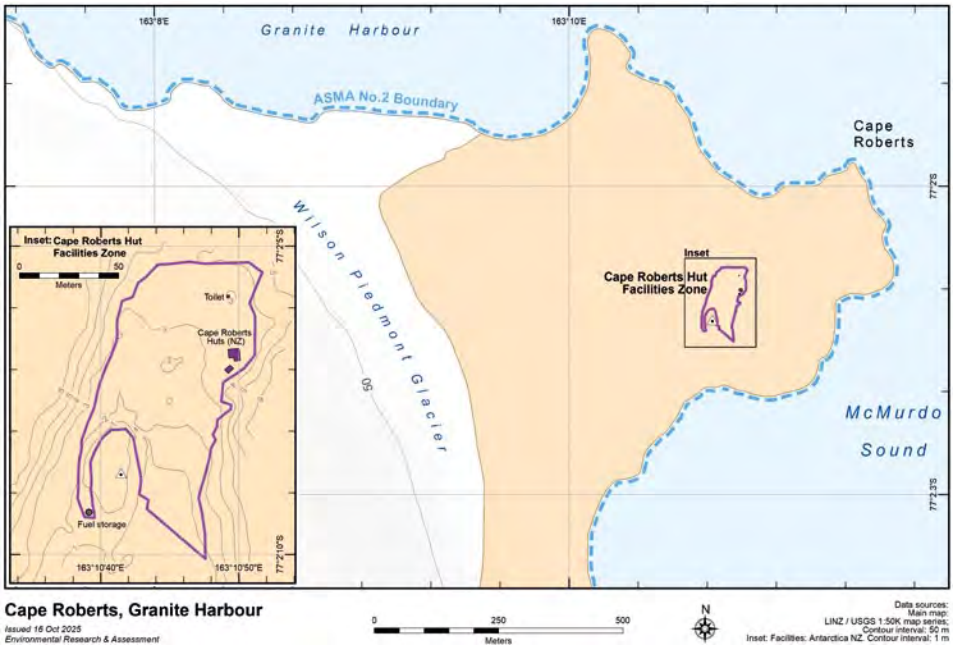
DESCRIPTION: South Polar skua breed at Cape Roberts (~109 pairs). Cape Roberts Camp (NZ) comprises 2 small huts and is designated a Facilities Zone in ASMA No.2 McMurdo Dry Valleys (see EAM10-08-1).

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

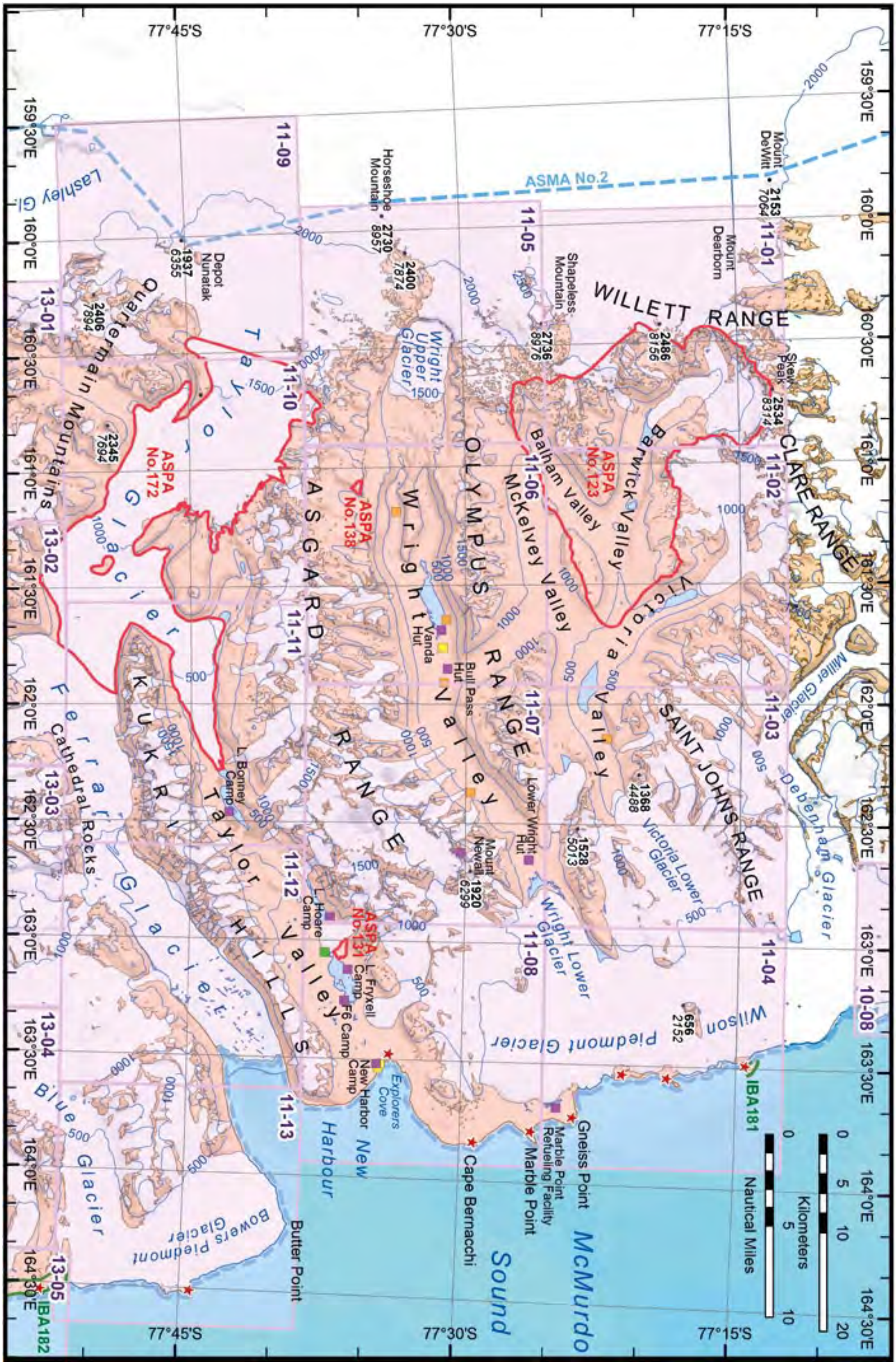
INFORMATION SOURCES and DATES:
ASMA No.2 McMurdo Dry Valleys Management Plan (2015). Ainley *et al*. 1986.

CAPE ROBERTS HUT Facilities Zone **EAM10-08-1**
GRID REF: ELEV FT
GPS:

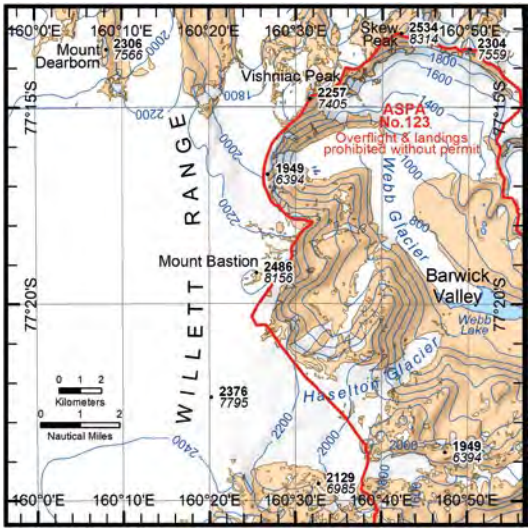


ENVIRONMENTAL AWARENESS MAPS

EAM11: McMURDO DRY VALLEYS
WRIGHT VALLEY
TAYLOR VALLEY


77°45'S
77°30'S
77°15'S
159°30'E
160°0'E
160°30'E
161°0'E
161°30'E
162°0'E
162°30'E
163°0'E
163°30'E
164°0'E
164°30'E
ASMA No.2
Lashley Gl.
11-09
11-05
11-01
11-10
11-06
11-02
11-11
11-07
11-03
11-12
11-08
11-04
11-13
10-08
13-01
13-02
13-03
13-04
13-05
Horseshoe Mountain 2730 8957
Mount DeWitt 2153 7064
Mount Dearborn
Depot Nunatak 1937 6355
2400 7874
2406 7894
Shapeless Mountain 2736 8976
2486 8156
Skew Peak 2534 8314
2345 7694
WILLETT RANGE
CLARE RANGE
Quartermain Mountains
Taylor Glacier
ASPA No.172
ASPA No.123
ASPA No.138
ASPA No.131
Wright Upper Glacier
OLYMPUS RANGE
Balham Valley
Barwick Valley
McKelvey Valley
Victoria Valley
Wright Valley
ASGARD RANGE
Vanda Hut
Bull Pass Hut
Miller Glacier
SAINT JOHNS RANGE
Debenham Glacier
1368 4488
1528 5013
Lower Wright Hut
Mount Newall 1920 6299
Victoria Lower Glacier
Wright Lower Glacier
KUKRI HILLS
Taylor Valley
L. Bonney Camp
L. Hoare Camp
L. Fryxell Camp
F6 Camp
New Harbor Camp
Explorers Cove
Ferrar Glacier
Cathedral Rocks
Wilson Piedmont Glacier
656 2152
IBA181
IBA182
Blue Glacier
Bowers Piedmont Glacier
Butter Point
New Harbour
Cape Bernacchi
Marble Point
Marble Point Refueling Facility
Gneiss Point
McMurdo Sound
Kilometers
Nautical Miles
0 5 10 20
0 5 10

BARWICK VALLEY **EAM11-01**
GRID REF: ELEV FT
GPS:



LOCATION: McMurdo Dry Valleys, northwest.

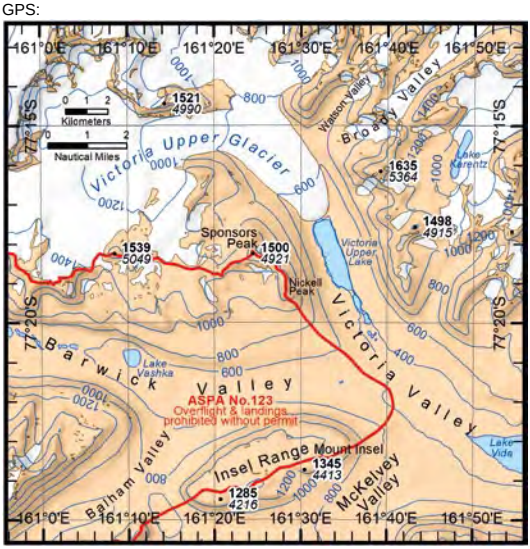
DESCRIPTION: ASPA No.123 Barwick and Balham Valleys protected as a pristine reference area.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Entry to ASPA No.123 prohibited except by permit. Landing / overflight restrictions apply. **Consult Management Plan**.

INFORMATION SOURCES and DATES: ASPA No.123 Barwick & Balham Valleys Management Plan (2023). ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

VICTORIA VALLEY, Upper **EAM11-02**
GRID REF: ELEV FT
GPS:



LOCATION: McMurdo Dry Valleys, north.

DESCRIPTION: ASPA No.123 Barwick and Balham Valleys protected as a pristine reference area.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

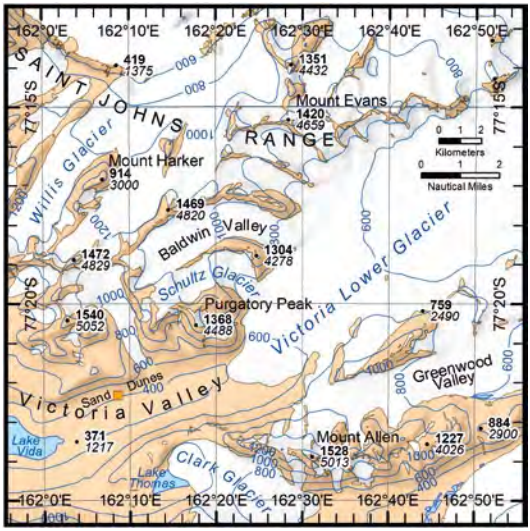
RESTRICTIONS: Entry to ASPA No.123 prohibited except by permit. Landing / overflight restrictions apply. **Consult Management Plan**. Victoria Valley Sand Dune Field Restricted Zone extends to north of Lake Vida (See EAM11-03-1).

INFORMATION SOURCES and DATES: ASPA No.123 Barwick & Balham Valleys Management Plan (2023). ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

VICTORIA VALLEY, Lower **EAM11-03**

GRID REF: ELEV ~1380 FT

GPS: S 77° 22.077' E 162° 12.292' Sand Dune Field HLS



LOCATION: McMurdo Dry Valleys, northeast.

DESCRIPTION: Victoria Valley sand dune formations, the largest in Antarctica, are sensitive and protected as a Restricted Zone under ASMA No.2 Management Plan. See EAM11-03-1 for extent.

HAZARDS:

APPROACH / DEPARTURE:

COMMS:

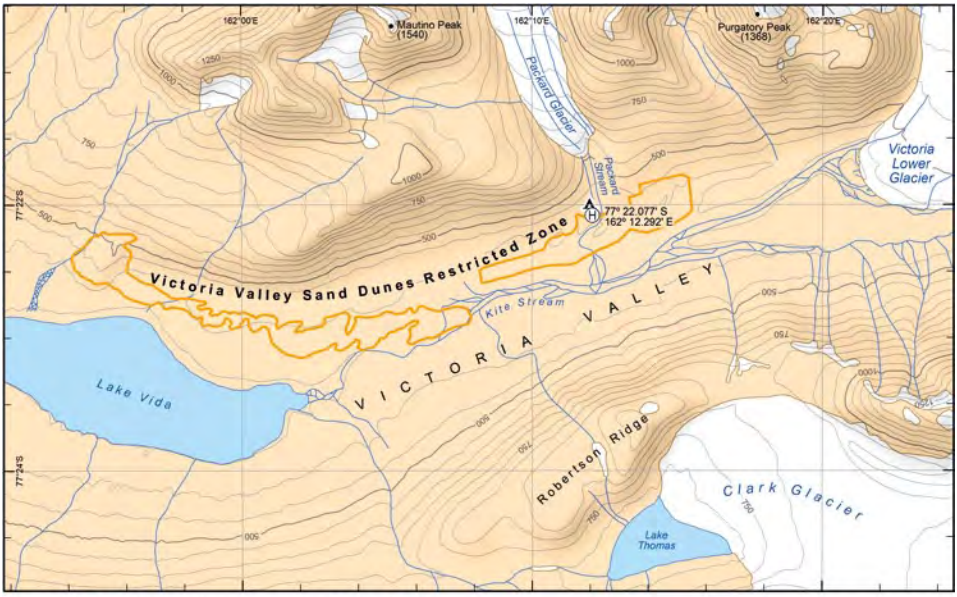
CONTACT:

REMARKS:

RESTRICTIONS: Prior permission required for entry to Victoria Valley Sand Dunes Restricted Zone. Use designated HLS and campsite.

INFORMATION SOURCES and DATES: ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

VICTORIA VALLEY SAND DUNES Restricted Zone **EAM11-03-1**



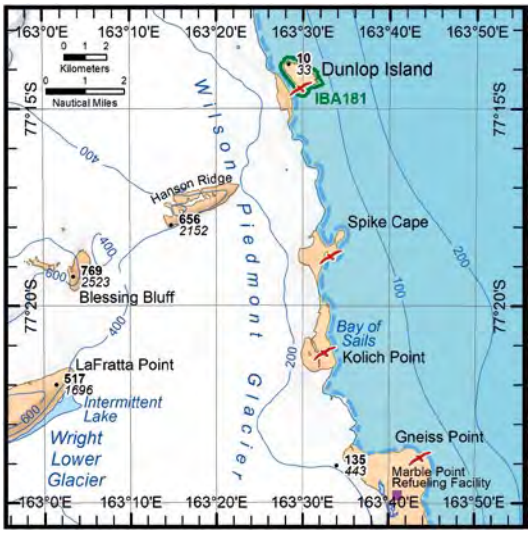
Map 22: Victoria Valley Sand Dunes Restricted Zone

Issued 16 Oct 2025

Environmental Research & Assessment

Data source: LINZ / USGS 1:50K map series
Contour interval: 50 m
Restricted Zone digitised from Quickbird imagery 2004
(Imagery © 2004 Maxar; supplied by PGC)

WILSON PIEDMONT GLACIER **EAM11-04**
GRID REF:
GPS: S 77° 24.82' E 163° 40.75' Marble Point HLS
ELEV 172FT



LOCATION: McMurdo Dry Valleys, northeast.

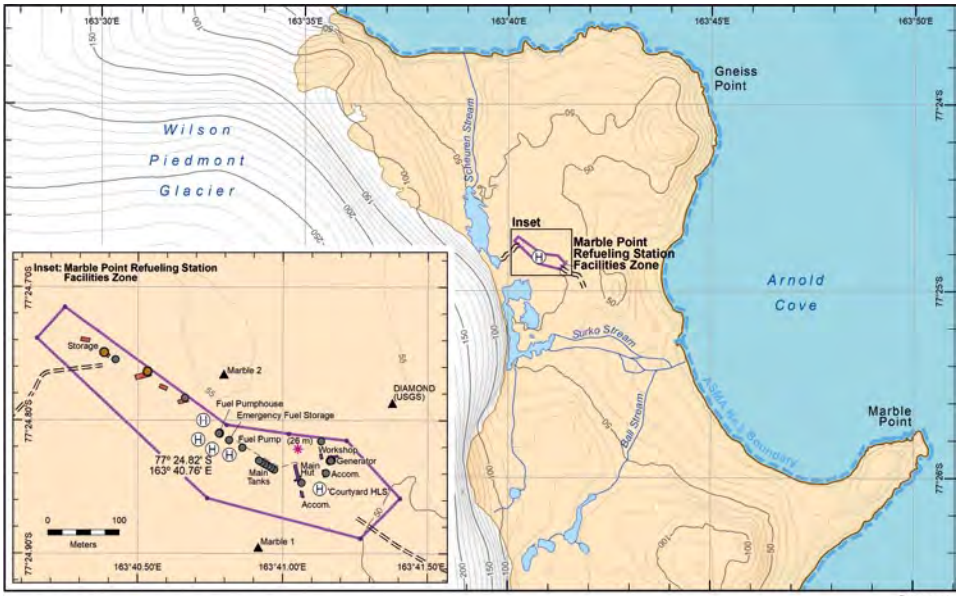
DESCRIPTION: South Polar skua breed at Dunlop Island (~88 pairs), Spike Cape (~62 pairs), Kolich Point (~21 pairs) and at Gneiss Point (~29 pairs). Marble Point Refueling Station Facilities Zone (see EAM11-04-1 below) located between Gneiss Point and Marble Point.

HAZARDS:
APPROACH / DEPARTURE: Refer AFIM.
COMMS: Mac Center: HF 5726 KHz, 6708 KHz, 9032 KHz, 11256 KHz, 13251 KHz; VHF 118.2 MHz
CONTACT: Mac Center.
REMARKS: IBA No.181 identified at Dunlop Island on basis of size of South Polar skua colony.

RESTRICTIONS:

INFORMATION SOURCES and DATES: ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

MARBLE POINT REFUELING STATION Facilities Zone **EAM11-04-1**



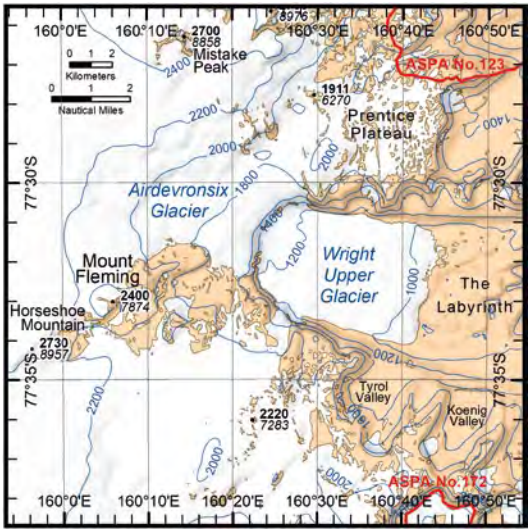
Map 10: Marble Point, McMurdo Sound
Issued 16 Oct 2025
Environmental Research & Assessment

0 500 1000 Meters

N

Data sources:
Lakes, ponds, streams coastline: from WorldView-1 (10 Dec 2014) provided by Polar Geospatial Center (NSF #2129685)
Contours: PGC, derived from WorldView imagery
Contour interval: 10 m; Inset 5 m
Zone boundaries & facilities: USAP (27 Dec 2007)

WRIGHT VALLEY, Upper **EAM11-05**
GRID REF: ELEV
GPS:



LOCATION: McMurdo Dry Valleys, east.

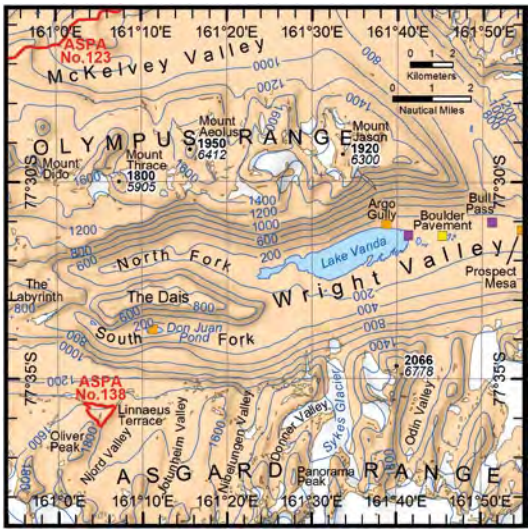
DESCRIPTION: Upper Wright Valley.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Entry to ASPA No.123 prohibited except by permit. Landing / overflight restrictions apply. Entry to ASPA No.172 on glacier surface allowed **except** at Blood Falls. **Consult management plans**.

INFORMATION SOURCES and DATES: ASPA No.123 Barwick & Balham Valleys Management Plan (2023). ASPA No.172 Lower Taylor Glacier & Blood Falls Management Plan (2023). ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

LAKE VANDA **EAM11-06**
GRID REF: ELEV
GPS:

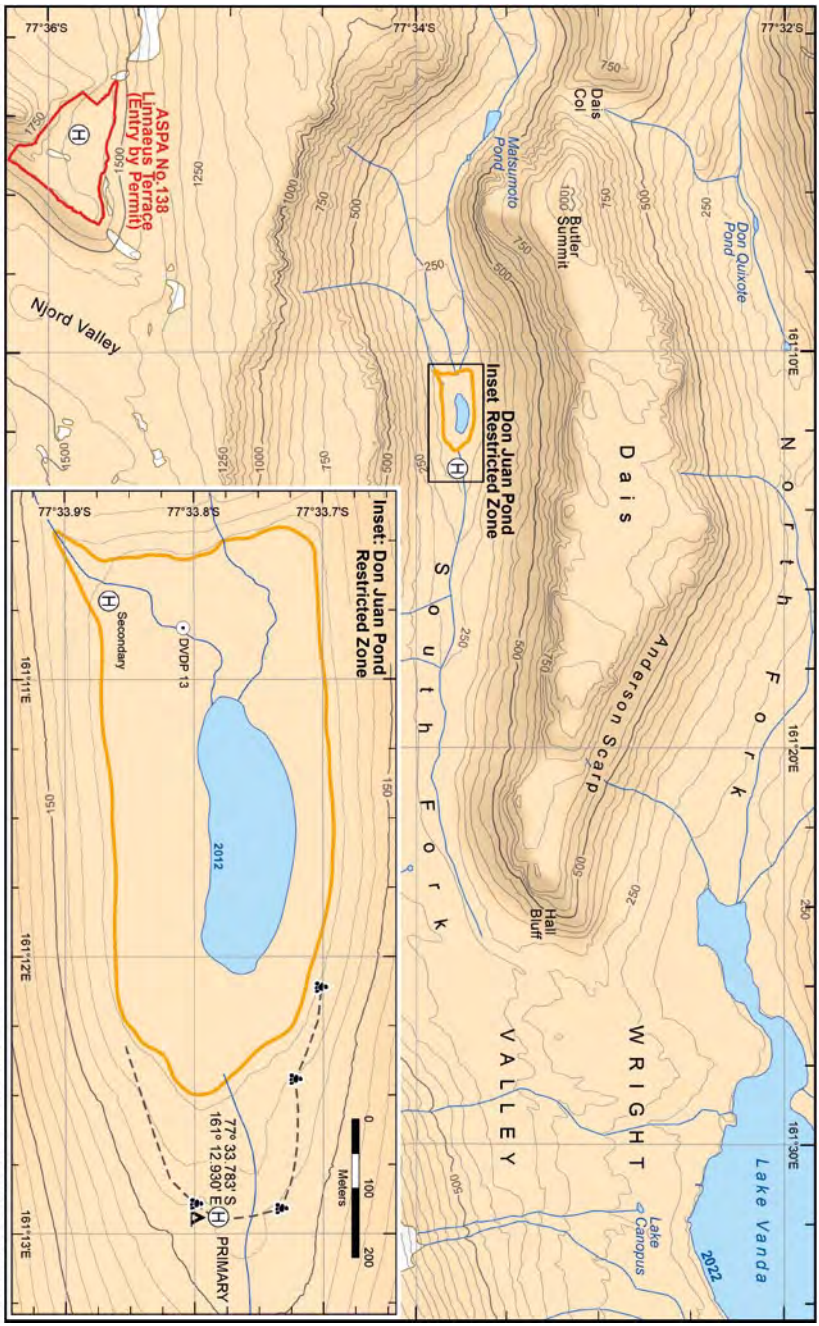


LOCATION: McMurdo Dry Valleys, central.

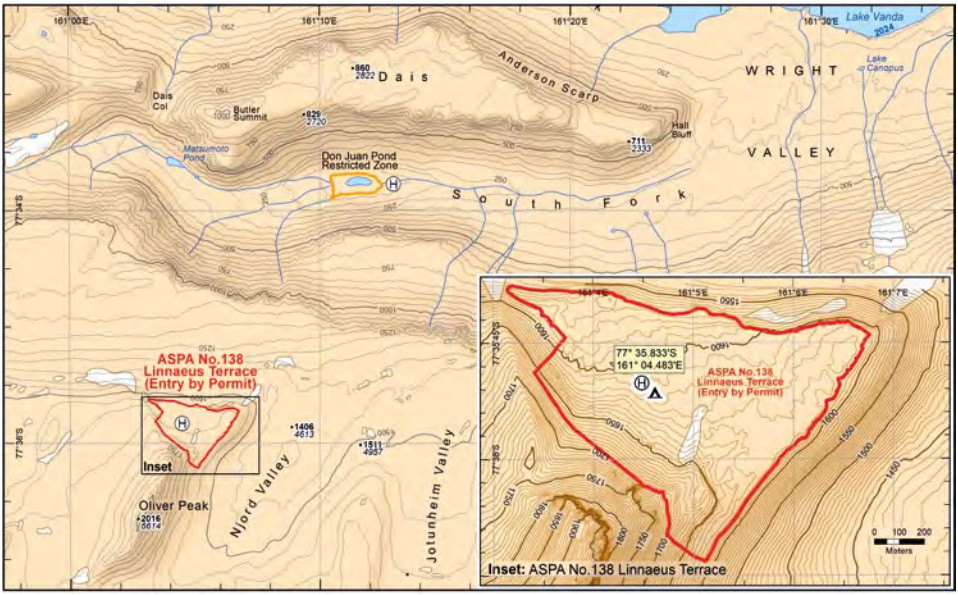
DESCRIPTION: Bull Pass Facilities Zone. Boulder Pavement Scientific Zone. Don Juan Pond, Argo Gully & Prospect Mesa Restricted Zones. Lake Vanda Hut Facilities Zone proposed for delisting due to rising lake level. See EAM11-06-1 to EAM11-06-6.
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Vanda Hut (NZ) removed 2025.
RESTRICTIONS: Entry to ASPA No.123 and ASPA No.138 (EAM11-06-2) prohibited except by permit. Landing / overflight restrictions apply. **Consult management plans**. Prior permission required for entry to Don Juan Pond, Argo Gully, and Prospect Mesa Restricted Zones.

INFORMATION SOURCES and DATES: ASPA No.123 Barwick & Balham Valleys Management Plan (2023). ASPA No.138 Linnaeus Terrace Management Plan (2023). ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

Don Juan Pond, South Fork, Wright Valley, is the most saline water body on Earth and is a Restricted Zone within the McMurdo Dry Valleys ASMA. Prior permission is required for entry. Photo: © C. Harris, ERA, 16 Nov 2024.


Map 18: Don Juan Pond, Wright Valley
Issued 21 Oct 2025
Environmental Research & Assessment
Inset: Don Juan Pond Restricted Zone
Don Juan Pond Inset Restricted Zone
ASPA No.138 Linnaeus Terrace (Entry by Permit)
Njord Valley
Dais Col
Butter Summit
Malsumoto Pond
Don Quixote Pond
Anderson Scarp
Hall Bluff
Lake Vanda
Lake Canopus
WRIGHT VALLEY
Dais
North Fork
South Fork
Secondary
DVDP 13
2012
PRIMARY
77° 33.783' S
161° 12.930' E
Meters
Kilometers
N
Data source: Topography LINZ / USGS 1:50K map series
Contours (finest): from OSU / NASA / USGS 2 m LiDAR DEM
Contour interval: 50 m; inset 10 m
Camp site, HLS, cairn, path: US/NZ fieldwork (Jan 2012)
Restricted Zone digitised from WorldView-2 imagery 2012
(Imagery © 2012 Maxar; supplied by PGC)

LINNAEUS TERRACE Topography & air access **EAM11-06-2**



ASPA No.138 Linnaeus Terrace, Wright Valley.

Issued 05 Dec 2025
Environmental Research & Assessment

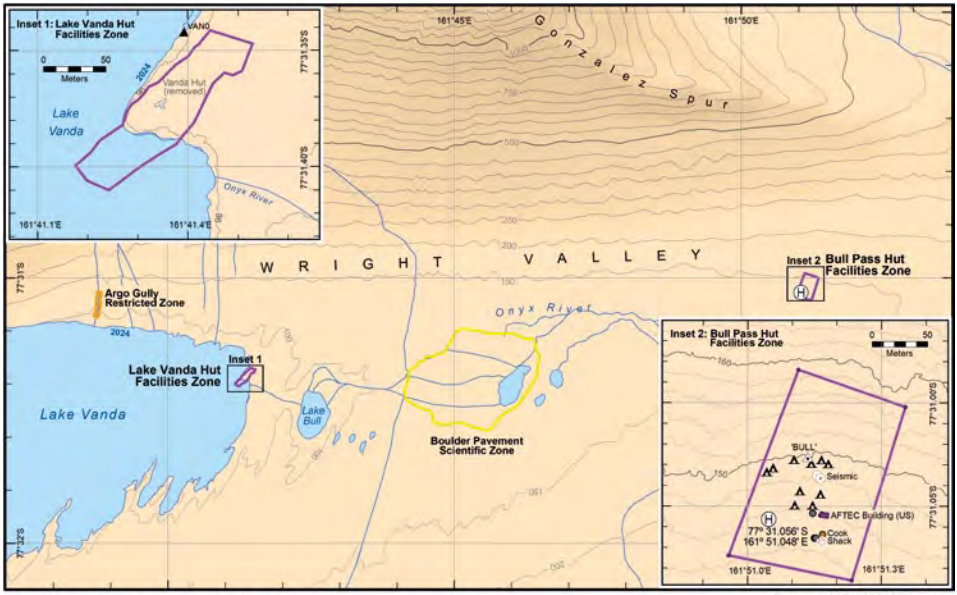
Kilometers

Data source: Topography LINZ / USGS 1:50K map series
Contours (Inset): from digital orthophoto 2 m DEM
Contour interval: 50 m; Inset 10 m
Camp site, HLS - ERA fieldwork (Jan 2012).

Linnaeus Terrace is designated ASPA No.138 to protect fragile cryptoendolithic lichens which colonise sandstone rocks. Wright Upper Glacier in distance. Photo: © C. Harris, ERA, 16 Jan 2012.

LAKE VANDA & BULL PASS Facilities Zones

EAM11-06-3



Map 12: Lake Vanda, Wright Valley

05 Dec 2025
Environmental Research & Assessment

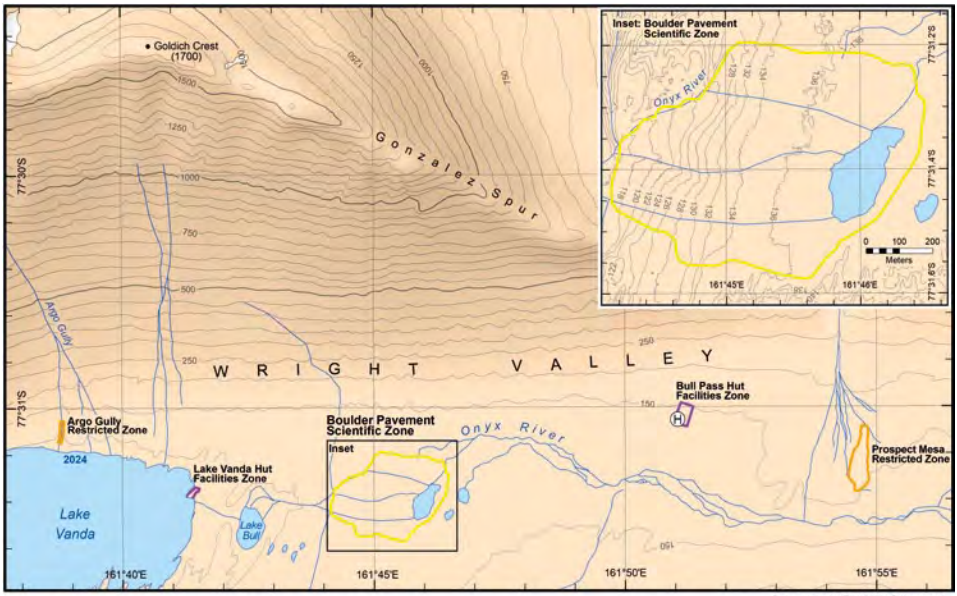
0 500 1000 Meters

N

Data sources: LINZ / USGS 1:50K map series
Lake Vanda: WorldView-2 (01 Feb 2024) supplied by PGC
Streams & other lakes: WorldView-3 (04 Dec 2022)
Inset contours: OSU / NASA / USGS 2 m LiDAR DEM
Contour interval: 50 m; Insets 2 m
Zone boundaries & features: USAP (2024) / Antarctica NZ (2025)

BOULDER PAVEMENT Scientific Zone

EAM11-06-4



Map 15: Boulder Pavement, Wright Valley

Issued 05 Dec 2025
Environmental Research & Assessment

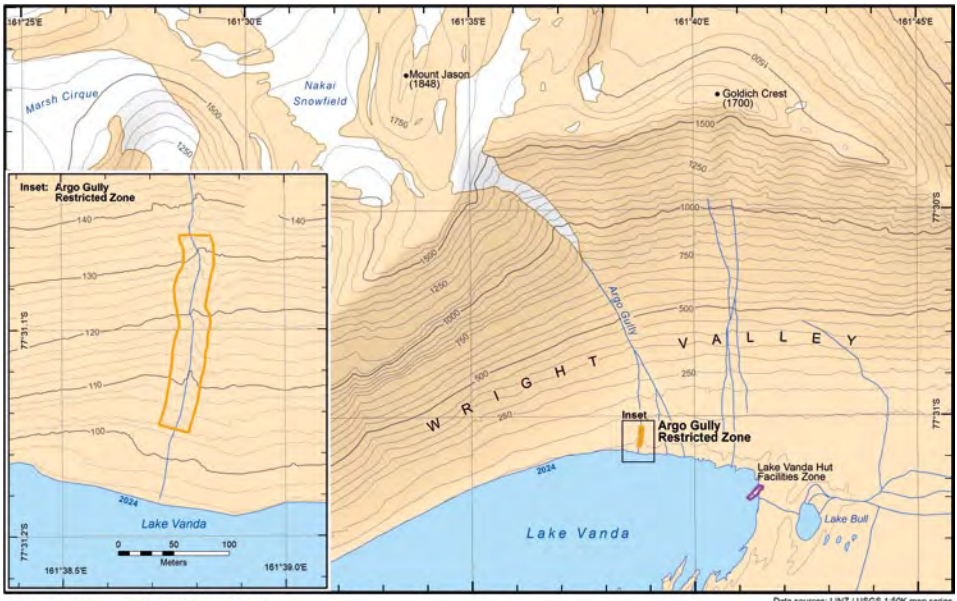
0 500 1000 Meters

N

Data sources: LINZ / USGS 1:50K map series
Lake Vanda: WorldView-2 (01 Feb 2024) supplied by PGC
Streams & other lakes: WorldView-3 (04 Dec 2022)
Inset contours: OSU / NASA / USGS 2 m LiDAR DEM
Contour interval: 50 m; Inset 2 m
Zone boundaries & features: USAP (2024) / Antarctica NZ (2025)

ARGO GULLY Restricted Zone

EAM11-06-5



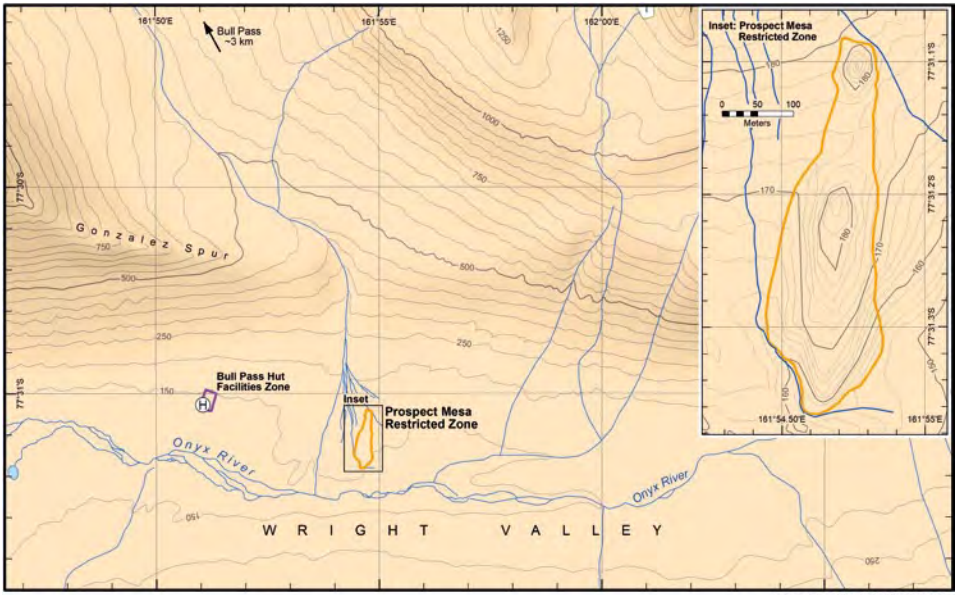
Map 19: Argo Gully, Wright Valley

Issued 05 Dec 2025
Environmental Research & Assessment

Data sources: LINZ / USGS 1:50K map series
Lake Vanda: WorldView-2 (01 Feb 2024)
streams: WorldView-3 (04 Dec 2022) supplied by PGC
Inset contours: OSU / NASA / USGS 2 m LiDAR DEM
Contour interval: 50 m; Inset 2 m
Zone boundaries & features: USAP (2024) / Antarctica NZ (2025)

PROSPECT MESA Restricted Zone

EAM11-06-6



Map 20: Prospect Mesa, Wright Valley

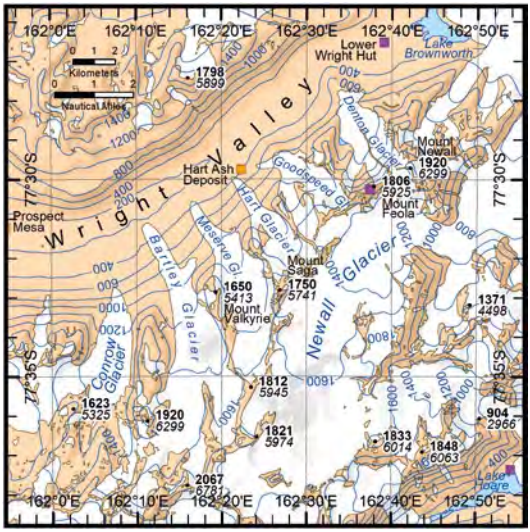
16 Oct 2025
Environmental Research & Assessment

Data sources: LINZ / USGS 1:50K map series
Lakes, ponds & streams: from WorldView-3 (04 Dec 2022) supplied by PGC
Inset contours: OSU / NASA / USGS 2 m LiDAR DEM
Contour interval: 50 m; Inset 2 m
Zone boundaries & features: USAP (30 Jan 2009) / Antarctica NZ

WRIGHT VALLEY, Lower **EAM11-07**

GPS: S 77° 26.537', E 162° 39.070' Lower Wright Hut HLS ELEV ~902 FT

GPS: S 77° 20.295', E 162° 37.340' Mount Newall HLS ELEV ~5740 FT



LOCATION: McMurdo Dry Valleys, central.

DESCRIPTION: Lower Wright Hut Facilities Zone. Mount Newall Facilities Zone. Lake Hoare Camp Facilities Zone (lower-right corner of map), Taylor Valley.

HAZARDS:

APPROACH / DEPARTURE:

COMMS:

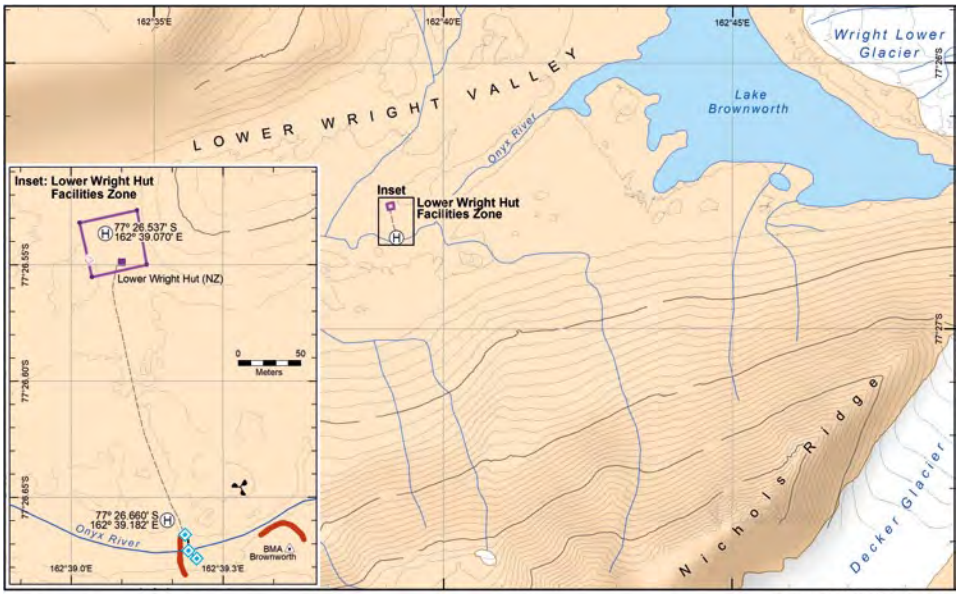
CONTACT:

REMARKS:

RESTRICTIONS: Prior permission required to enter Hart Ash Deposit Restricted Zone.

INFORMATION SOURCES and DATES: ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

LOWER WRIGHT HUT Facilities Zone **EAM11-07-1**



Map 11: Lower Wright Valley

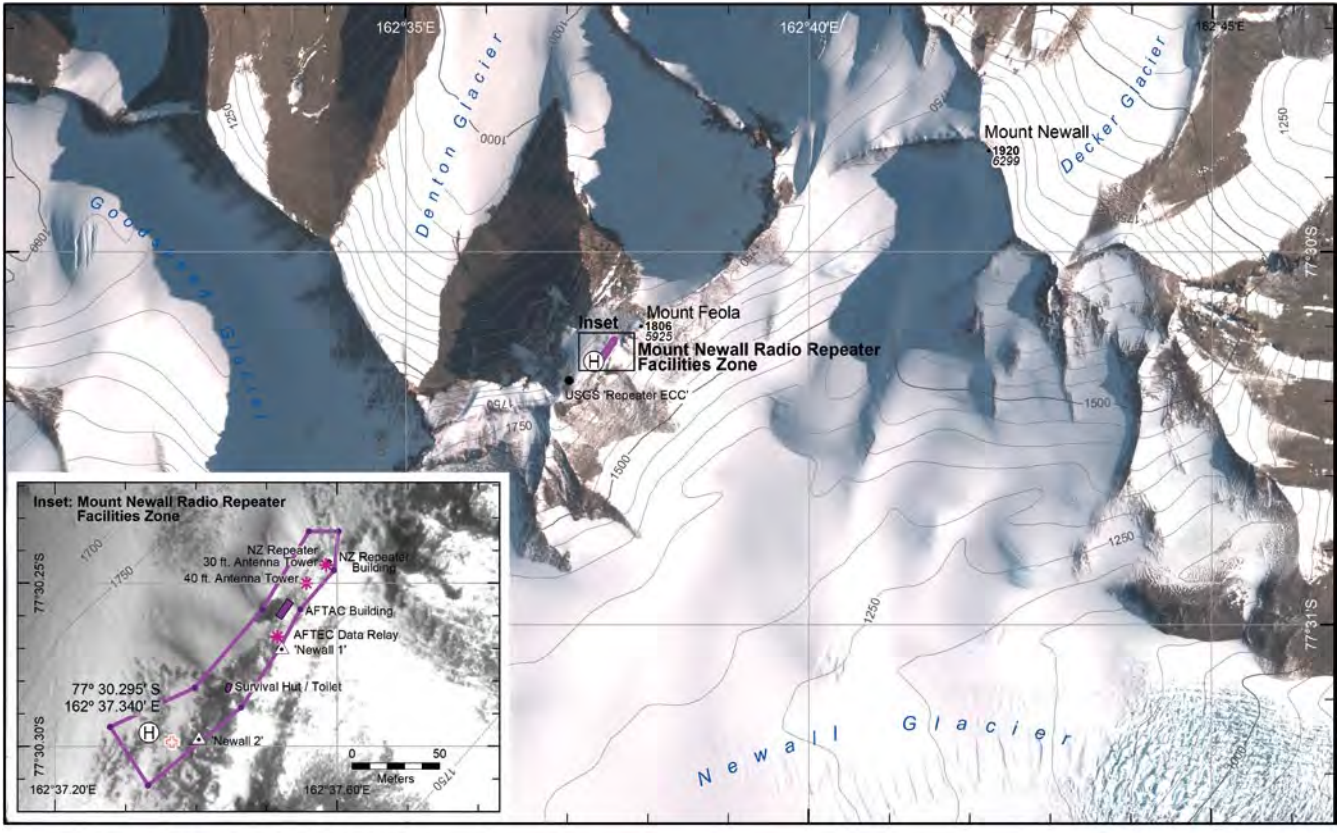
Issued 16 Oct 2025

Environmental Research & Assessment

0 500 1000 Meters

N

Data source: LINZ / USGS 1:50K map series;
Streams edited from Sentinel image 06 Dec 2022
Stream Inset from Quickbird image 09 Jan 2003
Contours: from OSU / NASA / USGS 2 m LiDAR DEM
Contour interval: 20 m; Inset 2 m
Zone boundaries & facilities: USAP (14 Jan 2008)



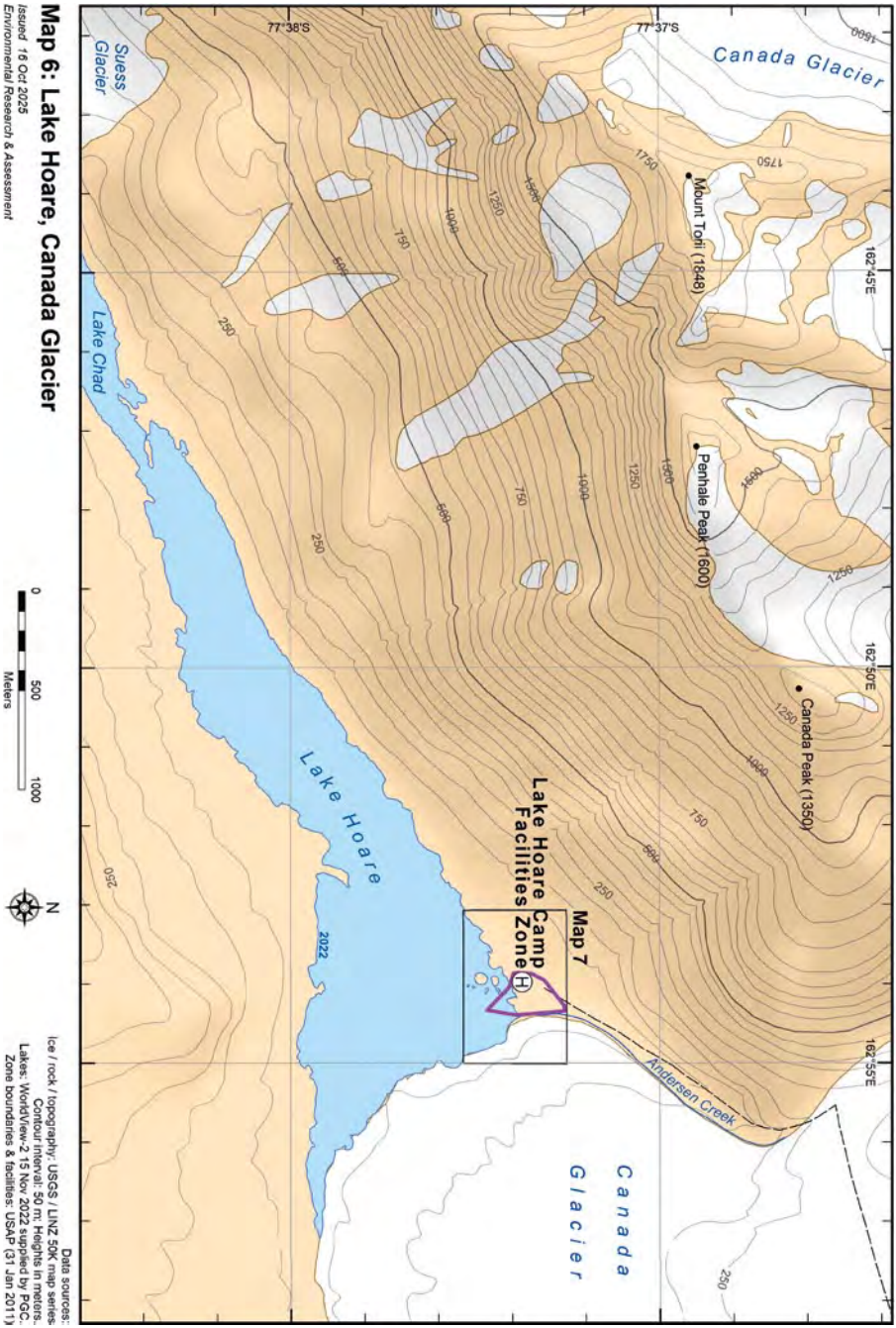
Map 9: Mount Newall, Asgard Range

Issued 16 Oct 2025
Environmental Research & Assessment

0 500 1000
Meters

N

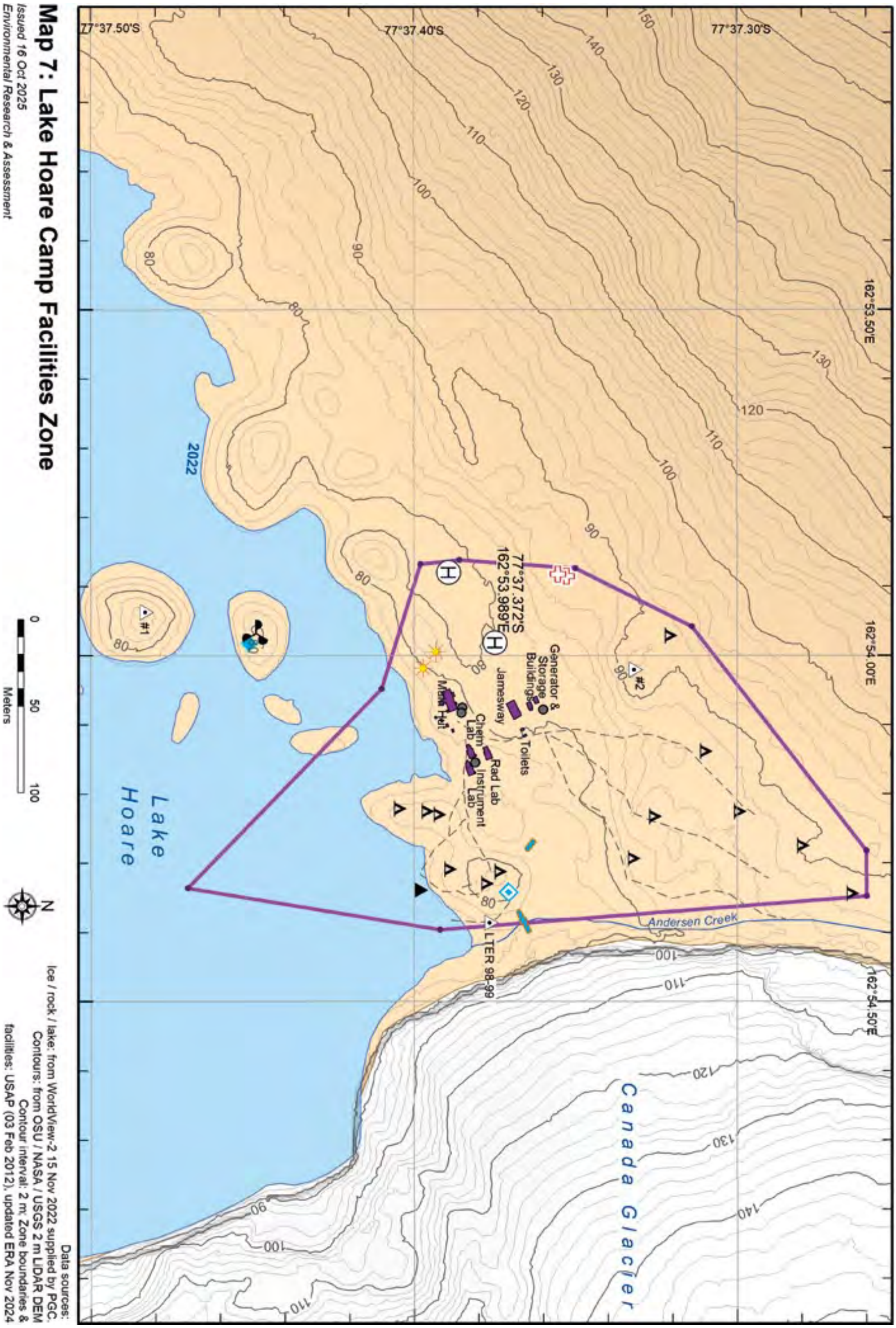
Data source: LINZ / USGS 1:50K map series
Contour interval: 50 m
Spot Heights in **Meters** & *Feet*
Zone boundaries & facilities: USAP (01 Feb 2008)



Map 6: Lake Hoare, Canada Glacier

Issued 16 Oct 2025
Environmental Research & Assessment

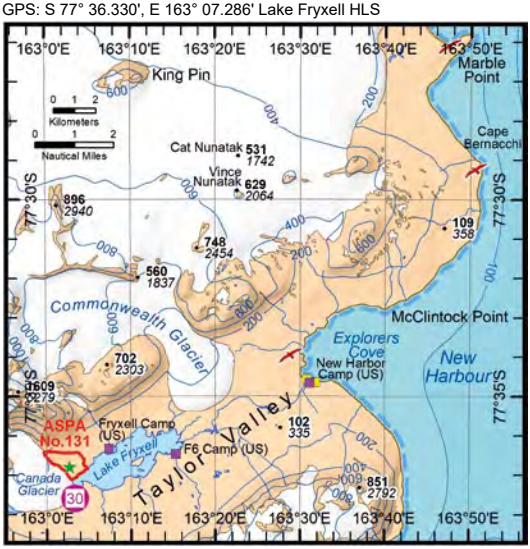
Data sources:
Ice / rock / topography: USGS / LINZ 50K map series
Contour interval: 50 m. Heights in meters.
Lakes: WorldView-2 15 Nov 2022 supplied by PGC.
Zone boundaries & facilities: USAP (31 Jan 2011)


Map 7: Lake Hoare Camp Facilities Zone
Issued 16 Oct 2025
Environmental Research & Assessment
77°37.50'S
77°37.40'S
77°37.30'S
162°53.50'E
162°54.00'E
162°54.50'E
77°37.372'S
162°53.989'E
Generator & Storage Buildings
Jamesway
Toilets
Main Hut
Chem Lab
Rad Lab
Instrument Lab
#1
#2
LTER 98-99
Andersen Creek
Lake Hoare
2022
Canada Glacier
0
50
100
Meters
N
Data sources:
Ice / rock / lake: from WorldView-2 15 Nov 2022 supplied by PGC.
Contours: from OSU / NASA / USGS 2 m LiDAR DEM
Contour interval: 2 m; Zone boundaries &
facilities: USAP (03 Feb 2012), updated ERA Nov 2024

TAYLOR VALLEY, Lower **EAM11-08**

GRID REF: ELEV FT

GPS: S 77° 36.330', E 163° 07.286' Lake Fryxell HLS



LOCATION: McMurdo Dry Valleys, east.

DESCRIPTION: New Harbour, Lake Fryxell and F6 Facilities Zones. Rich moss vegetation at ASPA No.131 Canada Glacier. Visitor Site Guidelines (VSG30) apply at Visitor Zone in lower Taylor Valley. Scientific Zone at New Harbour.

HAZARDS:

APPROACH / DEPARTURE:

COMMS:

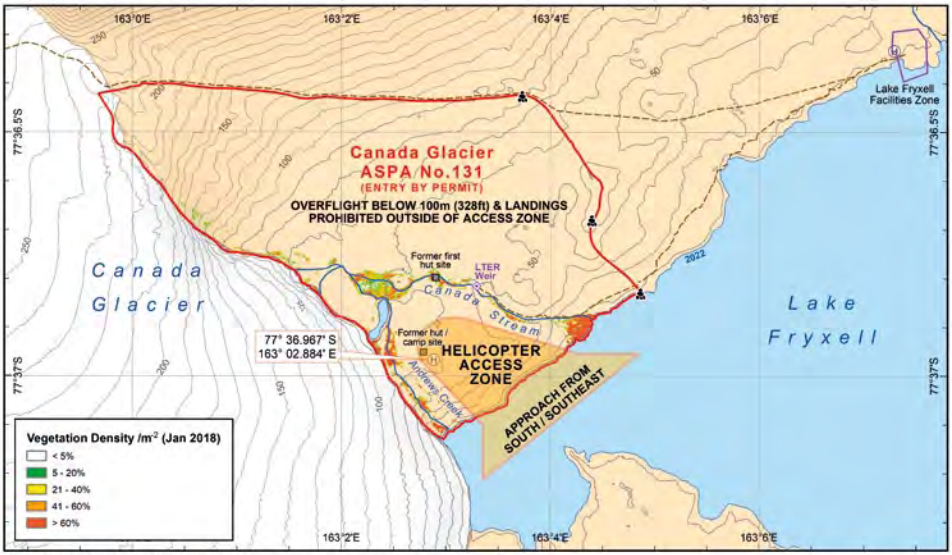
CONTACT:

REMARKS:

RESTRICTIONS: Entry to ASPA No.131 prohibited except by permit. Landing / overflight restrictions apply (see EAM-11-08-1). **Consult management plan**.

INFORMATION SOURCES and DATES: ASPA No.131 Canada Glacier Management Plan (2021). ASMA No.2 McMurdo Dry Valleys Management Plan (2015). Visitor Site Guidelines No.30.

CANADA GLACIER Air Access **EAM11-08-1**



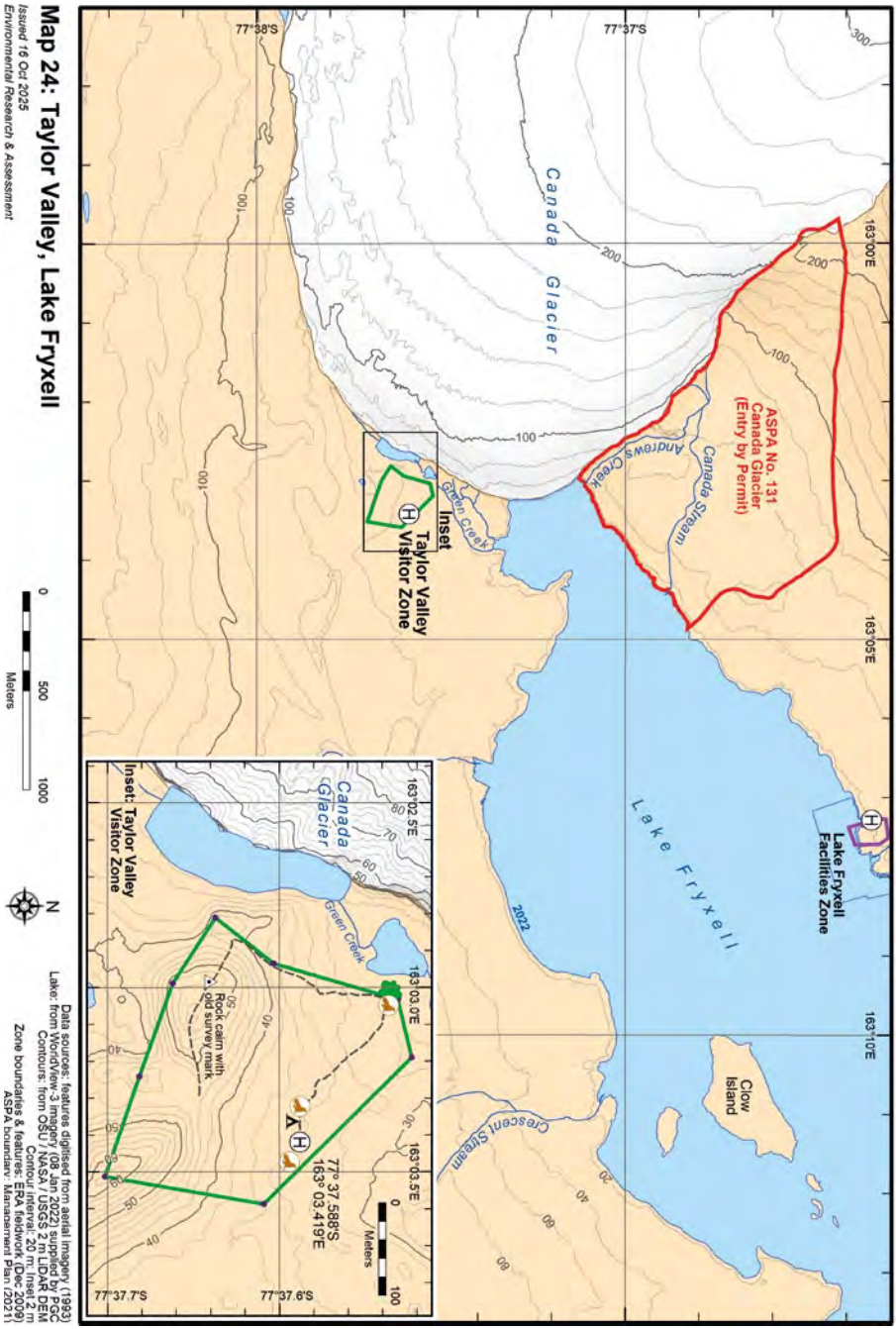
Map 2: ASPA No.131 Canada Glacier Helicopter Access Zone

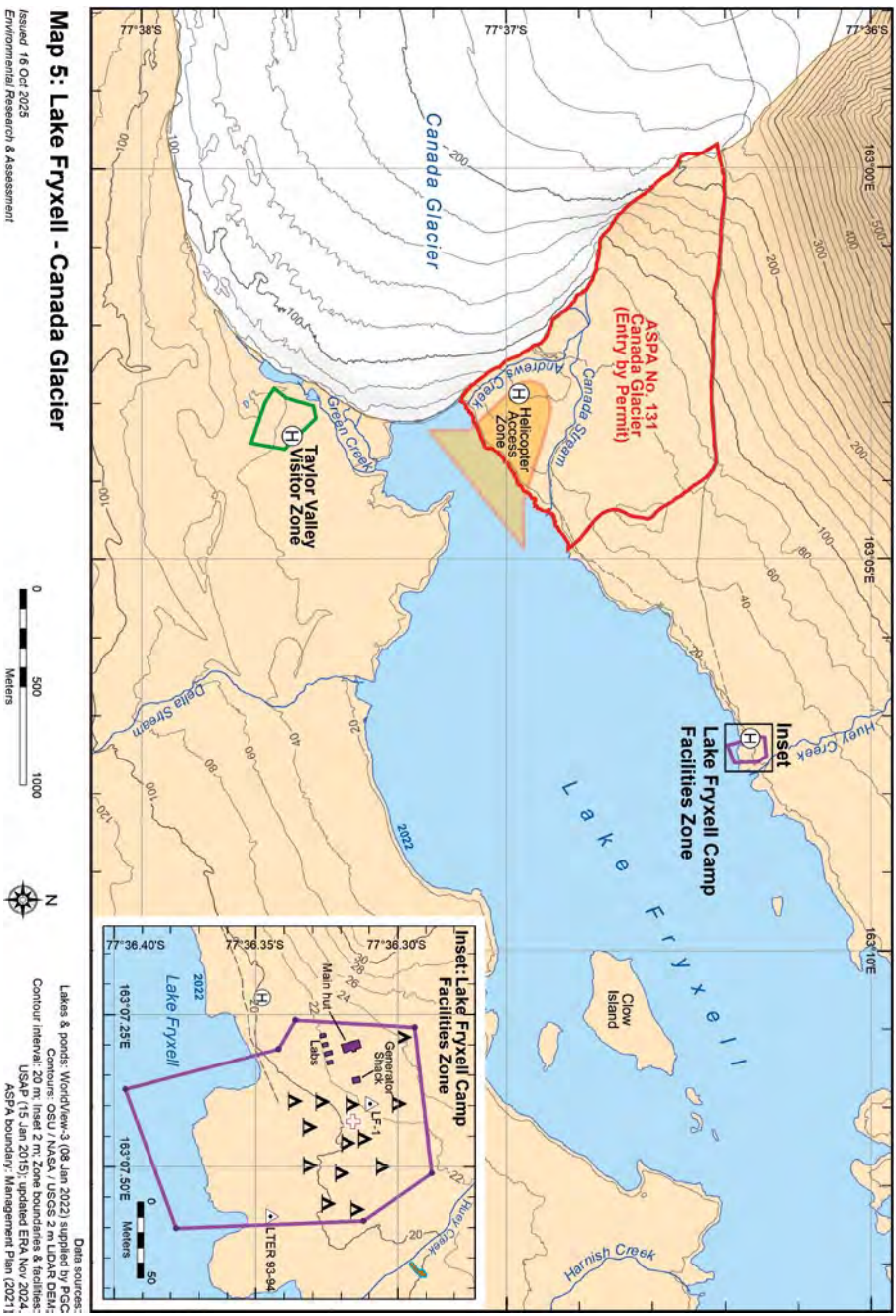
Environmental Research & Assessment
Issued 15 Oct 2025

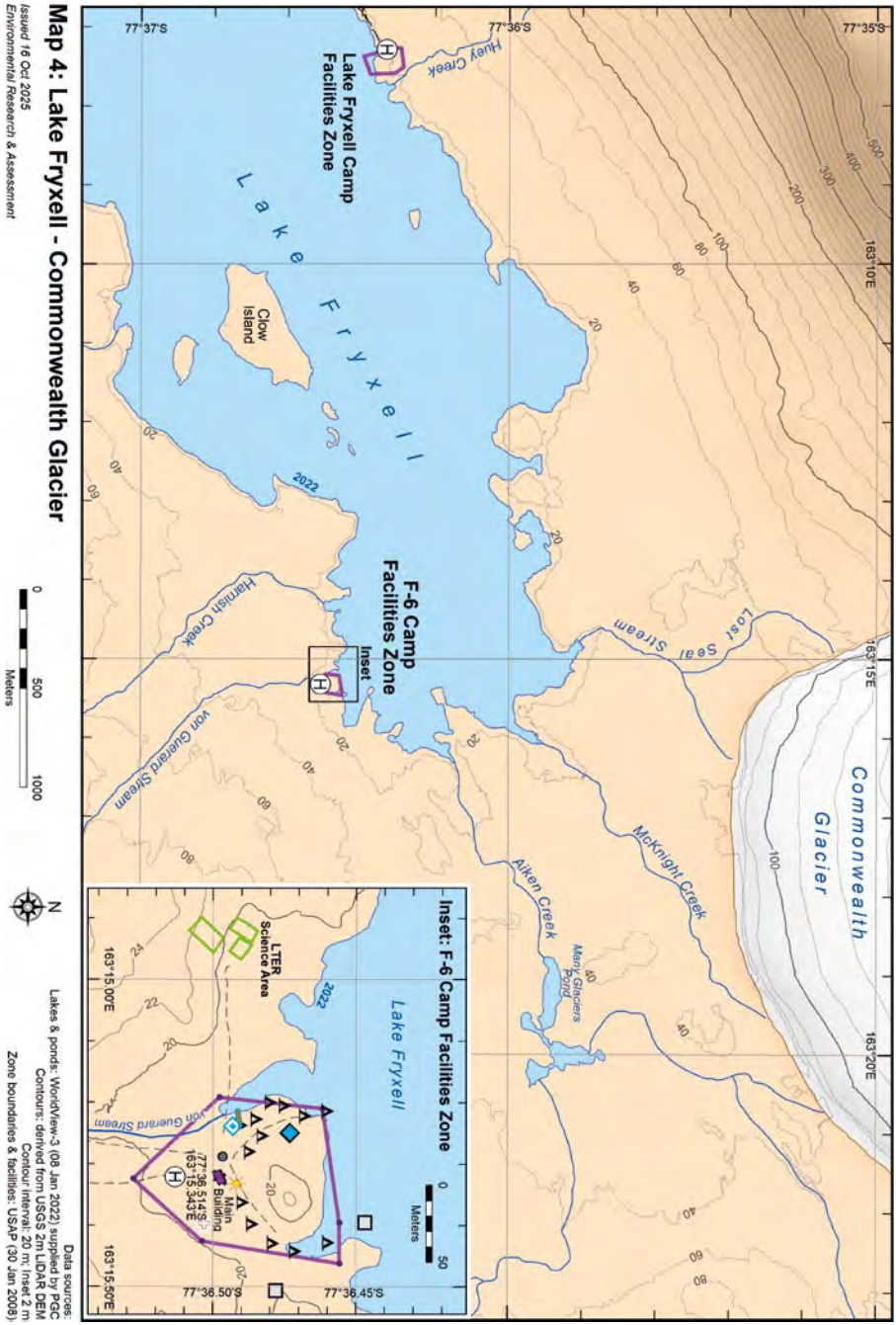
Antarctica New Zealand

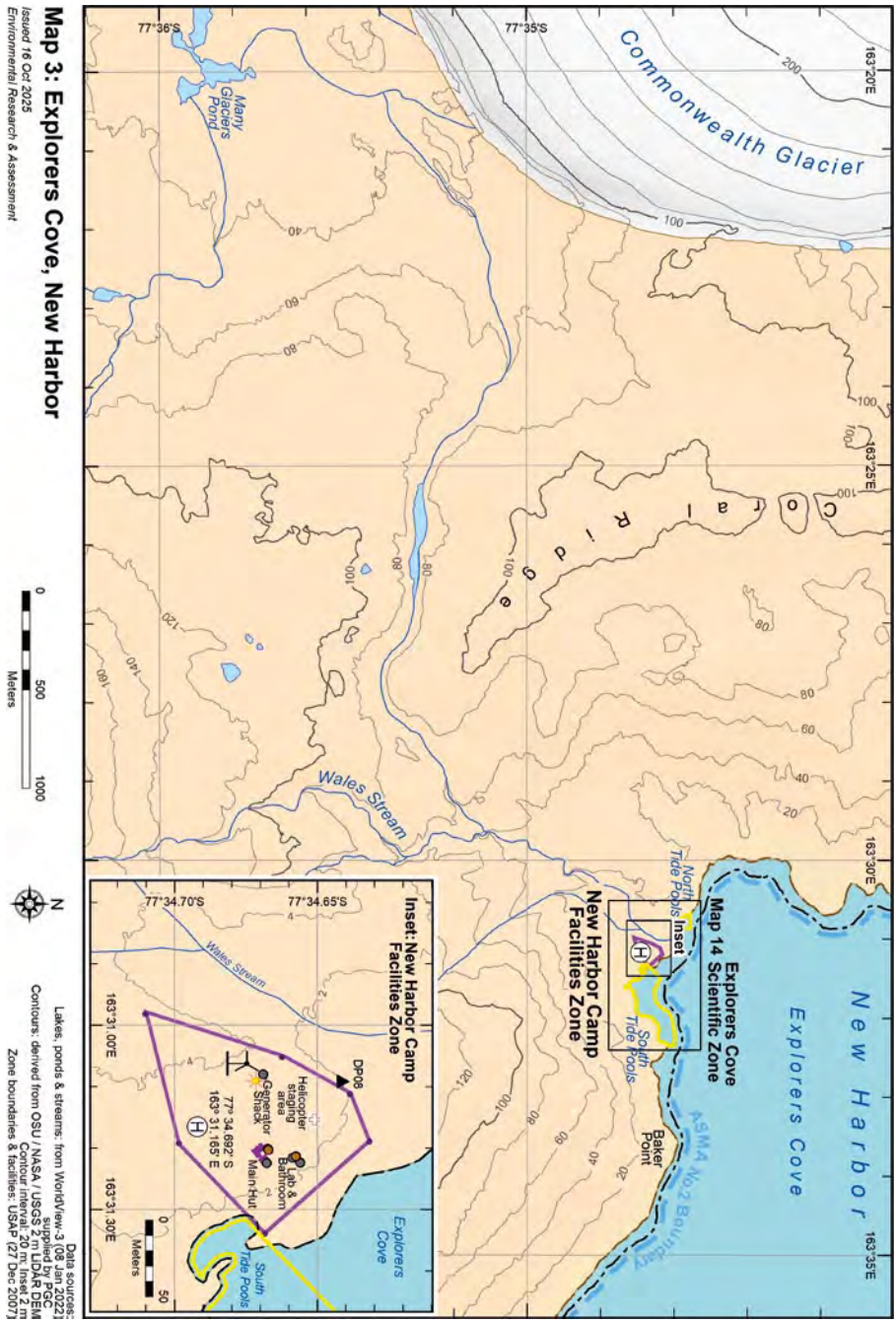
Glacier
Lake / Pond
Contour (10 m)
Stream
Protected Area boundary
Path
Cairn
Weir
Helicopter Access Zone
Helicopter landing site
Former hut / camp site

0 100 200 300 400 500 Metres


Map 24: Taylor Valley, Lake Fryxell
Issued 16 Oct 2025
Environmental Research & Assessment
Canada Glacier
Lake Fryxell
ASPA No. 131
Canada Glacier
(Entry by Permit)
Andrews Creek
Canada Stream
Green Creek
Taylor Valley
Visitor Zone
Inset
Lake Fryxell
Facilities Zone
Clow
Island
Crescent Stream
2022
77°37'S
77°38'S
163°00'E
163°05'E
163°10'E
Inset: Taylor Valley
Visitor Zone
Rock cairn with
old survey mark
77° 37.588'S
163° 03.419'E
77°37.7'S
77°37.6'S
163°02.5'E
163°03.0'E
163°03.5'E
0
500
1000
Meters
0
100
Meters
N
Data sources: features digitised from aerial imagery (1993)
Lake: from WorldView-3 imagery (08 Jan 2022) supplied by PGC
Contours: from OSU Contour interval: 20 m; Inset 2 m
Zone boundaries & features: ERA fieldwork (Dec 2009)
ASPA boundary: Management Plan (2021)


Map 5: Lake Fryxell - Canada Glacier
Issued 16 Oct 2025
Environmental Research & Assessment
Canada Glacier
ASPA No. 131
Canada Glacier
(Entry by Permit)
Helicopter Access Zone
Andrews Creek
Canada Stream
Green Creek
Taylor Valley Visitor Zone
Delta Stream
Lake Fryxell Camp Facilities Zone
Inset
Huey Creek
Lake Fryxell
Clow Island
Harnish Creek
Inset: Lake Fryxell Camp Facilities Zone
Main hut
Labs
Generator Shack
LF-1
LTER 93-94
77°38'S
77°37'S
77°36'S
163°00'E
163°05'E
163°10'E
77°36.40'S
77°36.35'S
77°36.30'S
163°07.25'E
163°07.50'E
0
500
1000
Meters
0
50
Meters
N
Data sources:
Lakes & ponds: WorldView-3 (08 Jan 2022) supplied by PGC
Contours: OSU / NASA / USGS 2 m LiDAR DEM;
Contour interval: 20 m; Inset 2 m; Zone boundaries & facilities:
USAP (15 Jan 2015); updated ERA Nov 2024.
ASPA boundary: Management Plan (2021)


Map 4: Lake Fryxell - Commonwealth Glacier
Issued 16 Oct 2025
Environmental Research & Assessment
Lake Fryxell Camp Facilities Zone
F-6 Camp Facilities Zone
Inset
Lake Fryxell
Clow Island
2022
Huey Creek
Lost Seal Stream
Hanlon Creek
von Guerard Stream
McKnight Creek
Aiken Creek
Marie Glaciers Pond
Commonwealth Glacier
77°37'S
77°36'S
77°35'S
163°10'E
163°15'E
163°20'E
0
500
1000
Meters
N
Inset: F-6 Camp Facilities Zone
LTER Science Area
Main Building
(77°36.514'S 163°15.343'E)
77°36.50'S
77°36.45'S
163°15.00'E
163°15.50'E
0
50
Meters
Data sources:
Lakes & ponds: WorldView-3 (08 Jan 2022) supplied by PGC
Contours: derived from USGS 2m LiDAR DEM
Contour interval: 20 m; Inset 2 m
Zone boundaries & facilities: USAP (30 Jan 2008)


Map 3: Explorers Cove, New Harbor
Issued 16 Oct 2025
Environmental Research & Assessment
Commonwealth Glacier
Mary Glacier Pond
Wales Stream
Explorers Cove
New Harbor
Map 14 Scientific Zone
New Harbor Camp Facilities Zone
Inset
North Tide Pools
South Tide Pools
Baker Point
ASMA No.2 Boundary
Inset: New Harbor Camp Facilities Zone
Helicopter landing area
Generator Shack
Main Hut
Lab & Bathroom
DP08
77° 34.692' S
163° 31.165' E
77°36'S
77°35'S
77°34.70'S
77°34.65'S
163°20'E
163°25'E
163°30'E
163°35'E
163°31.00'E
163°31.30'E
0
500
1000
Meters
50
N
Data sources:
Lakes, ponds & streams: from WorldView-3 (08 Jan 2022) supplied by PGC
Contours: derived from OSU / NASA / USGS 2 m LiDAR DEM
Contour interval: 20 m. Inset 2 m
Zone boundaries & facilities: USAP (27 Dec 2007)

DEPOT NUNATAK **EAM11-09**

GRID REF: ELEV FT

GPS:

LOCATION: McMurdo Dry Valleys, west.

DESCRIPTION: Upper Taylor Glacier.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

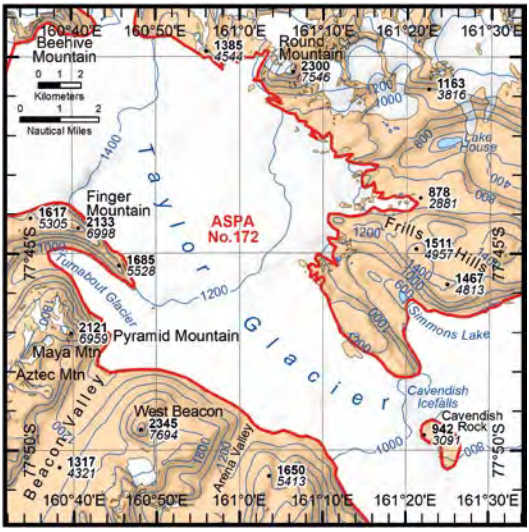
RESTRICTIONS: Entry to ASPA No.172 on glacier surface allowed **except** at Blood Falls where entry is prohibited except by permit. Entry to sub-glacial environment within ASPA No.172 is prohibited except by permit. **Consult management plan**.

INFORMATION SOURCES and DATES: ASPA No.172 Lower Taylor Glacier & Blood Falls Management Plan (2023). ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

TAYLOR VALLEY, Upper **EAM11-10**

GRID REF: ELEV

GPS:



LOCATION: McMurdo Dry Valleys, west.

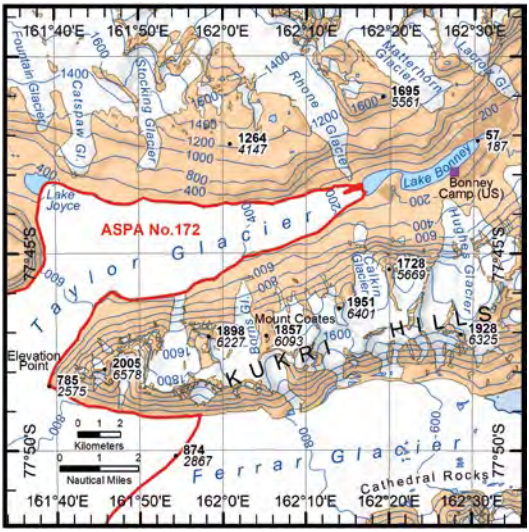
DESCRIPTION: Taylor Glacier.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Entry to ASPA No.172 on glacier surface allowed **except** at Blood Falls where entry is prohibited except by permit. Entry to sub-glacial environment within ASPA No.172 is prohibited except by permit. **Consult management plan**.

INFORMATION SOURCES and DATES: ASPA No.172 Lower Taylor Glacier & Blood Falls Management Plan (2023). ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

LAKE BONNEY **EAM11-11**
GRID REF: ELEV ~262 FT
GPS: S 77°42.95', E 162° 27.65' Lake Bonney HLS



LOCATION: McMurdo Dry Valleys, central.

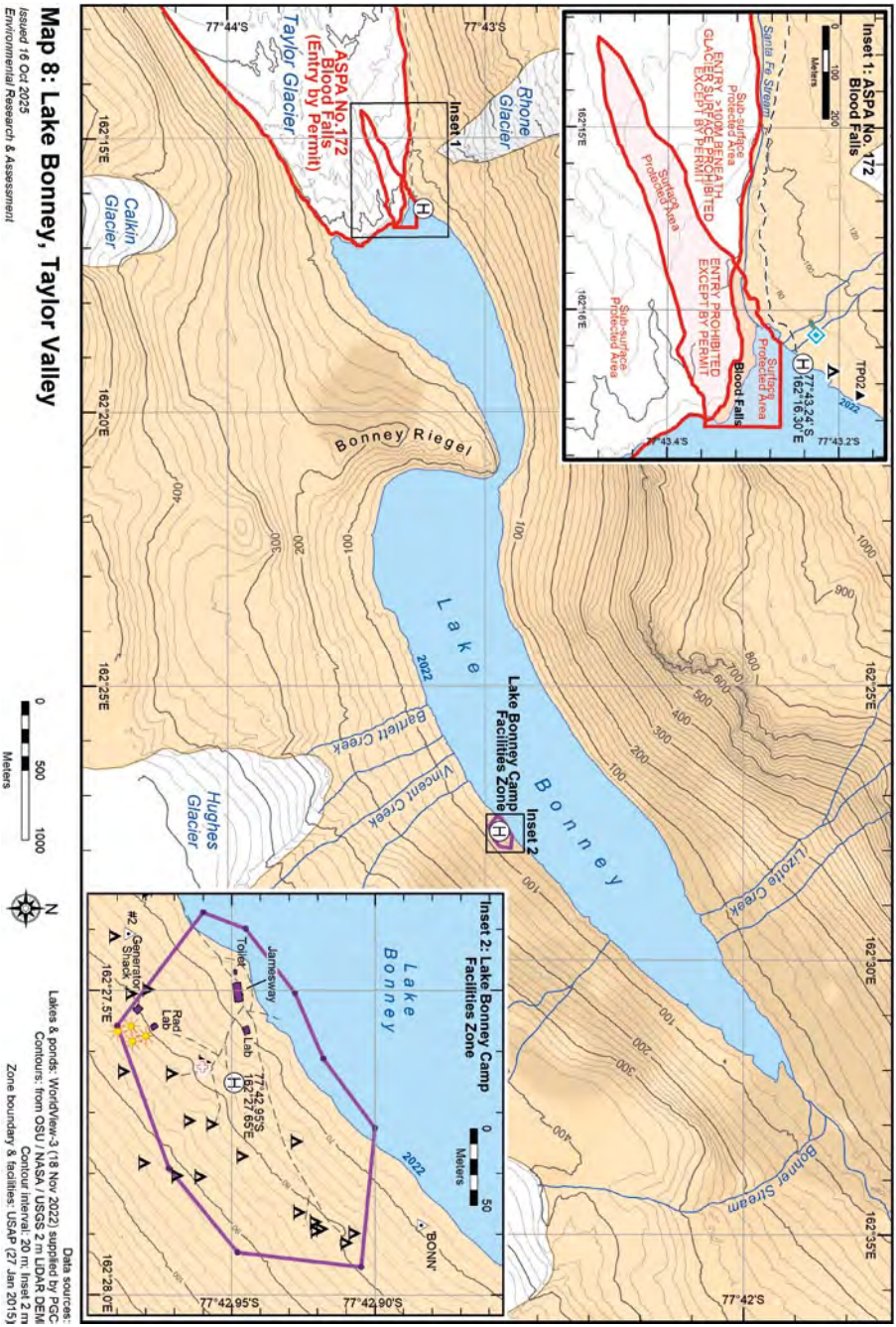
DESCRIPTION: Lake Bonney Facilities Zone on south shore of Lake Bonney.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Entry to ASPA No.172 on glacier surface allowed **except** at Blood Falls where entry is prohibited except by permit. Entry to sub-glacial environment within ASPA No.172 is prohibited except by permit. **Consult management plan.**

INFORMATION SOURCES and DATES:
ASPA No.172 Lower Taylor Glacier & Blood Falls Management Plan (2023). ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

Blood Falls, lowerTaylor Glacier, is designated ASPA No.172. The site protects an unusual iron-rich reddish discharge at the terminus and associated subglacial features.
Photo: © C. Harris, ERA, 09 Nov 2024.


Map 8: Lake Bonney, Taylor Valley
Issued 16 Oct 2025
Environmental Research & Assessment
Inset 1: ASPA No. 172 Blood Falls
Inset 2: Lake Bonney Camp Facilities Zone
ASPA No.172 Blood Falls (Entry by Permit)
Taylor Glacier
Rhone Glacier
Calkin Glacier
Hughes Glacier
Bonney Riegel
Lake Bonney
Bartlett Creek
Vincent Creek
Lizotte Creek
Bonner Stream
Santa Fe Stream
Blood Falls
Sub-surface Protected Area
Surface Protected Area
ENTRY PROHIBITED EXCEPT BY PERMIT
ENTRY PROHIBITED BENEATH GLACIER SURFACE EXCEPT BY PERMIT
TP02
2022
77°43.24'S 162°16.30'E
Jamesway
Toilet
Lab
Rad Lab
#2 Generator Shack
'BONN'
77°42.95'S 162°27.85'E
77°42.90'S
77°42'S
77°43'S
77°44'S
162°15'E
162°20'E
162°25'E
162°30'E
162°35'E
162°27.5'E
162°28.0'E
Meters
N
Data sources:
Lakes & ponds: WorldView-3 (18 Nov 2022) supplied by PGC
Contours: from OSU / NASA / USGS 2 m LIDAR DEM
Contour interval: 20 m; Inset 2 m
Zone boundary & facilities: USAP (27 Jan 2015)

FERRAR GLACIER, Lower **EAM11-12**
GRID REF: ELEV FT
GPS:

LOCATION: McMurdo Dry Valleys, east.

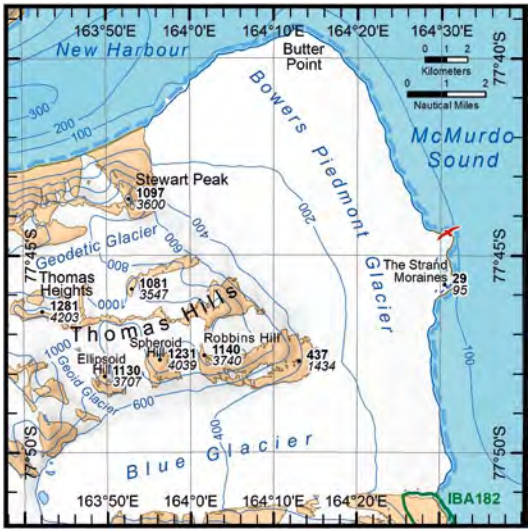
DESCRIPTION: The lower Ferrar Glacier flows between the Kukri Hills and the Stratton Hills.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES: ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

BOWERS PIEDMONT GLACIER **EAM11-13**
GRID REF: ELEV FT
GPS:



LOCATION: McMurdo Dry Valleys, east.

DESCRIPTION: ~153 pairs of South polar skua breed at The Strand Moraines.

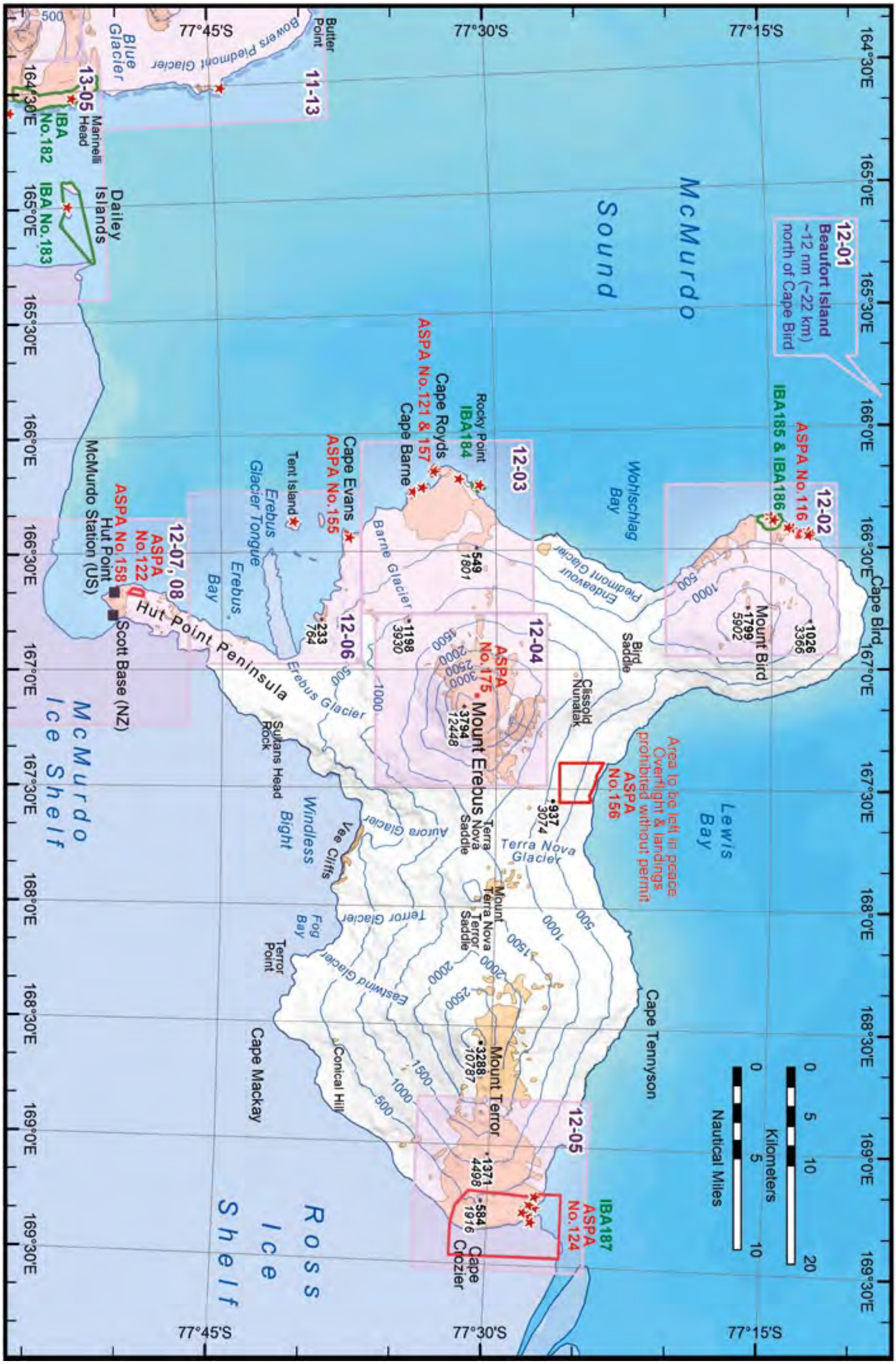
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBA No.182 south of Blue Glacier identified on basis of size of South Polar skua colony.

RESTRICTIONS:

INFORMATION SOURCES and DATES: ASMA No.2 McMurdo Dry Valleys Management Plan (2015). Ainley *et al*. 1986.

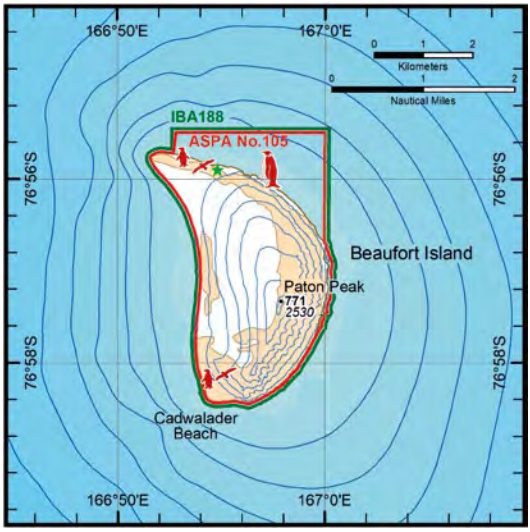
ENVIRONMENTAL AWARENESS MAPS

EAM12: ROSS ISLAND


McMurdo Sound
McMurdo Ice Shelf
Ross Ice Shelf
12-01
Beaufort Island
~12 nm (~22 km) north of Cape Bird
12-02
ASPA No.116
IBA185 & IBA186
Cape Bird
Mount Bird
•1026
3366
•1799
5902
Lewis Bay
Area to be left in peace.
Overflight & landings prohibited without permit.
ASPA No.156
Bird Saddle
Wohlschlag Bay
Endeavour Piedmont Glacier
Clissold Nunatak
•937
3074
Terra Nova Glacier
12-03
Rocky Point
IBA184
Cape Royds
ASPA No.121 & 157
Cape Barne
Barne Glacier
•549
1801
12-04
ASPA No.175
Mount Erebus
•3794
12448
•1198
3930
Cape Evans
ASPA No.155
Tent Island
Erebus Glacier Tongue
Erebus Bay
12-06
•233
764
Erebus Glacier
12-07, 08
ASPA No.122
ASPA No.158
Hut Point
McMurdo Station (US)
Scott Base (NZ)
Hut Point Peninsula
Sultans Head Rock
Windless Bight
Vee Cliffs
Aurora Glacier
Terra Nova Saddle
Mount Terra Nova
Terror Saddle
Terror Glacier
Fog Bay
Terror Point
Eastwind Glacier
Conical Hill
Cape Mackay
Mount Terror
•3288
10787
Cape Tennyson
12-05
•1371
4498
•584
1916
Cape Crozier
IBA187
ASPA No.124
11-13
Butter Point
Bowers Piedmont Glacier
Blue Glacier
13-05
Marinelli Head
IBA No.182
Dailey Islands
IBA No.183
Kilometers
0 5 10 20
Nautical Miles
0 5 10
77°15'S
77°30'S
77°45'S
164°30'E
165°0'E
165°30'E
166°0'E
166°30'E
167°0'E
167°30'E
168°0'E
168°30'E
169°0'E
169°30'E

BEAUFORT ISLAND
GRID REF:
GPS: S 76° 55.15' E 166° 52.083' designated HLS

EAM12-01
ELEV ~100 FT



LOCATION: ~22 km (~12 nm) north of Cape Bird, Ross Island.

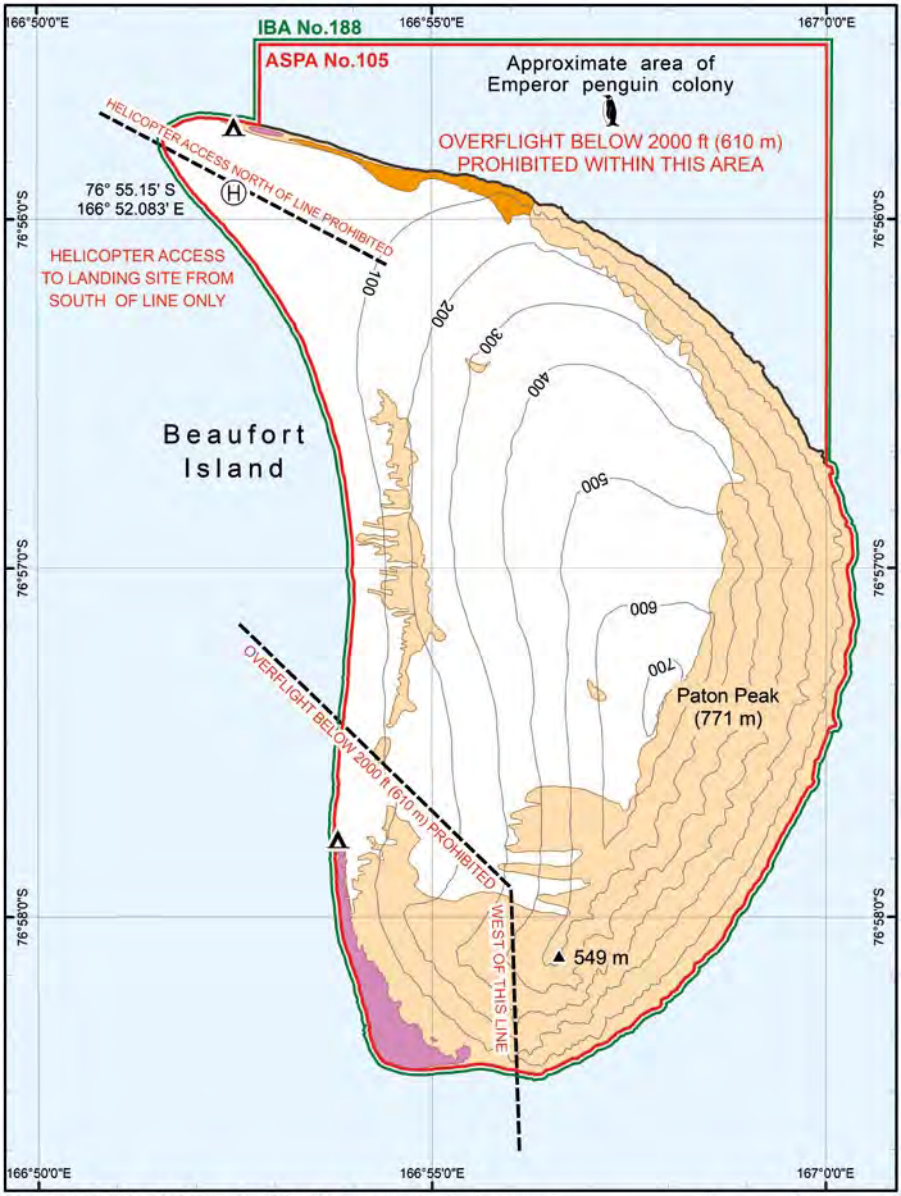
DESCRIPTION: Large Adélie penguin colony (~70,468 pairs) on SW coast and ~989 pairs on northern coast (2013/14). Emperor penguin colony (~400-800 pairs in recent counts) breeds on sea ice close to NE coast. South Polar skua breed on both the northern and southern coasts. Rich moss vegetation on lower northern slopes.

HAZARDS:
APPROACH / DEPARTURE: See EAM12-01-1.
COMMS:
CONTACT:
REMARKS: IBA No.188 identified on basis of size of Adélie penguin colony.

RESTRICTIONS: Entry to ASPA No.105 Beaufort Island prohibited except by permit. Landing / overflight restrictions apply. See EAM12-01-1. **Consult Management Plan**.

INFORMATION SOURCES and DATES:
ASPA No.105 Beaufort Island Management Plan (2021). Antarctica NZ *et al*. (2023).

Beaufort Island, viewed from the west. The main Adélie penguin colony is situated on Cadwalader Beach at the base of cliffs at right of photo (south). The Emperor penguin colony breeds on sea ice beyond the low point at left (north). Photo: © C. Harris, ERA, 03 Dec 2009.



Map 1: ASPA No. 105 Beaufort Island - topography & air access

11 Dec 2023 (v3.1)
Antarctica New Zealand
Environmental Research & Assessment

Antarctica New Zealand

Permanent ice
Ice free ground
Contour (100 m)
Coastline
ASPA boundary
Important Bird Area (IBA)
Adélie penguin colony
Skua nesting
Helicopter Landing Site
Designated campsite
Astro survey station

0 0.5 1
Kilometres

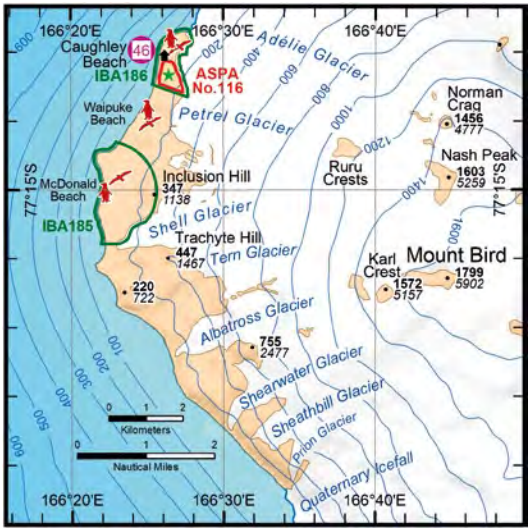
Projection: Lambert Conformal Conic
Spheroid and horizontal datum: WGS84
Data sources: ASPA boundary, topography & infrastructure data supplied by Antarctica New Zealand (2019)

CAPE BIRD HUT **EAM12-02**

GRID REF:

GPS: S 77° 13.095', E 166° 26.157' Primary HLS

ELEV ~79 FT



LOCATION: Ross Island, NW coast ~70 km (~38 nm) north of NSF McMurdo Station.

DESCRIPTION: Adélie penguin breed in three main colonies: North (44,983), Middle (4060), South (15,376), comprising ~64,419 pairs (2016-21). ~300 pairs South polar skua breed across icefree area. ASPA No.116 protected for rich vegetation. Cape Bird Hut located at Caughley Beach. Note: Cape Bird is located ~9 km NE on the northern coast of Ross Island.

HAZARDS:

APPROACH / DEPARTURE: see EAM12-02-1.

COMMS:

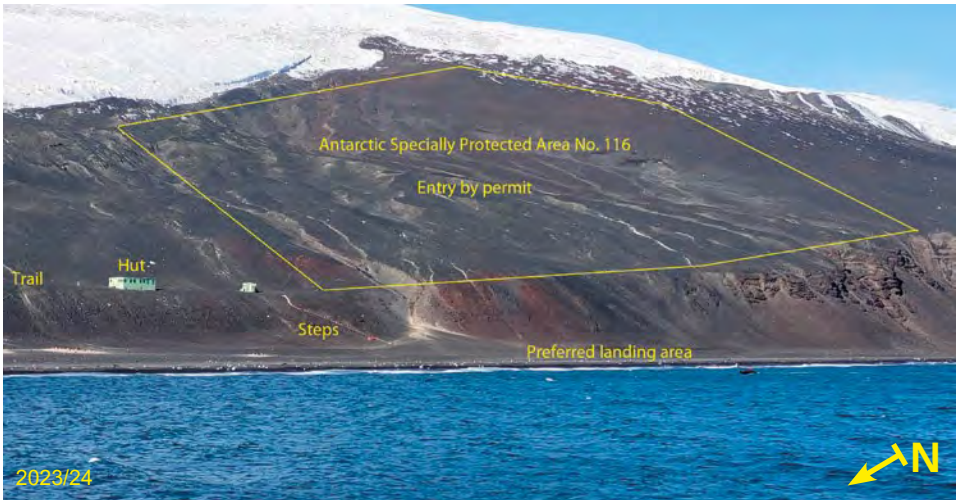
CONTACT:

REMARKS: IBAs No.185 and 186 identified on basis of size of Adélie penguin and South Polar skua colonies. Visitor Site Guidelines (Site No.46) apply at Northern colony (see EAM12-02-1). Preferred landing area for small boats on Caughley Beach.

INFORMATION SOURCES and DATES:

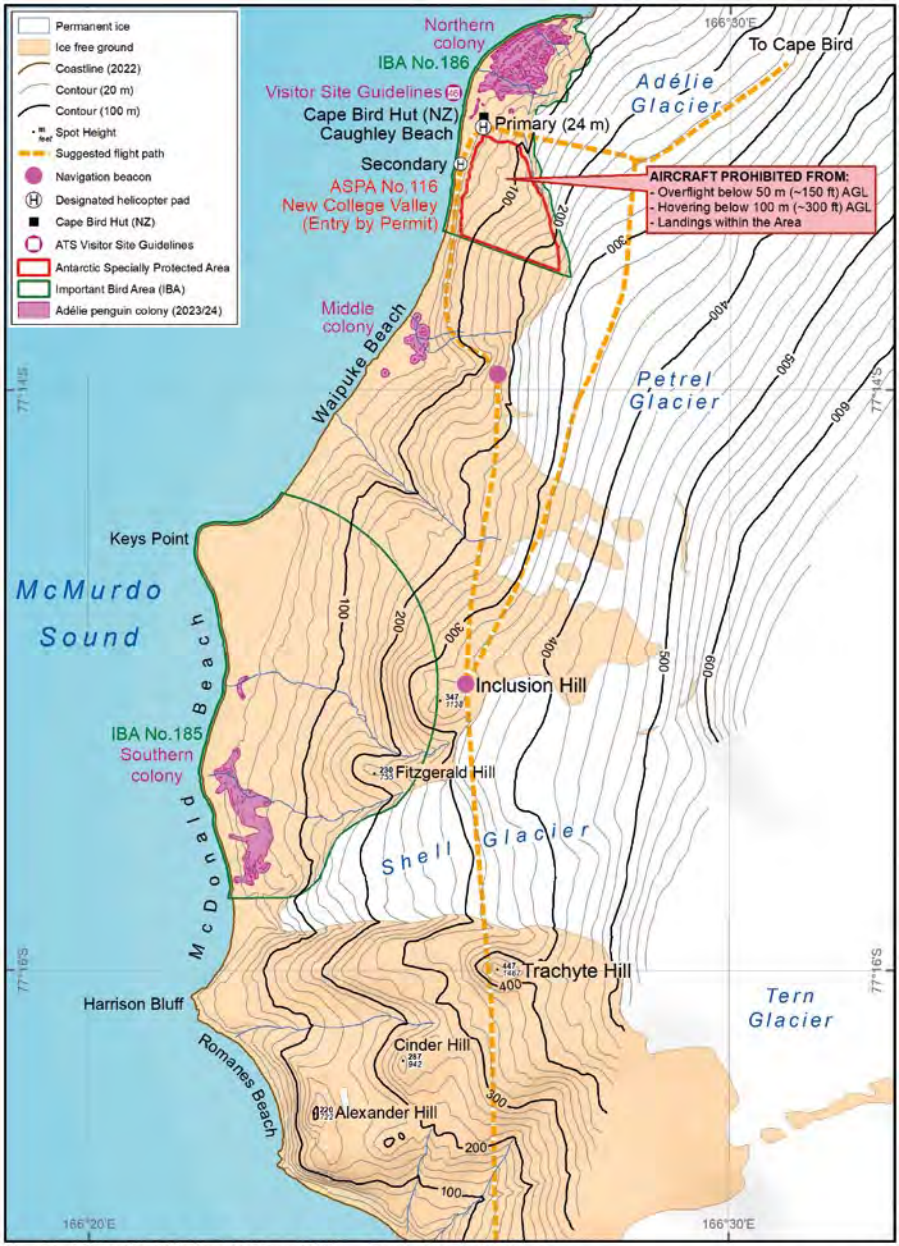
ASPA No.116 New College Valley Management Plan (2024). Antarctica NZ *et al*. 2023. ATS Visitor Site Guidelines No.46 (2025).

RESTRICTIONS: Entry to ASPA No.116 prohibited except by permit. Landing / overflight restrictions apply. See EAM12-02-1. **Consult Management Plan**.



Caughley Beach & Cape Bird Hut from sea showing preferred landing area for small boats. The designated HLS is on the bench above and to the right of the hut. ASPA boundary approx. Photo: C. Vervoorn, 2023/24.

CAPE BIRD HUT Topography & air access EAM12-02-1



Map 2: ASPA No.116 New College Valley - Topography & air access

26 Sep 2025
Environmental Research & Assessment
Antarctica New Zealand

0 1 2
Kilometres

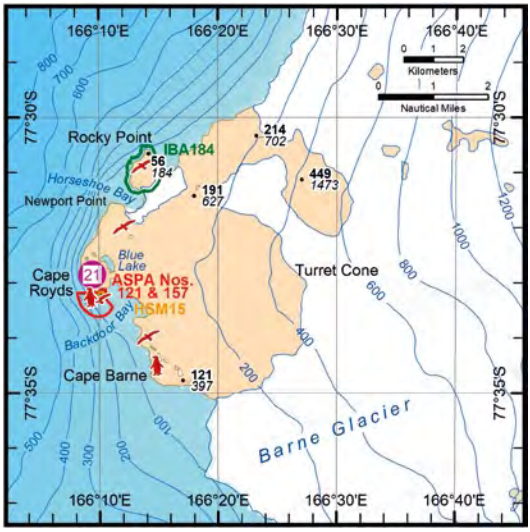
N

Projection: Lambert Conformal Conic
Horizontal datum: WGS84; Vertical datum: MSL.
Data sources: ASPA, hut, contours: Gateway Antarctica (2012); Helicopter landing sites / flight route: Antarctica NZ 2024; Coastline / streams / ice-free ground / glacial extent: digitised ERA from WV3 (23 Dec 2022). IBA boundary. ERA 2024; Penguin sub-colonies: G. Ballard pers.comm. 2024.

CAPE ROYDS **EAM12-03**

GRID REF: ELEV ~82 FT

GPS: S 77° 33.06' E 166° 10.38' Cape Roydes Primary HLS



INFORMATION SOURCES and DATES:

ASPA No.121 Cape Royds Management Plan (2021). ASPA No.157 Backdoor Bay Management Plan (2021). Ainley *et al*. 1986. Antarctica NZ *et al.* (2023).

LOCATION: Ross Island, western coast ~35 km (~19 nm) NW of NSF McMurdo Station.

DESCRIPTION: Adélie penguin colony (~2469 pairs; 2016-21) at Cape Royds. Prior permission required for entry to Shackleton's Hut (ASPA No.157, HSM No.15). Visitor Site Guidelines apply (VSG21). ~66 pairs South Polar skua breed at Rocky Point and at Cape Barne along with a few pairs Adélie penguin.

HAZARDS:

APPROACH / DEPARTURE: See EAM12-03-1.

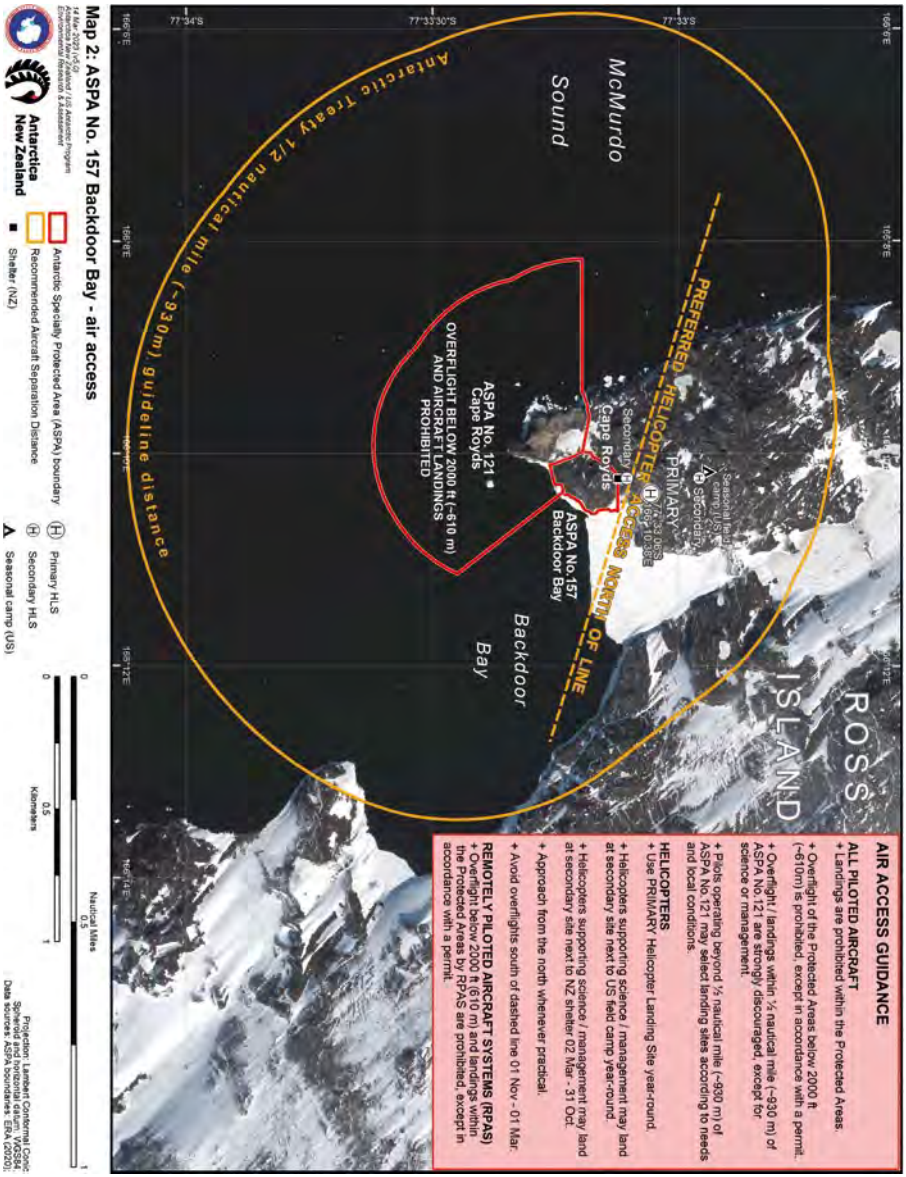
COMMS:

CONTACT:

REMARKS: IBA No.184 identified on basis of size of South Polar skua colony. HSM No.15 Shackleton's 1907-09 hut.

RESTRICTIONS: Entry to ASPA No.121 Cape Royds and ASPA No.157 Backdoor Bay prohibited except by permit. Landing / overflight restrictions apply. See EAM12-03-1. **Consult Management Plans**.

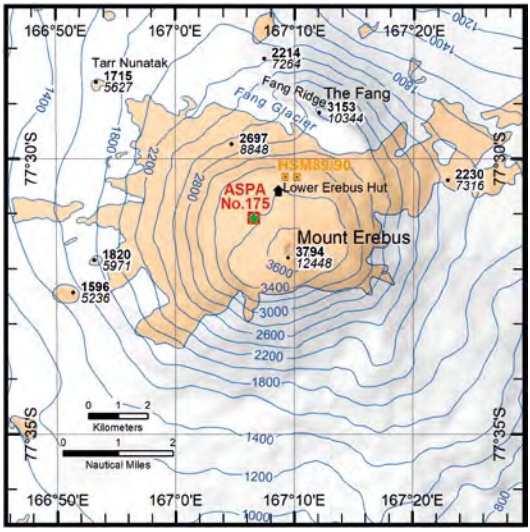
Cape Royds: Shackleton's Hut, ASPA No.157 & HSM No.15. Photo: © C. Harris, ERA, 17 Jan 2012.


Map 2: ASPA No. 157 Backdoor Bay - air access
14 Mar 2021 (v5.0)
Antarctica New Zealand
Environmental Research & Assessment
Antarctica New Zealand
Shelter (NZ)
Antarctic Specially Protected Area (ASPA) boundary
Recommended Aircraft Separation Distance
Primary HLS
Secondary HLS
Seasonal camp (US)
Nautical Miles
Kilometers
Projection: Lambert Conformal Conic
Spheroid and horizontal datum: WGS84
Data sources: ASPA boundaries: ERA (2020);
ROSS ISLAND
McMurdo Sound
Backdoor Bay
Antarctic Treaty 1/2 nautical mile (~930m) guideline distance
PREFERRED HELICOPTER ACCESS NORTH OF LINE
PRIMARY
SECONDARY
Seasonal camp (US)
Cape Royds
ASPA No.121
Cape Royds
OVERFLIGHT BELOW 2000 ft (~610 m) AND AIRCRAFT LANDINGS PROHIBITED
ASPA No.157
Backdoor Bay
AIR ACCESS GUIDANCE
ALL PILOTED AIRCRAFT
+ Landings are prohibited within the Protected Areas.
+ Overflight of the Protected Areas below 2000 ft (~610m) is prohibited, except in accordance with a permit.
+ Overflight / landings within ½ nautical mile (~930 m) of ASPA No.121 are strongly discouraged, except for science or management.
+ Pilots operating beyond ½ nautical mile (~930 m) of ASPA No.121 may select landing sites according to needs and local conditions.
HELICOPTERS
+ Use PRIMARY Helicopter Landing Site year-round.
+ Helicopters supporting science / management may land at secondary site next to US field camp year-round.
+ Helicopters supporting science / management may land at secondary site next to NZ shelter 02 Mar - 31 Oct.
+ Approach from the north whenever practical.
+ Avoid overflights south of dashed line 01 Nov - 01 Mar.
REMOTELY PILOTED AIRCRAFT SYSTEMS (RPAS)
+ Overflight below 2000 ft (610 m) and landings within the Protected Areas by RPAS are prohibited, except in accordance with a permit.

MOUNT EREBUS **EAM12-04**

GRID REF: ELEV ~11,152 FT

GPS: S 77° 30.63' S 167° 08.84' E Lower Erebus Hut HLS



INFORMATION SOURCES and DATES:
ASPA No.175 High Altitude Geothermal Sites Management Plan (2024).

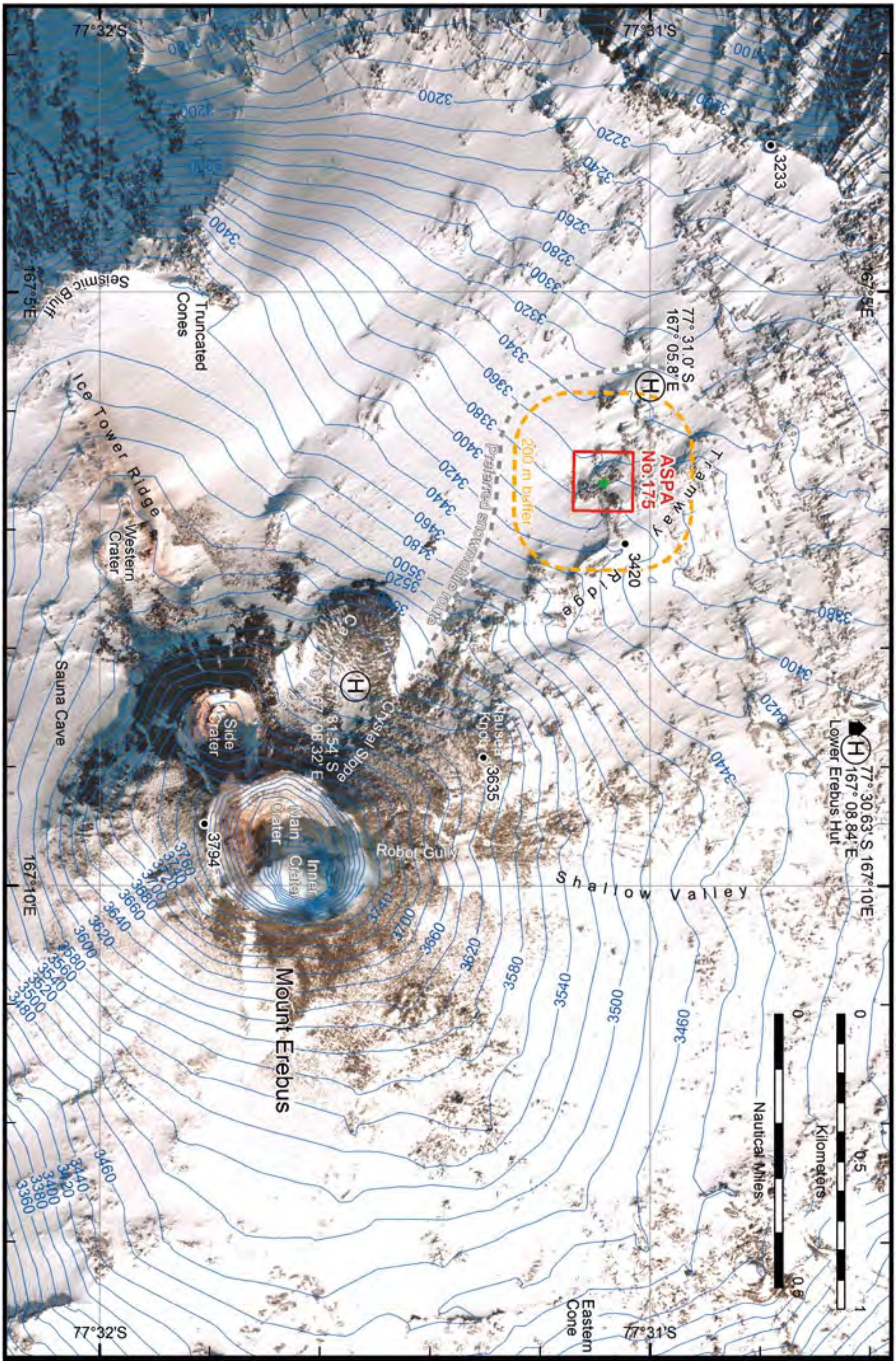
LOCATION: Ross Island, central. ~38 km (~20 nm) north of NSF McMurdo Station.

DESCRIPTION: Sensitive geothermal sites (eg. fumaroles, warm ground, mosses) near summit of Mount Erebus. Lower Erebus Hut (US; ~3400 m) located ~2.2 km north of summit. Upper Erebus Hut no longer exists.

HAZARDS: Geothermal activity, heated ground. Eruption risk. Steam. Altitude.
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: Use snowmobile route between Lower Erebus Hut and summit area and keep at least 200 m from ASPA No.175. See EAM12-04-1. HSM Nos.89/90 Terra Nova Expedition camp sites from 1910-12 Erebus survey ~500 m north of hut.

RESTRICTIONS: Observe the SCAR Code of Conduct for Activity within Terrestrial Geothermal Environments in Antarctica (Resolution 3 (2016)). Entry to ASPA No.175 High Altitude Geothermal Site Tramway Ridge prohibited except by permit. See EAM12-04-2. **Consult Management Plan**.

Tramway Ridge, Mount Erebus: Scientists in sterile suits take samples on geothermally heated ground. Steam rises from the crater above. Photo: © I. McDonald, University of Waikato, Nov 2023.

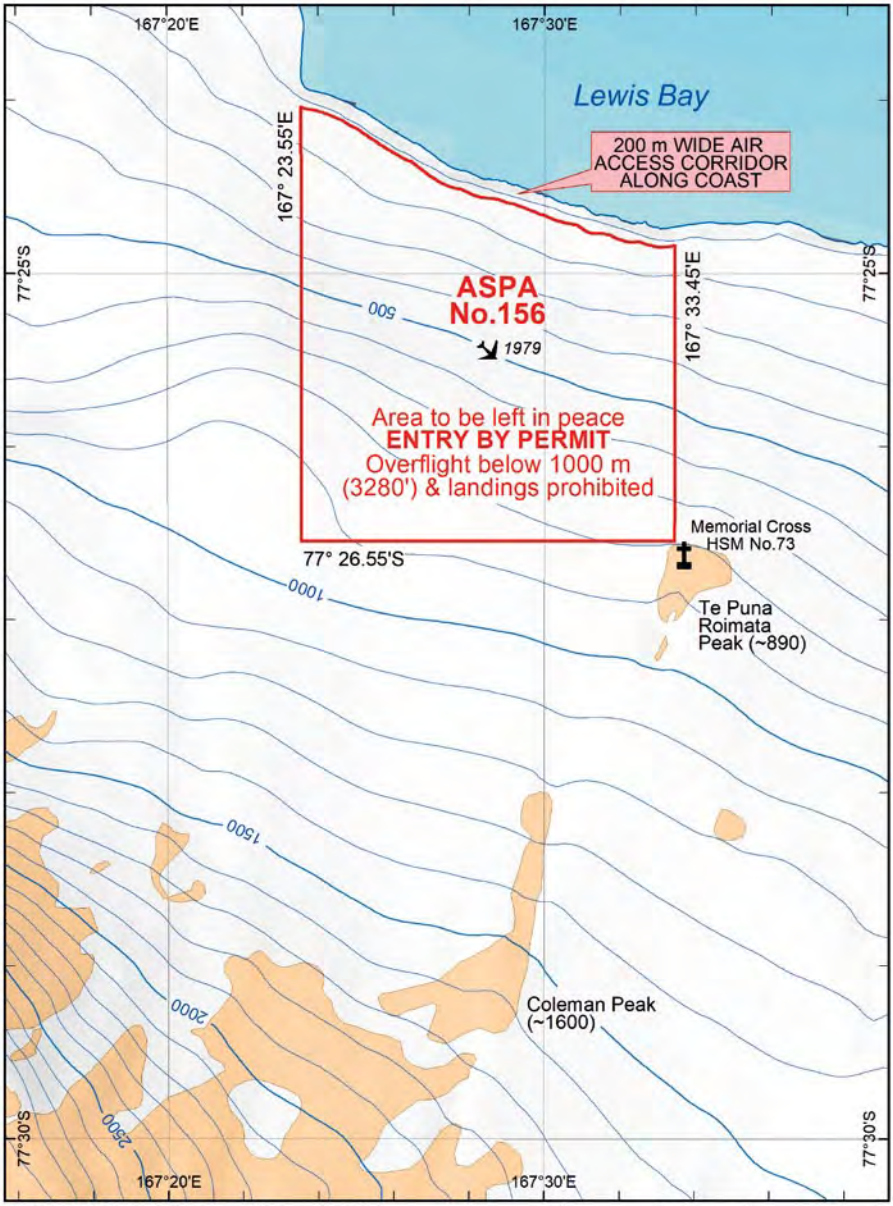

77°32'S
77°31'S
167°5'E
167°10'E
Seismic Bluff
Truncated Cones
Ice Tower Ridge
Western Crater
Sauna Cave
Side Crater
Main Crater
Inner Crater
Mount Erebus
Robot Gully
Crystal Slope
Nausea Knob
3635
3794
3233
3420
Shallow Valley
Tramway Ridge
ASPA No.175
200 m buffer
Preferred snowmobile route
77° 31.0' S 167° 05.8' E
77°30.63' S 167°08.84' E
Lower Erebus Hut
Eastern Cone
Kilometers
Nautical Miles

Map 2 - ASPA 175: High Altitude Geothermal Sites of the Ross Sea Region

Tramway Ridge, Mount Erebus Topographical Map

Map Information:
Version 2 - 4 Apr 2024.
Horizontal Datum: WGS72, Camp Area Projection.
Vertical Datum: Mean Sea Level
Satellite Imagery: orthorectified without ground-truthing.

Data Sources:
Survey Data: DOSLI Survey Plan 37/142
Contours & Geothermally Heated Area: University of Canterbury.
Main Map & Overview Diagram Imagery: Digital Globe WorldView-2 Satellite (0.5 m resolution).
Site Photograph: University of Waikato.



Map 2: ASPA No.156 Lewis Bay topography

09 Jun 2023 (v1.0)
Environmental Research & Assessment

Antarctica New Zealand

Permanent ice
Icefree ground
Contour (100 m)
Protected area boundary
HSM No.73 Memorial Cross
Flight TE-901 crash location & year

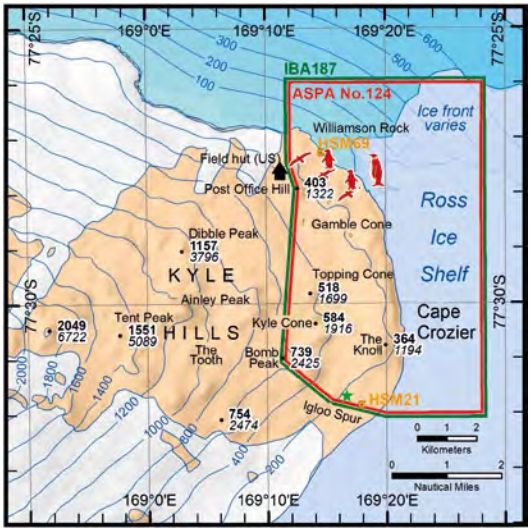
0 1 2 3 Kilometres

Projection: Lambert Conformal Conic
Spheroid and horizontal datum: WGS84
Elevations in metres. Basemap data:
Topography from REMA / SCAR Antarctic Digital Database v7.3 (2021);
Coastline, glaciology and icefree ground from LINZ 1:50K digital data.

CAPE CROZIER **EAM12-05**

GRID REF: ELEV ~722 FT

GPS: S 77° 27.64' E 169° 11.19' Cape Crozier Primary HLS



INFORMATION SOURCES and DATES:

ASPA No.124 Cape Crozier Management Plan (2022). Antarctica NZ *et al*. 2023.

LOCATION: Ross Island, eastern coast ~76 km (~41 nm) northeast of NSF McMurdo Station.

DESCRIPTION: Very large Adélie penguin colony (~303,205 pairs; 2016-21). Emperor penguin (~1189 pairs) breed on sea ice between cracks in the Ross Ice Shelf. Largest South Polar skua colony in Antarctica (~1347 pairs). Fragile lichens colonise Igloo Spur.

HAZARDS:

APPROACH / DEPARTURE:

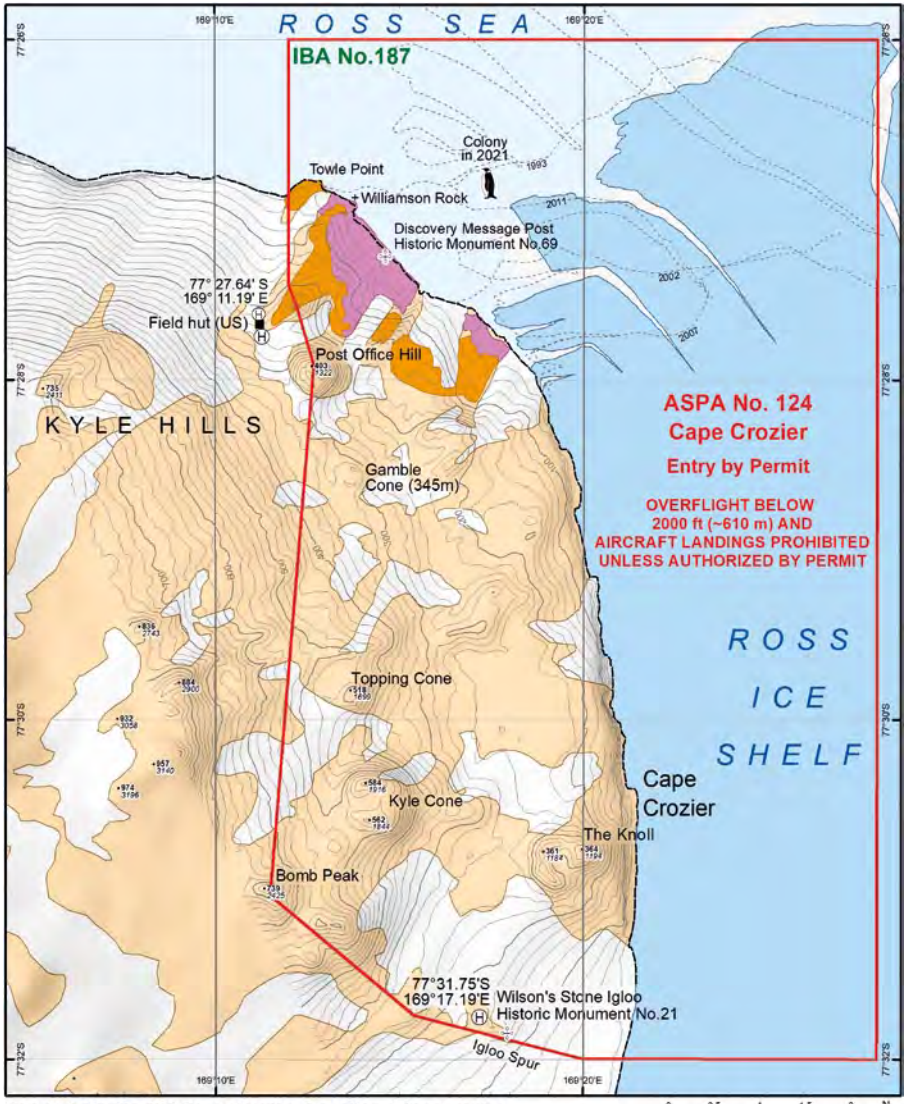
COMMS:

CONTACT:

REMARKS: IBA No.187 identified on basis of size of Adélie penguin and South Polar skua colonies. HSM No.69 Scott's Discovery Message Post on northern coast. HSM No.21 Wilson's stone hut on Igloo Spur.

RESTRICTIONS: Entry to ASPA No.124 Cape Crozier prohibited except by permit. Landing / overflight restrictions apply. See EAM12-05-1. **Consult Management Plan**.

Cape Crozier, view east from Post Office Hill. Adélie penguins breed on slopes below Post Office Hill, while Emperor penguins breed on sea ice that forms between cracks in the Ross Ice Shelf (evident in the photo). Weddlell seals also frequent the area. Photo: © G. Ballard, 03 Feb 2025.



Map 1: ASPA No.124 Cape Crozier - Location & topography

25 Sep 2025 v3.0
United States Antarctic Program
Environmental Research & Assessment

Coastline (approx)
Index contour (100 m)
Contour (20 m)
Ice free ground
Permanent ice
Ice shelf
Ice shelf edge
Protected Area boundary
Historic Site & Monument
Field hut
Helicopter landing site
Skua nesting area
Adélie penguin colony
Emperor penguin colony

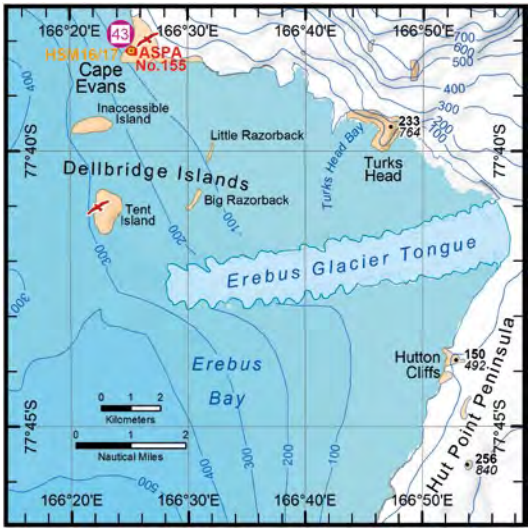
0 0.5 1 1.5 2 Kilometers

Projection: Lambert Conic Conformal
Spheroid and horizontal datum: WGS 84
Data sources: ASPA boundary: ERA (Aug 2020)
Coastline, contours and bird data: Gateway Antarctica
Facilities: RPSC GPS survey (25 Dec 2007); Ice shelf icefree ground: Quickbird © 09 Oct 2011 Digital Globe
Emperor colony location: Sentinel-2 2021 (AAD 2022)

CAPE EVANS **EAM12-06**

GRID REF: ELEV ~16 FT

GPS: S 77° 38.32', E 166° 24.45' Cape Evans Primary HLS



INFORMATION SOURCES and DATES:

ASPA No.155 Cape Evans Management Plan (2021).
Ainley *et al*. 1986.

LOCATION: Ross Island, western coast ~25 km (~13 nm) north of NSF McMurdo Station.

DESCRIPTION: Prior permission required to visit Scott's Terra Nova hut (ASPA No.155, HSM No.16) and cross on Wind Vane Hill (HSM No.17). See EAM12-06-1. South Polar skua breed at Cape Evans (~88 pairs) and on Dellbridge Islands (~50 pairs). A large number of Weddell seals breed on sea ice in the vicinity. Visitor Site Guidelines (VSG43) apply at Cape Evans.

HAZARDS:

APPROACH / DEPARTURE:

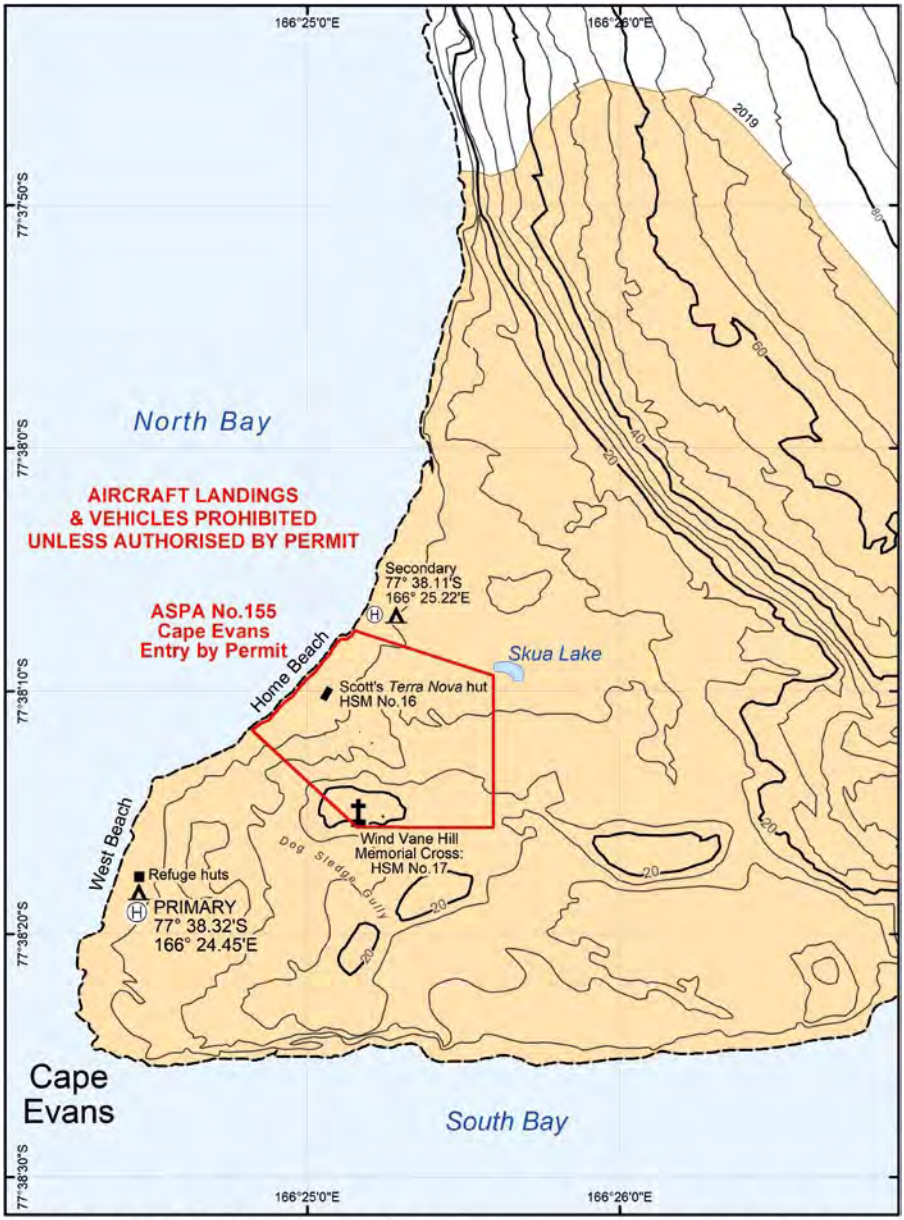
COMMS:

CONTACT:

REMARKS:

RESTRICTIONS: Entry to ASPA No.155 Cape Evans prohibited except by permit. See EAM12-06-1. **Consult Management Plan**.

Turks Head: A large number of Weddell seals breed on sea ice in the Erebus Bay area, which are the subject of long-term studies. Photo: © Parker Leavinson 2024 (NMFS Permit No. 26375).



Map 1: ASPA No. 155 Cape Evans - topography

15 Mar 2023 (v3.0)
Antarctica New Zealand
Environmental Research & Assessment

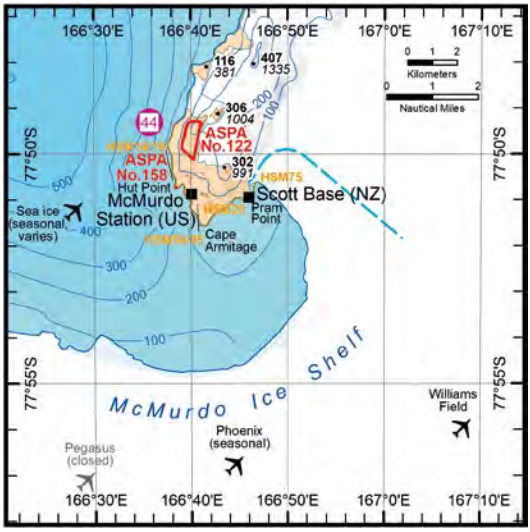
Antarctica New Zealand

Ocean
Permanent ice (approx)
Ice free ground
Coastline (approx)
Contours (20 m)
Contours (5 m)
Protected Area boundary
Helicopter landing site
Designated campsite
Buildings
Memorial Cross

0 50 100 150 200
Metres

Projection: Lambert Conformal Conic
Spheroid and horizontal datum: WGS84.
Data sources: ASPA boundary, topography & infrastructure data supplied by Antarctica NZ (2019).

HUT POINT: NSF McMurdo Station (US) **EAM12-07**
GRID REF: ELEV ~49 FT
GPS: S 77° 50.9358', E 166° 40.1942' McMurdo Station HLS



INFORMATION SOURCES and DATES:
ASPA No.122 Arrival Heights Management Plan (2023).
ASPA No.158 Discovery Hut Management Plan (2021).

LOCATION: Ross Island, southern extremity of Hut Point Peninsula.

DESCRIPTION: Main United States station in Antarctica. Occupancy: summer ~1000; winter ~153. Visitor Site Guidelines apply at Hut Point / Discovery Hut (VSG44). Phoenix and Williams Field airfields on McMurdo Ice Shelf. Sea ice airfield seasonal.

HAZARDS: Aerials, towers.
APPROACH / DEPARTURE: Refer AFIM.
COMMS: Mac Center VHF 118.2 MHz.
CONTACT: Station commander.
REMARKS: See EAM12-07-1 & 2. HSMs: No.18 Scott's Discovery hut; No.19 George Vince memorial cross; No.20 Scott's expedition memorial cross on Observation Hill; No.54 Richard Byrd memorial; No.75 A Hut of Scott Base from 1956/57 Trans-Antarctic Expedition; No.85 NSF McMurdo Station nuclear plant commemoration.

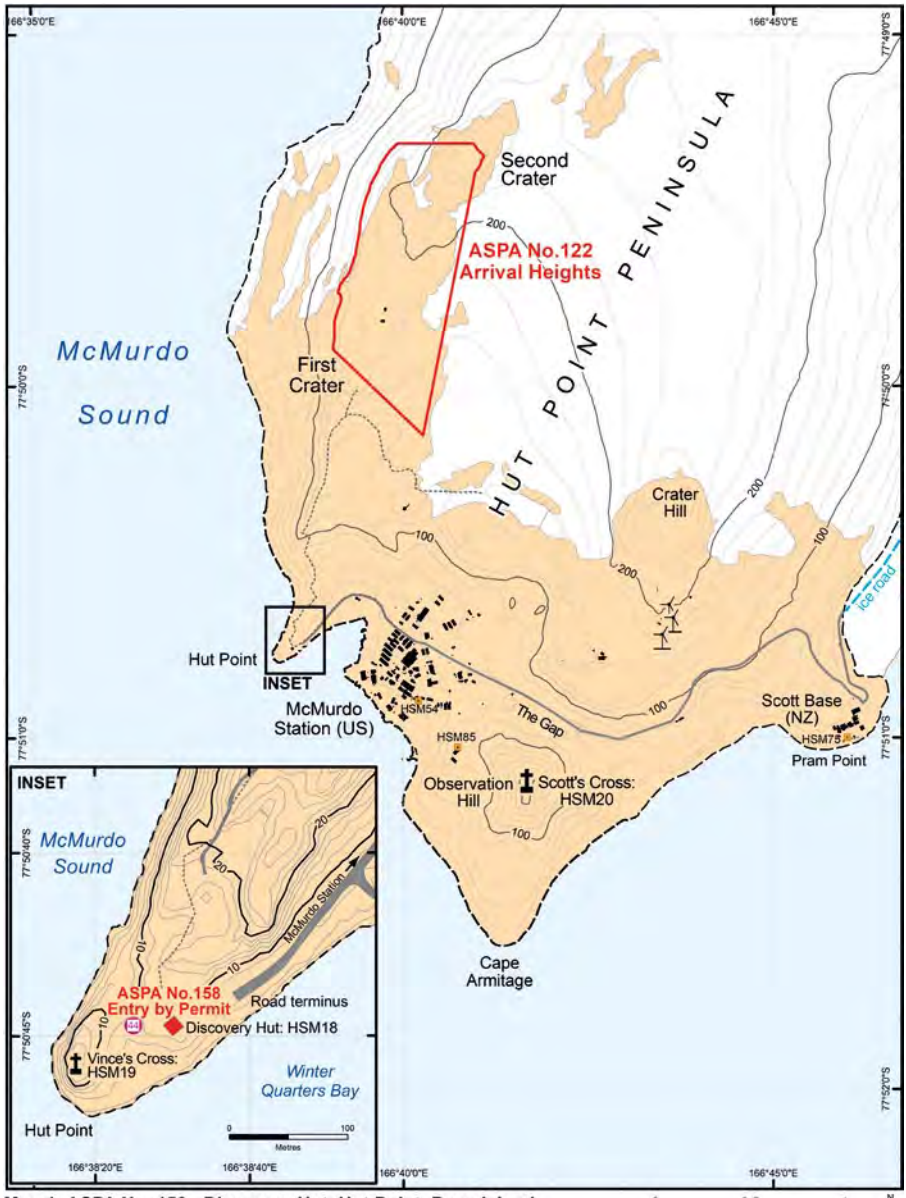
RESTRICTIONS: Entry to ASPA No.122 Arrival Heights ASPA No.158 Scott's Discovery Hut prohibited except by permit. **Consult Management Plans**. Landing / Overflight restrictions apply: **Refer AFIM**.

NSF McMurdo Station (US): view from west of station looking east. Photo: © C. Harris, ERA, 2024.
Note visitor helicopter requirements overleaf: **Refer AFIM for Approach / Departure details**.

NSF McMurdo Station (US) helicopter landing area. All visiting helicopters will land at the Visitor's Heliport (located within **Red Circle**), UNLESS prior permission granted by NSF Station Manager (24-hours prior notice required, 48 to 72-hours prior notice preferred). Source: AFIM 2023. **Refer AFIM for Approach / Departure details**.

NSF McMurdo Station (US): view from south of station looking north. Photo: © C. Harris, ERA, 2024. **Note visitor helicopter requirements above.**

HUT POINT Topography & Discovery Hut EAM12-07-1



Map 1: ASPA No. 158 - Discovery Hut, Hut Point, Ross Island

24 Oct 2025 (v 4.1)
Antarctica New Zealand
Environmental Research & Assessment

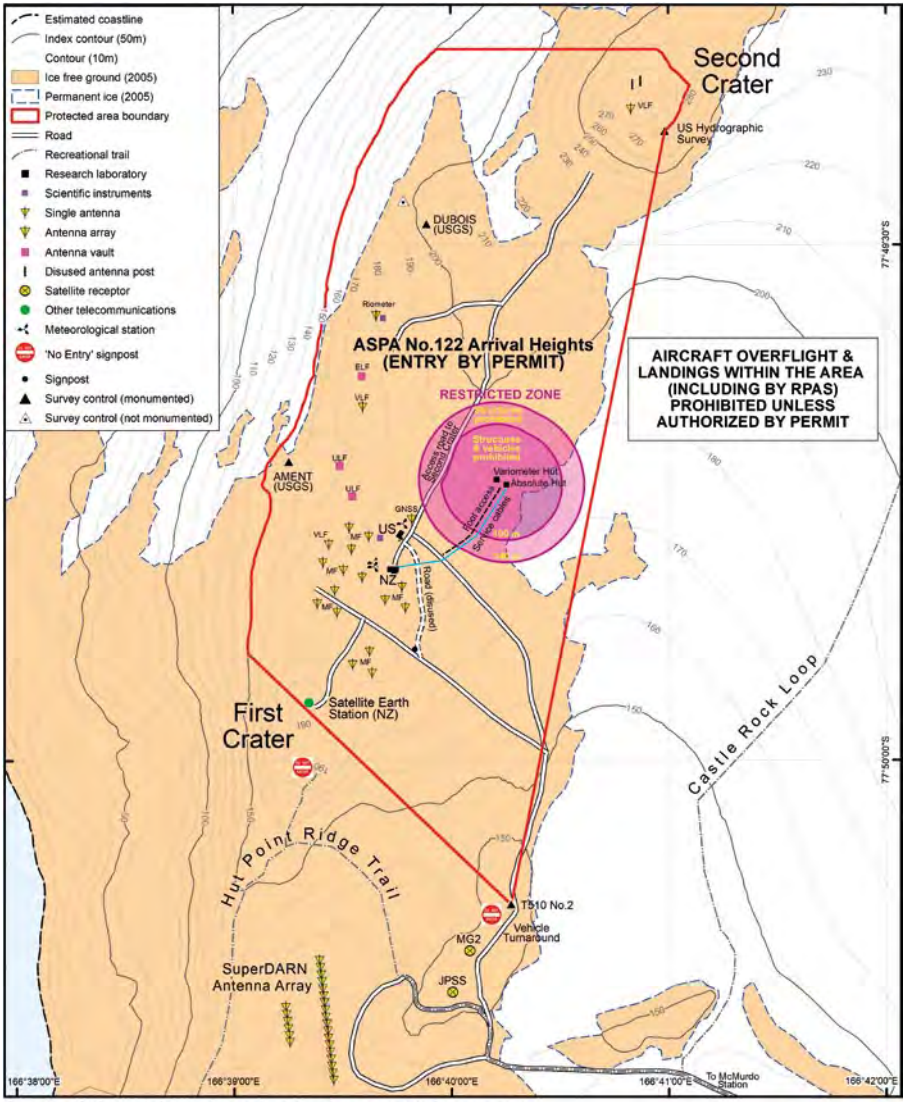
Antarctica New Zealand

Ocean
Permanent ice (2005)
Ice free ground (2005)
Estimated coastline
Visitor Site Guidelines
Index contour (100 m)
Contour (20 m)
Main road
Recreational trail
Protected area boundary
Buildings
Memorial cross
Wind turbine

0 0.5 1 Kilometres

N

Projection: Lambert Conformal Conic
Spheroid and horizontal datum: WGS84
Contour interval: main map - 20 m; Inset 3 - 2 m.
Data sources: Buildings: RPSC survey (Feb 09);
Features: USAP (Feb 09) & ERA (Nov 09) field surveys;
Permanent ice extent: Digitised from Quickbird orthophoto (15 Oct 05) (Imagery © 2005 Digital Globe).



Map 2: ASPA No.122 Arrival Heights - Boundary & topography

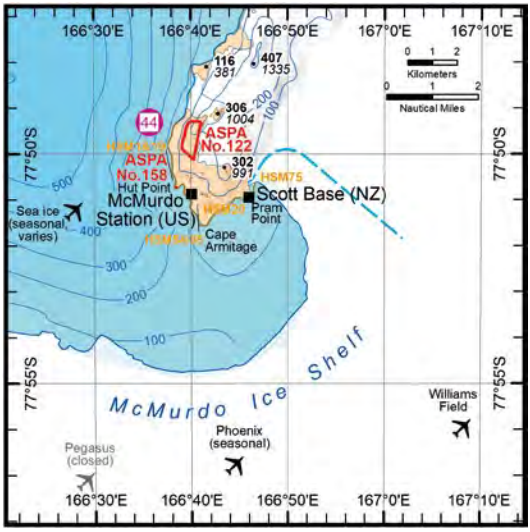
16 Oct 2025 (v1)
United States Antarctic Program
Environmental Research & Assessment

Caution:
Overground cables are present throughout Arrival Heights and are not shown on this map. Care should be taken to avoid disturbing these cables.

N
0 100 200
Meters

Projection: Lambert Conic Conformal
Data sources: Contours: Derived from 2m DEM, contour interval 10m; Features: Derived from USAP (Feb 2009) & ERA (Nov 2009) field surveys; Recreational trails: PGC field survey 2009; Permanent ice digitised from orthorectified Quickbird image (15 Oct 05) (Imagery © Digital Globe); ASPA boundary: Management Plan (2022). Antennae / instruments / infrastructure: verified 2022.

HUT POINT: Scott Base (NZ) **EAM12-08**
GRID REF: ELEV 6.5 FT
GPS: S 77° 50.8931', E 166° 46.5202' Scott Base temporary HLS



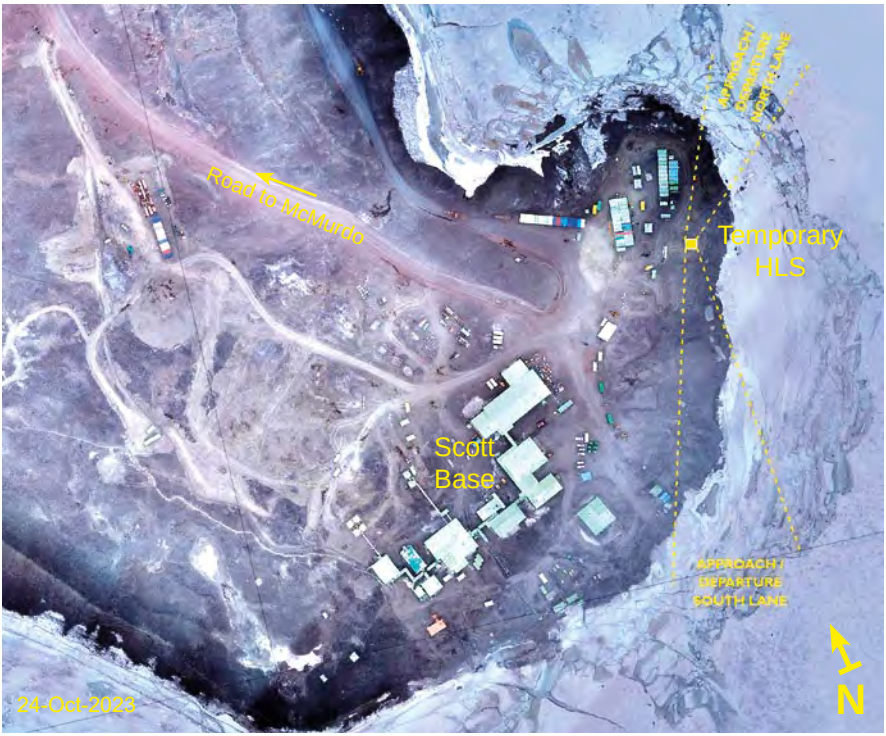
LOCATION: Pram Point, Ross Island, southern extremity of Hut Point Peninsula.

DESCRIPTION: New Zealand station. Occupancy: summer 78; winter 12. Weddell seals breed near Pram Point / Cape Armitage.

HAZARDS: Aerials, towers.
APPROACH / DEPARTURE: Refer AFIM.
COMMS: Mac Center VHF 118.2 MHz.
CONTACT: Station commander.
REMARKS: See EAM12-07-1 & 2. HSMs: see EAM12-07.

RESTRICTIONS: Entry to ASPA No.122 Arrival Heights & ASPA No.158 Scott's Discovery Hut prohibited except by permit. **Consult Management Plans**. Landing / Overflight restrictions apply: **Refer AFIM**.

INFORMATION SOURCES and DATES: ASPA No.122 Arrival Heights Management Plan (2023). ASPA No.158 Discovery Hut Management Plan (2021).



Scott Base (NZ): helicopter approach / departure routes. Source: Antarctica NZ / AFIM 2023.

Scott Base (NZ): helicopter landing site and approach and departure lanes. Source: Antarctica NZ Helicopter operations Manual 2023.

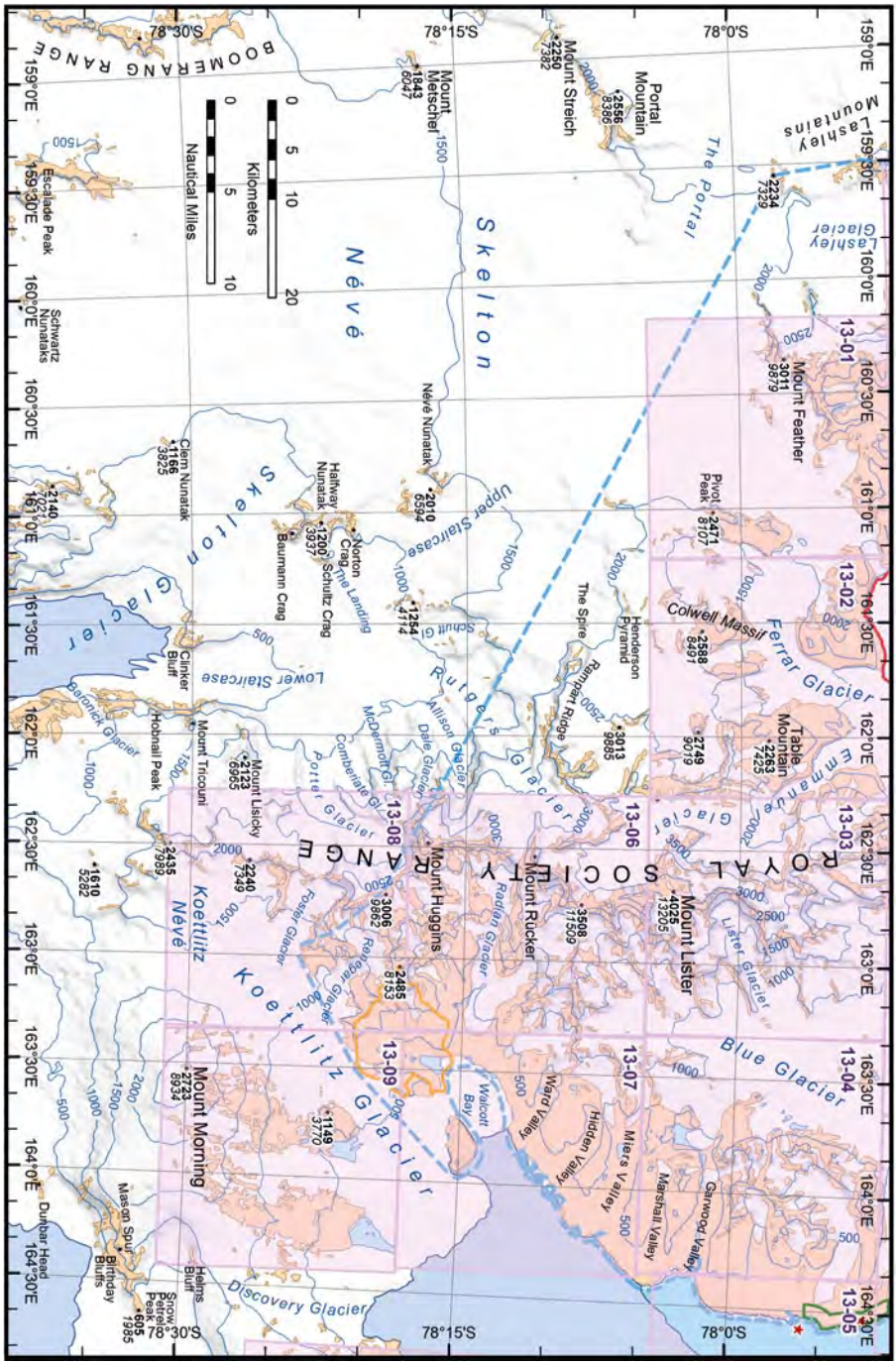
Hercules aircraft, Williams Field. Royal Society Range in distance. Photo: © ERA, 25 Nov 2024.

Discovery: Emperor penguin, McMurdo Sound. Mount Discovery in distance. Photo: © ERA, 1993.

ENVIRONMENTAL AWARENESS MAPS

EAM13: ROYAL SOCIETY RANGE SOUTHERN DRY VALLEYS

ROYAL SOCIETY RANGE OVERVIEW EAM13



MOUNT FEATHER
GRID REF:
GPS:

EAM13-01
ELEV FT

LOCATION: Upper Ferrar Glacier, McMurdo Dry Valleys, southwest.

DESCRIPTION: Beacon Heights, Beacon Valley, Arena Valley, Mount Feather Restricted Zone - see detail in EAM13-01-1.

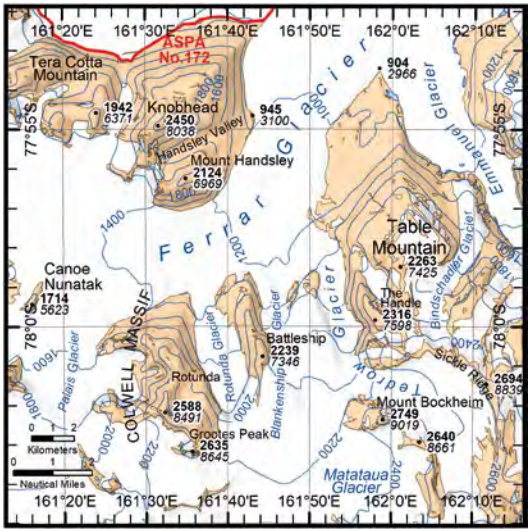
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Prior permission required for entry to Mount Feather Restricted Zone (see detail in EAM13-01-1).

INFORMATION SOURCES and DATES: ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

TABLE MOUNTAIN
GRID REF:
GPS:

EAM13-02
ELEV FT



LOCATION: McMurdo Dry Valleys, southwest.

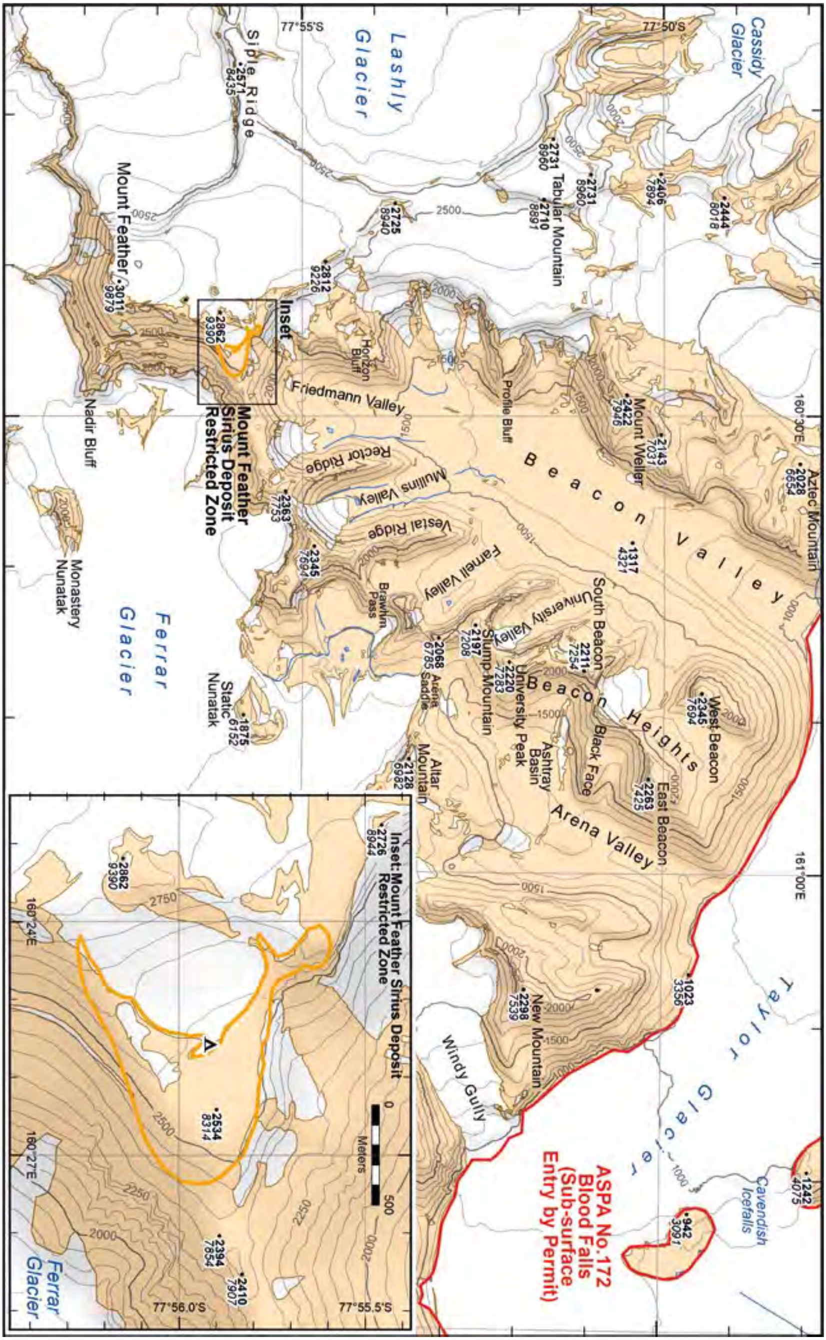
DESCRIPTION: The Ferrar Glacier flows between Knobhead and Table Mountain.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Entry to ASPA No.172 on glacier surface allowed **except** at Blood Falls where entry is prohibited except by permit. Entry to sub-glacial environment within ASPA No.172 is prohibited except by permit. **Consult management plan.**

INFORMATION SOURCES and DATES: ASPA No.172 Lower Taylor Glacier & Blood Falls Management Plan (2023). ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

MOUNT FEATHER Restricted Zone **EAM13-01-1**


Cassidy Glacier
77°50'S
Lashly Glacier
77°55'S
Siple Ridge
Tabular Mountain
Mount Feather
Inset
Horizon Bluff
Friedmann Valley
Profile Bluff
Mount Weller
Aztec Mountain
160°30'E
Beacon Valley
Nadir Bluff
Mount Feather Sirius Deposit Restricted Zone
Rector Ridge
Mullins Valley
Vestal Ridge
Farnell Valley
Brawhm Pass
Monastery Nunatak
Ferrar Glacier
Static Nunatak
Arena Saddle
Stump Mountain
University Valley
South Beacon
University Peak
Beacon Heights
West Beacon
Ashtray Basin
Black Face
East Beacon
Altar Mountain
Arena Valley
161°00'E
New Mountain
Windy Gully
Taylor Glacier
ASPA No.172 Blood Falls (Sub-surface Entry by Permit)
Cavendish Icefalls
Inset: Mount Feather Sirius Deposit Restricted Zone
Meters
160°24'E
160°27'E
77°56.0'S
77°55.5'S
Ferrar Glacier
Kilometers
N

Map 17: Mount Feather - Beacon Valley

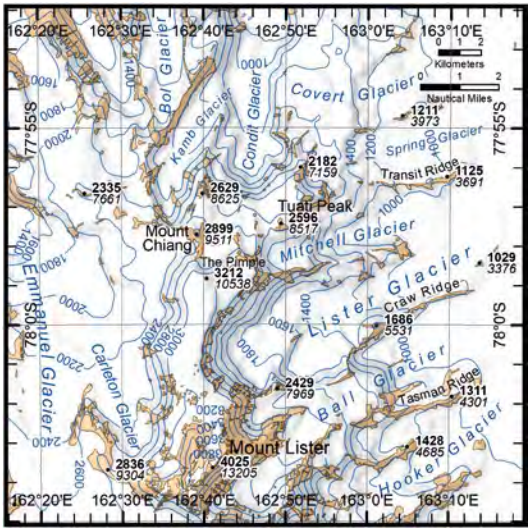
Issued 23 Oct 2025
Environmental Research & Assessment

Data source: LINZ / USGS 1:50K map series.
Contour interval: 100 m; Inset 50 m. Spot heights in **meters** & *feet*.
Restricted Zone extent digitised from Wilson *et al.* 2002.

MOUNT LISTER

GRID REF:
GPS:

EAM13-03
ELEV FT



LOCATION: McMurdo Dry Valleys, south.

DESCRIPTION: Mount Lister (4025 m) is the highest peak in the Royal Society Range.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

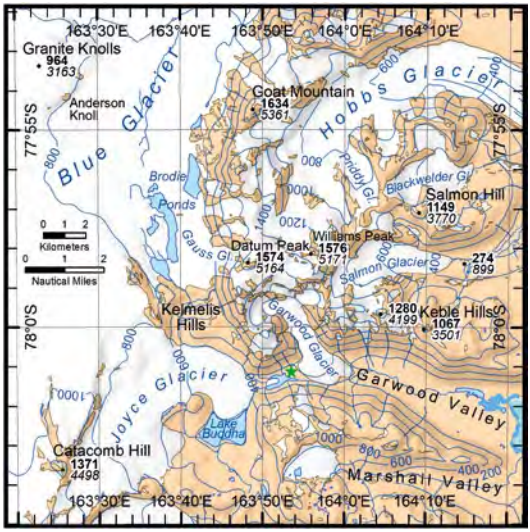
RESTRICTIONS:

INFORMATION SOURCES and DATES:
ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

GARWOOD VALLEY

GRID REF:
GPS:

EAM13-04
ELEV



LOCATION: McMurdo Dry Valleys, southeast.

DESCRIPTION: Ice-free valleys east of the Blue Glacier, including Garwood Valley and Marshall Valley.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT: .
REMARKS: Rich vegetation reported in upper Garwood Valley near Lake Colleen.

RESTRICTIONS:

INFORMATION SOURCES and DATES:
ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

CAPE CHOCOLATE / DAILEY ISLANDS

GRID REF:
GPS:

EAM13-05
ELEV FT

LOCATION: ~38 km (~20 nm) west of NSF McMurdo Station.

DESCRIPTION: ~226 pairs South Polar skua breed along coast between Blue Glacier and Cape Chocolate, ~77 pairs in the Dailey Islands, with ~35 pairs at Cape Chocolate.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS: IBAs No.182 and No.183 identified on basis of size of South Polar skua colonies.

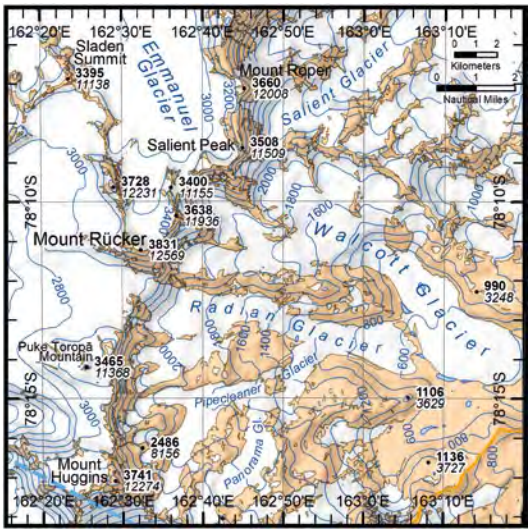
RESTRICTIONS:

INFORMATION SOURCES and DATES: ASMA No.2 McMurdo Dry Valleys Management Plan (2015). Ainley *et al*. 1986.

MOUNT RÜCKER

GRID REF:
GPS:

EAM13-06
ELEV



LOCATION: McMurdo Dry Valleys, south.

DESCRIPTION: Mount Rücker is flanked by the upper Emmanuel, Radian and Walcott glaciers.

HAZARDS:
APPROACH / DEPARTURE: .
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES: ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

MIERS VALLEY / WALCOTT BAY **EAM13-07**

GRID REF: ELEV ~36 FT

GPS: S 78° 17.16' E 163° 27.84' designated HLS Trough Lake

LOCATION: McMurdo Dry Valleys, south.

DESCRIPTION: A series of ice-free valleys east of the Royal Society Range, including Miers Valley, Hidden Valley, Ward Valley and the Trough Lake Catchment Restricted Zone.

HAZARDS:

APPROACH / DEPARTURE:

COMMS:

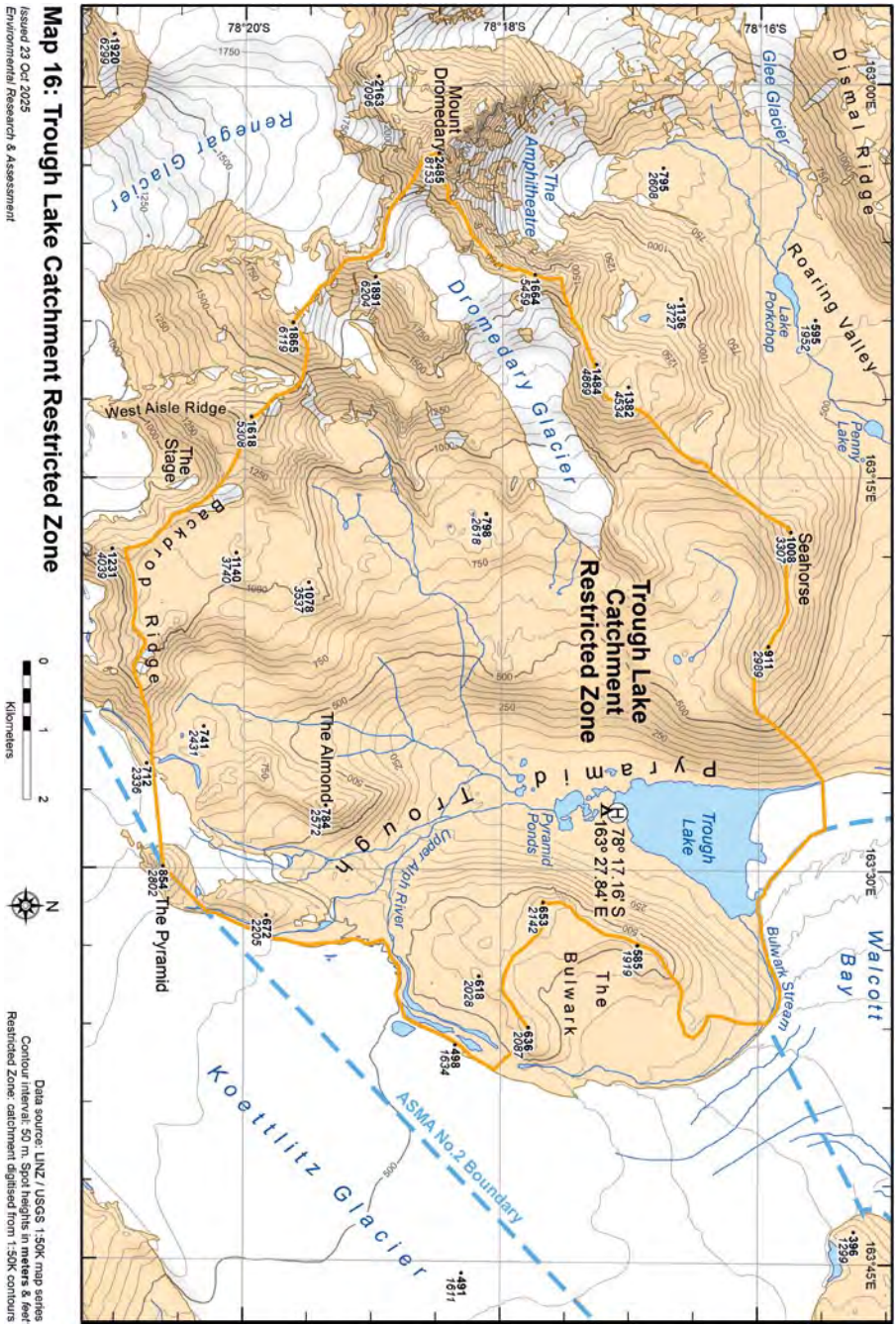
CONTACT:

REMARKS:

RESTRICTIONS: Prior permission required to enterTrough Lake Catchment Restricted Zone. Helicopters should land at the designated HLS (see EAM13-07-1). Movement within the Zone should be on foot unless helicopter access is essential.

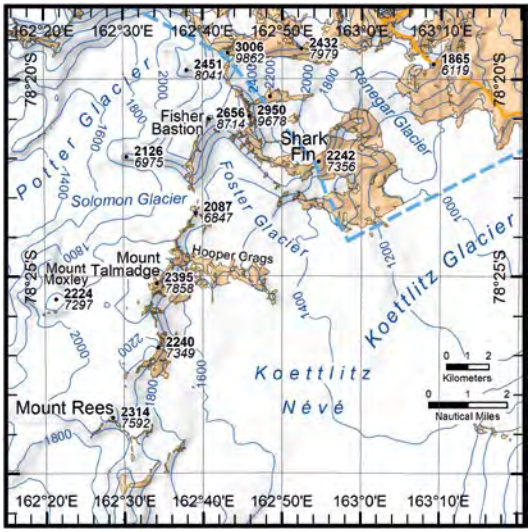
INFORMATION SOURCES and DATES: ASMA No.2 McMurdo Dry Valleys Management Plan (2015).

Trough Lake: View northeast toward Trough Lake (in middle distance) and Walcott Bay from the central valley in the Trough Lake catchment. Photo. © C. Harris, ERA, 10 Dec 2009.


Trough Lake Catchment Restricted Zone
78° 17.16' S
163° 27.84' E
Dismal Ridge
Roaring Valley
Glee Glacier
Lake Porkchop
Penny Lake
Seahorse
Mount Dromedary
The Amphitheatre
Dromedary Glacier
Renegar Glacier
West Aisle Ridge
The Stage
Backdoor Ridge
The Almond
Trough Ridge
Upper Rapn River
Pyramid Ponds
Trough Lake
Pyramid
The Bulwark
Bulwark Stream
Walcott Bay
Koettlitz Glacier
ASMA No.2 Boundary
78°20'S
78°18'S
78°16'S
163°00'E
163°15E
163°30E
163°45E
Map 16: Trough Lake Catchment Restricted Zone
Issued 23 Oct 2025
Environmental Research & Assessment
Kilometers
N
Data source: LINZ / USGS 1:50K map series
Contour interval: 50 m. Spot heights in meters & feet
Restricted Zone: catchment digitised from 1:50K contours

SHARK FIN
GRID REF:
GPS:

EAM13-08
ELEV FT



LOCATION: McMurdo Dry Valleys, south.

DESCRIPTION: Upper Koettlitz Glacier.

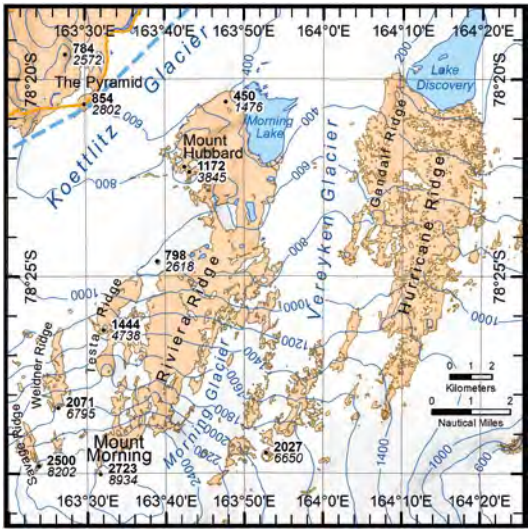
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:
.

MOUNT MORNING
GRID REF:
GPS:

EAM13-09
ELEV FT



LOCATION: McMurdo Dry Valleys, south.

DESCRIPTION: Mount Morning (2725 m) lies ~38 km SW of Mount Discovery (EAM 14-02).

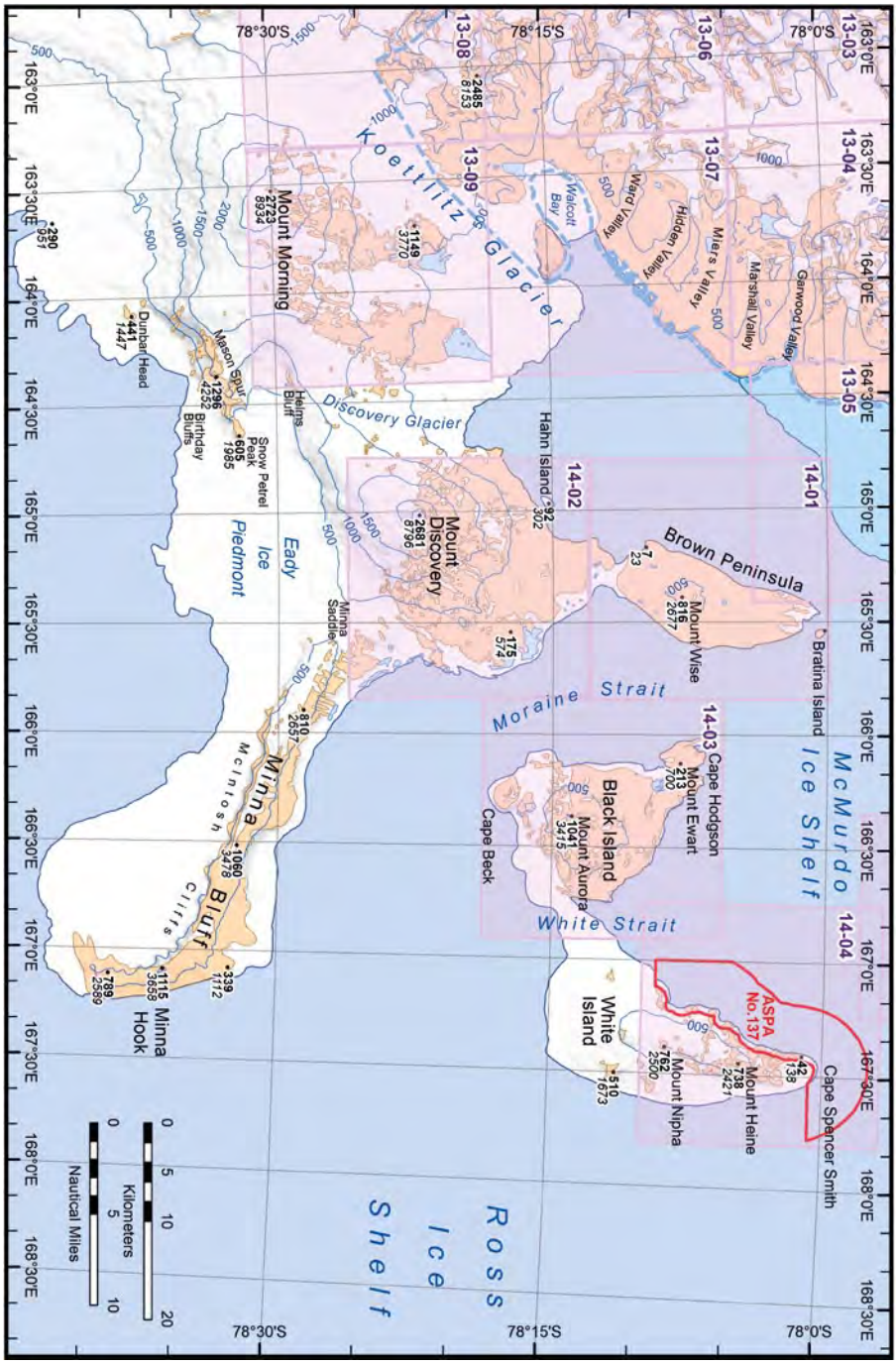
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

ENVIRONMENTAL AWARENESS MAPS

EAM14: MOUNT DISCOVERY
BROWN PENINSULA
BLACK ISLAND, WHITE ISLAND


Koettlitz Glacier
Discovery Glacier
Eady Ice Piedmont
McMurdo Ice Shelf
Ross Ice Shelf
Moraine Strait
White Strait
Brown Peninsula
Bratina Island
Hahn Island
Cape Beck
Black Island
White Island
Cape Hodgson
Cape Spencer Smith
Mount Discovery
Mount Wise
Mount Ewart
Mount Aurora
Mount Nipha
Mount Heine
Mount Morning
Minna Bluff
McIntosh Cliffs
Minna Hook
Dunbar Head
Mason Spur
Birthday Bluffs
Snow Petrel Peak
Helms Bluff
Minna Saddle
Walcott Bay
Wilson Valley
Hidden Valley
Miers Valley
Marshall Valley
Garwood Valley
ASPA No.137
13-03
13-04
13-05
13-06
13-07
13-08
13-09
14-01
14-02
14-03
14-04
78°30'S
78°15'S
78°0'S
163°0'E
163°30'E
164°0'E
164°30'E
165°0'E
165°30'E
166°0'E
166°30'E
167°0'E
167°30'E
168°0'E
168°30'E
Kilometers
Nautical Miles

BROWN PENINSULA
GRID REF:
GPS:

EAM14-01
ELEV

LOCATION: McMurdo Ice Shelf, southwest. ~35 km SW of NSF McMurdo Station.

DESCRIPTION: Brown Peninsula is mostly icefree and rises to 815 m at Mount Wise.

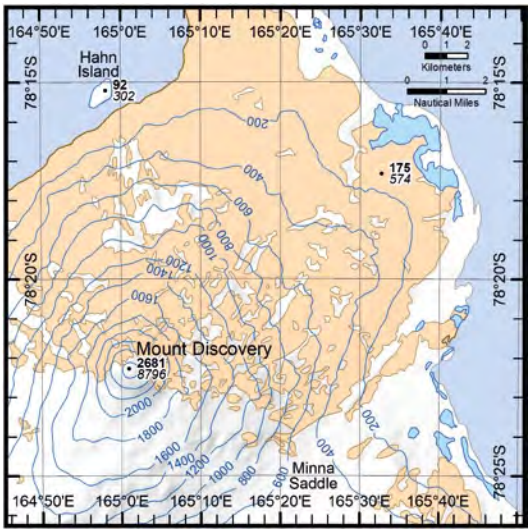
HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

MOUNT DISCOVERY
GRID REF:
GPS:

EAM14-02
ELEV



LOCATION: McMurdo Ice Shelf, southwest. ~70 km SW of NSF McMurdo Station.

DESCRIPTION: Mount Discovery (2680 m) is a prominent dormant volcanic cone which is mostly icefree on its northern slopes.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

BLACK ISLAND
GRID REF:
GPS:

EAM14-03
ELEV

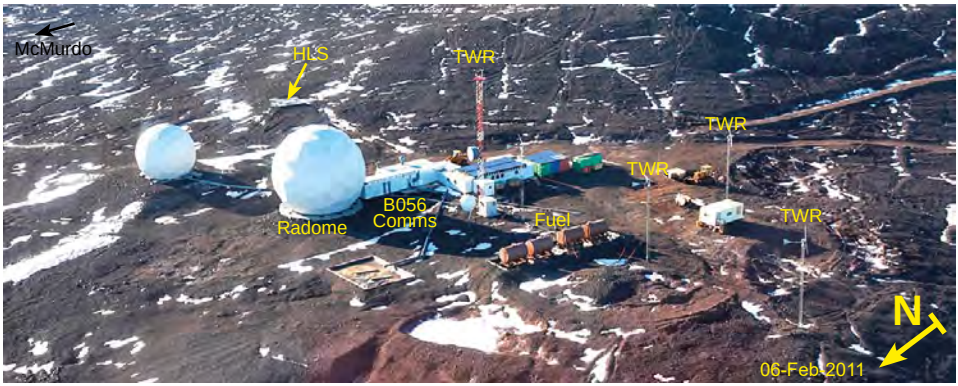
LOCATION: McMurdo Ice Shelf, southwest. ~35 km south of NSF McMurdo Station.

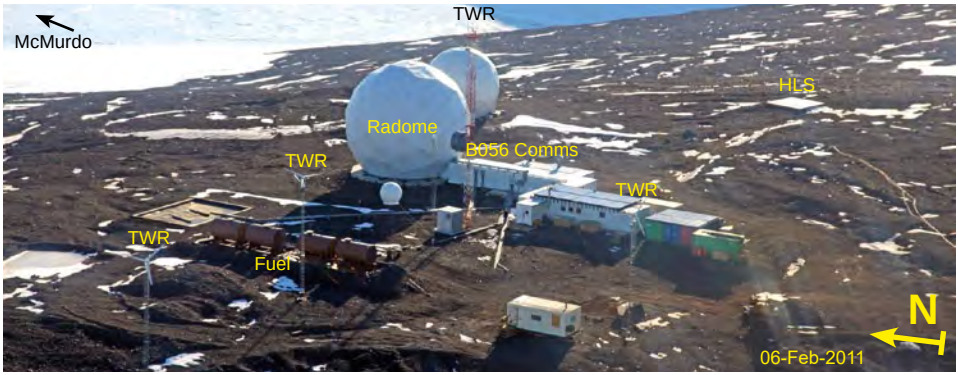
DESCRIPTION: Black Island Telecommunications Facility (US) (see photos below) is located on the NW extremity of Black Island between Cape Hodgson and Lake Cole.

HAZARDS: Multiple towers / wind turbines
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

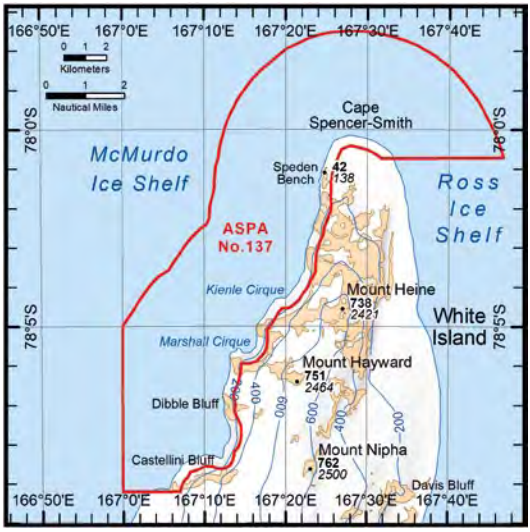
INFORMATION SOURCES and DATES: USAP / ASC pers. comm. 2024. Photos of Telecommunications Facility (US) below are from 2011.





WHITE ISLAND
GRID REF:
GPS:

EAM14-04
ELEV



LOCATION: Ross Ice Shelf / McMurdo Ice Shelf. ~25 km SE of NSF McMurdo Station.

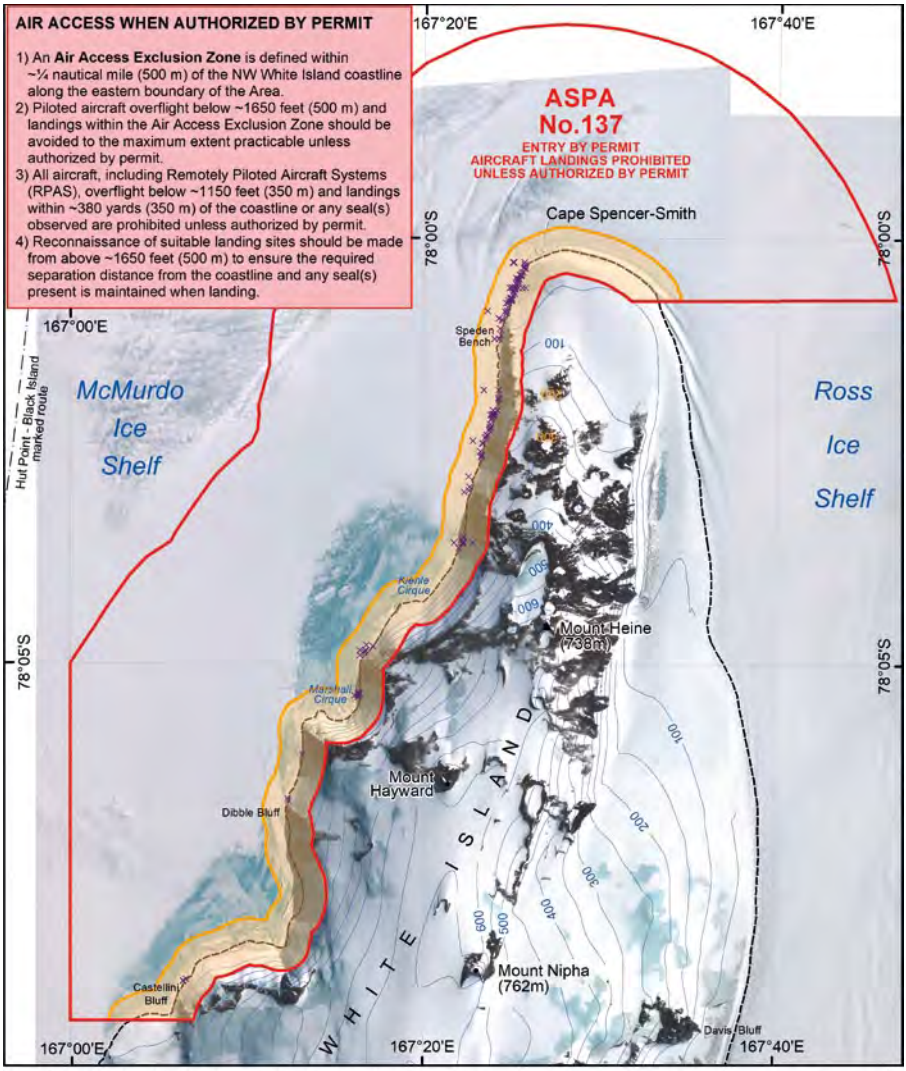
DESCRIPTION: A rare isolated colony of Weddell seal breeds on the ice shelf on the NW coast of White Island near Cape Spencer-Smith.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: Entry to ASPA No.137 prohibited except by permit. Landing / overflight restrictions apply. See EAM14-04-1. **Consult Management Plan**.

INFORMATION SOURCES and DATES:
ASPA No.137 Northwest White Island Management Plan (2024).

White Island: ASPA No.137 protects a small colony of Weddell seals on the northwestern coast. Mount Terror in the distance. Photo: © Parker Levinson 2022 (NMFS Permit No. 26375).



Map 2: ASPA No.137 Northwest White Island - air access

11 Apr 2024 v1
United States Antarctic Program
Environmental Research & Assessment

Estimated coastline
Contour (50m)
Marked route
Antarctic Specially Protected Area (ASPA) boundary
Air Access Exclusion Zone (500 m from coastline)
Seal locations 2003 - 2022

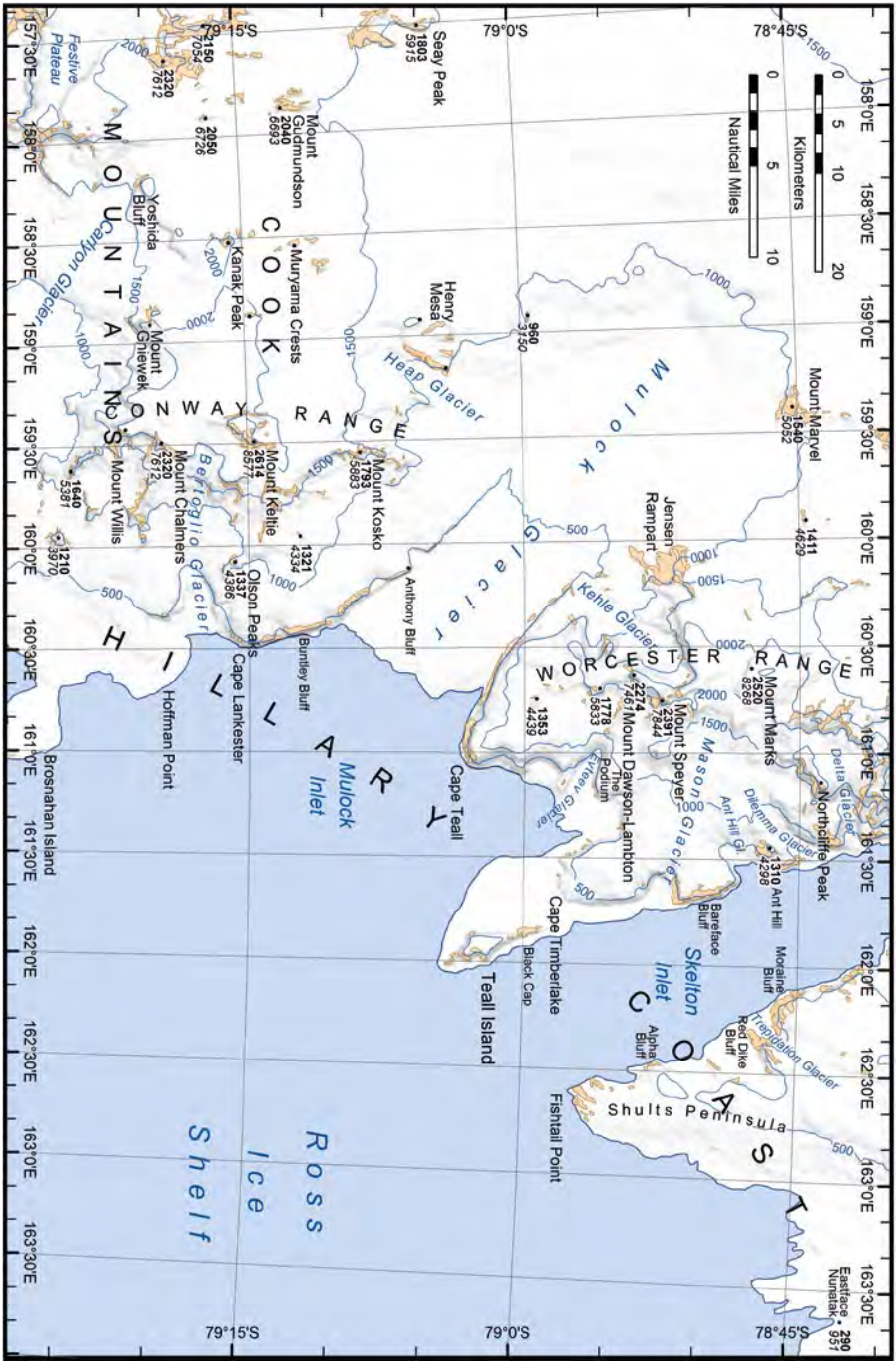
0 1 2 3 4 5 Kilometers

N

Projection: Lambert Conformal Conic
Spheroid and Datum: WGS84; Contour Interval: 50 m.
Data sources: Topography - Derived from USGS/NASA.
Airborne Topographic Mapper DEM (2001) by ERA.
Imagery: WorldView-3 31 Oct 2022 ©Maxar 2022 provided by Polar Geospatial Center (NSF #2129685);
Black Island route - GPS (2006);
Seal observations: J Rotella pers. comm. 2023.

ENVIRONMENTAL AWARENESS MAPS

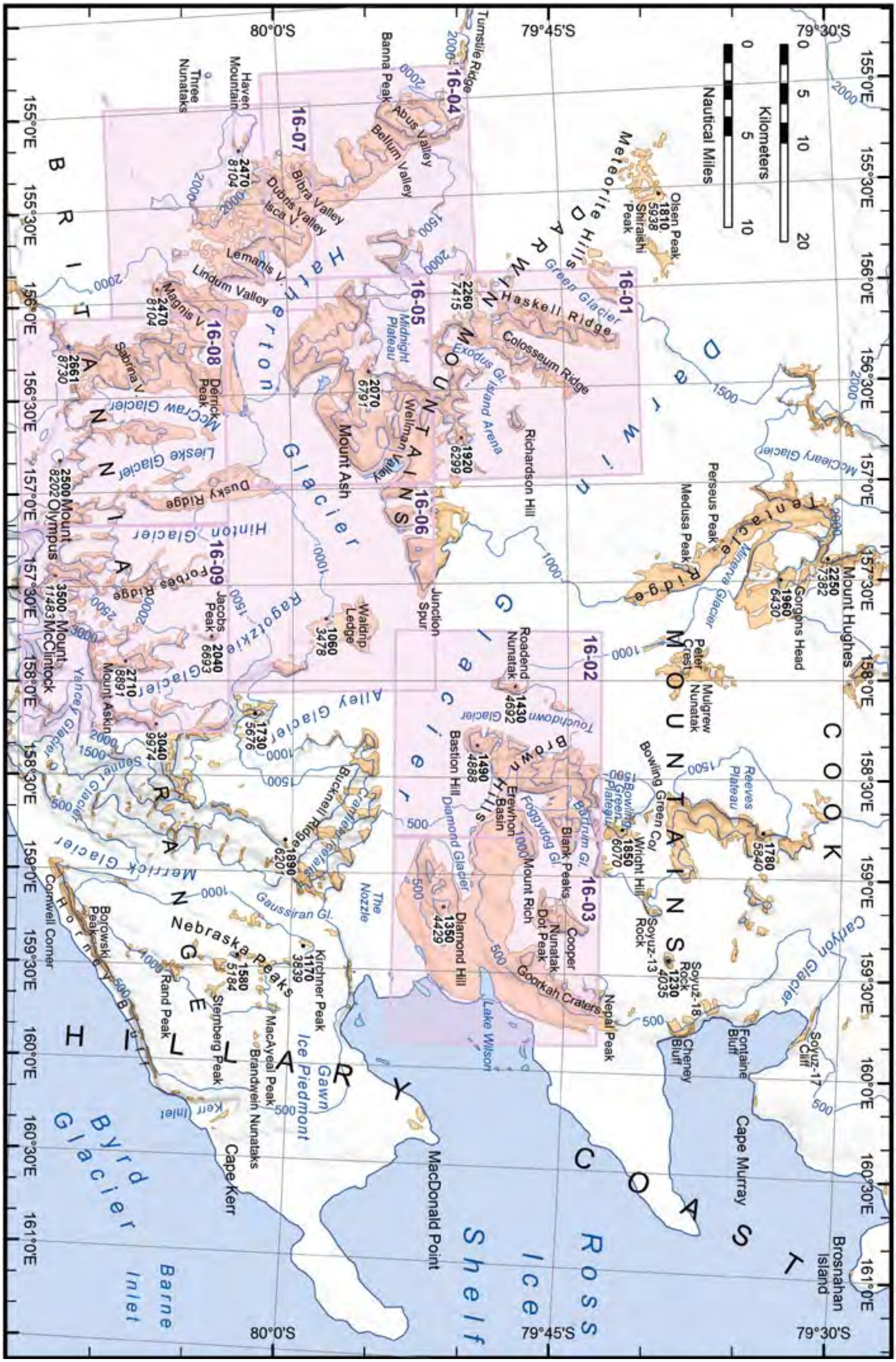
EAM15: MULOCK GLACIER
COOK MOUNTAINS North



Mulock Glacier
Mulock Inlet
Ross Ice Shelf
Skelton Inlet
Cook Mountains
Conway Range
Worcester Range
Hillary Coast
Festive Plateau
Canyon Glacier
Heap Glacier
Bertoglio Glacier
Kehle Glacier
Mason Glacier
Evteev Glacier
Ant Hill Gl.
Dilemma Glacier
Delta Glacier
Trepidation Glacier
Seay Peak
Mount Gudmundson
Yoshida Bluff
Kanak Peak
Muryama Crests
Mount Gniewek
Henry Mesa
Mount Keltie
Mount Kosko
Mount Chalmers
Mount Willis
Olson Peaks
Anthony Bluff
Buntley Bluff
Cape Lankester
Hoffman Point
Brosnahan Island
Cape Teall
Teall Island
Black Cap
Cape Timberlake
Fishtail Point
Jensen Rampart
Mount Marvel
Mount Marks
Mount Speyer
Mount Dawson-Lambton
The Podium
Northcliffe Peak
Ant Hill
Bareface Bluff
Moraine Bluff
Red Dike Bluff
Alpha Bluff
Shults Peninsula
Eastface Nunatak
Kilometers
Nautical Miles
79°15'S
79°0'S
78°45'S
157°30'E
158°0'E
158°30'E
159°0'E
159°30'E
160°0'E
160°30'E
161°0'E
161°30'E
162°0'E
162°30'E
163°0'E
163°30'E

ENVIRONMENTAL AWARENESS MAPS

EAM16: DARWIN GLACIER
COOK MOUNTAINS South
DARWIN MOUNTAINS
BRITANNIA RANGE

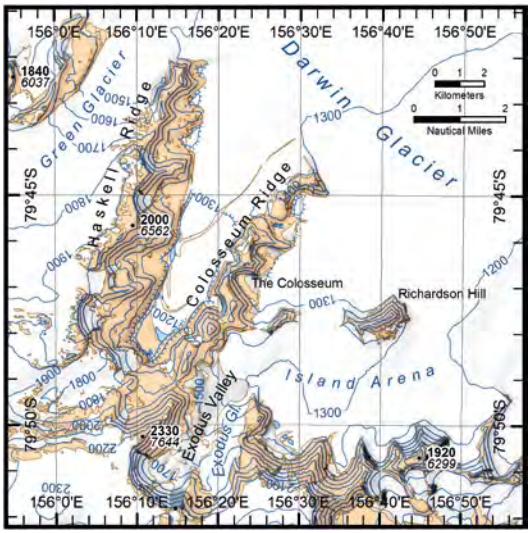

80°0'S
79°45'S
79°30'S
155°0'E
155°30'E
156°0'E
156°30'E
157°0'E
157°30'E
158°0'E
158°30'E
159°0'E
159°30'E
160°0'E
160°30'E
161°0'E
Kilometers
Nautical Miles
16-01
16-02
16-03
16-04
16-05
16-06
16-07
16-08
16-09
DARWIN MOUNTAINS
COOK MOUNTAINS
BRITANNIA RANGE
HILLARY COAST
Darwin Glacier
Hatherton Glacier
Ross Ice Shelf
Byrd Glacier
Barne Inlet
Gawn Ice Piedmont
Meteorite Hills
Brown Hills
Haskell Ridge
Colosseum Ridge
Teluelcle Ridge
Midnight Plateau
Island Arena
Richardson Hill
Mount Ash
Wellman Valley
Junction Spur
Roadend Nunatak
Bastion Hill
Diamond Hill
Lake Wilson
Mount Rich
Dot Peak
Cooper Nunatak
Goorkah Craters
Nepal Peak
Blank Peaks
Erewhon Basin
Bowling Green Col
Bowling Green Plateau
Wright Hill
Soyuz-13 Rock
Soyuz-18 Rock
Soyuz-17 Cliff
Fontaine Bluff
Cheney Bluff
Cape Murray
Brosnahan Island
MacDonald Point
Cape Kerr
Kerr Inlet
Nebraska Peaks
Kirchner Peak
MacAyeal Peak
Brandywein Nunataks
Sternberg Peak
Rand Peak
Borowski Peak
Cornwell Corner
Merrick Glacier
Gaussiran Gl.
The Nozzle
Bucknell Ridge
Alley Glacier
Ragotzkie Glacier
Walcott Ledge
Jacobs Peak
Mount McClintock
Mount Askin
Mount Olympus
Forbes Ridge
Hinton Glacier
Dusky Ridge
Lieske Glacier
McCraw Glacier
Derrick Peak
Sabrina V.
Magnis V.
Lindum Valley
Lemanis V.
Isca V.
Dubris Valley
Bibra Valley
Bellum Valley
Abus Valley
Banna Peak
Turnstile Ridge
Haven Mountain
Three Nunataks
Olsen Peak
Shiraishi Peak
Green Glacier
Exodus Gl.
Perseus Peak
Medusa Peak
Minerva Glacier
Gorgons Head
Mount Hughes
McCleary Glacier
Peter Crest
Mulgrew Nunatak
Reeves Plateau
Touchdown Glacier
Foggydog Gl.
Diamond Glacier
Carlyon Glacier
Yancey Glacier
Sennet Glacier

THE COLOSSEUM **EAM16-01**

GRID REF:

GPS:

ELEV FT



LOCATION: Darwin Mountains, north.

DESCRIPTION: The Colosseum is a prominent cirque formed at the head of the valley between the Colosseum and Haskell ridges, lying on the southern side of Darwin Glacier. So named for its enclosing cliffs resembling the famous Roman amphitheatre.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

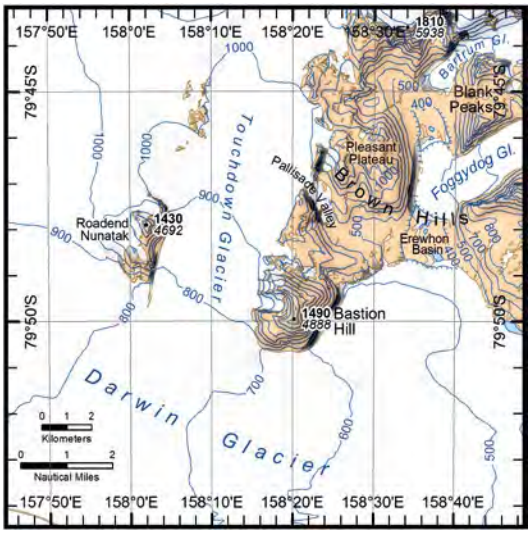
INFORMATION SOURCES and DATES:

TOUCHDOWN GLACIER **EAM16-02**

GRID REF:

GPS:

ELEV FT



LOCATION: Brown Hills, Cook Mountains.

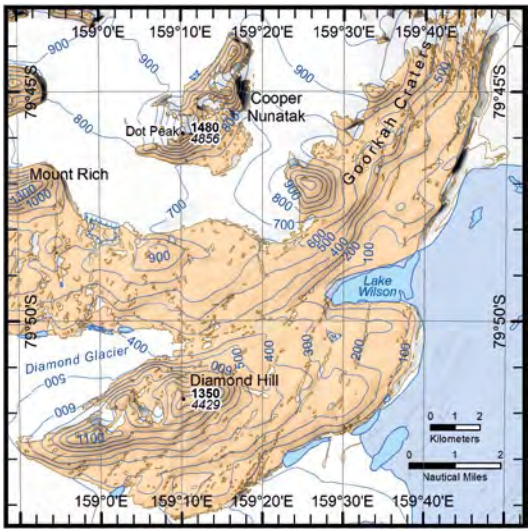
DESCRIPTION: Touchdown Glacier lies west of the Brown Hills, a group of mainly ice-free hills on the northern side of the Darwin Glacier. Touchdown Glacier flows into the lower reaches of the Darwin Glacier.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

DIAMOND HILL **EAM16-03**
GRID REF: ELEV FT
GPS:



LOCATION: Cook Mountains.

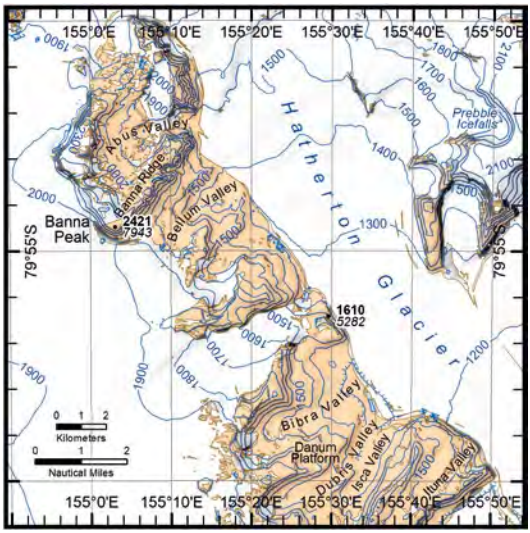
DESCRIPTION: Diamond Hill (~1200 m) is an extensive ice-free area lying ~3 km southwest of Lake Wilson, which lies on the western margin of the Ross Ice Shelf on the Hillary Coast.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS: .

INFORMATION SOURCES and DATES:

BELLUM VALLEY **EAM16-04**
GRID REF: ELEV FT
GPS:



LOCATION: Hatherton Glacier, upper.

DESCRIPTION: Bellum Valley lies southwest of the upper Hatherton Glacier and is flanked by the Abus Valley to the north and Bibra Valley to the south.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

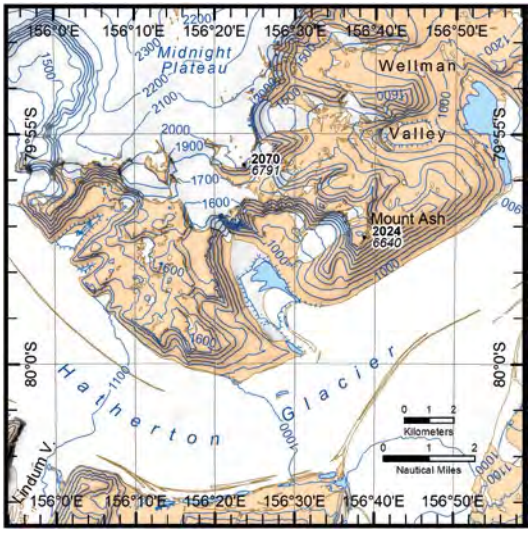
RESTRICTIONS:

INFORMATION SOURCES and DATES:

WELLMAN VALLEY **EAM16-05**

GRID REF: ELEV FT

GPS:



LOCATION: Darwin Mountains, south

DESCRIPTION: Wellman Valley is ice-free with a sizeable lake lying on the northern margin of the Hatherton Glacier.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

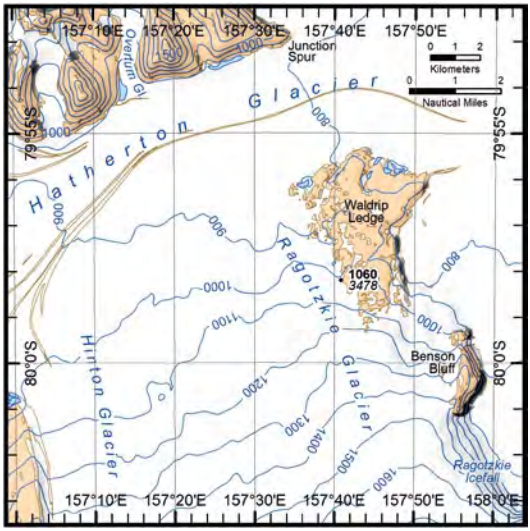
Wellman Valley: View west across lake at the northern ice margin of Hatherton Glacier, looking towards the ridges in the upper reaches of the valley. Photo: B. Storey, 13 Dec 2007; Antarctica NZ Image Library.

Wellman Valley: View east towards lake on margin of Hatherton Glacier. The Nozzle and peaks in the Britannia Range in distance. Photo: M. Stevens, 09 Dec 2007; Antarctica NZ Image Library.

RAGOTZKIE GLACIER

GRID REF:
GPS:

EAM16-06
ELEV FT



LOCATION: Hatherton Glacier, lower.

DESCRIPTION: The Ragotskie Glacier joins the Hatherton Glacier in its lower reaches, ~5 km from its junction with Darwin Glacier.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

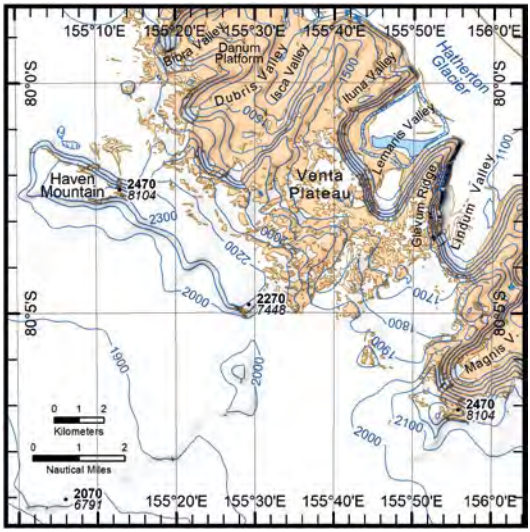
RESTRICTIONS:

INFORMATION SOURCES and DATES:

HAVEN MOUNTAIN

GRID REF:
GPS:

EAM16-07
ELEV FT



LOCATION: Britannia Range.

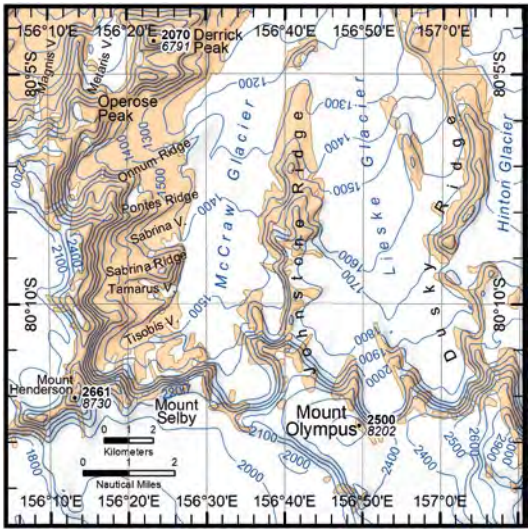
DESCRIPTION: Haven Mountain (~2420 m) is an ice covered / snowy ridge ~6 km from the Bibra, Dubris, Isca and Ituna valleys, a series of ice-free valleys flanking the southwest side of Hatherton Glacier.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

MOUNT OLYMPUS **EAM16-08**
GRID REF: ELEV FT
GPS:



LOCATION: Britannia Range.

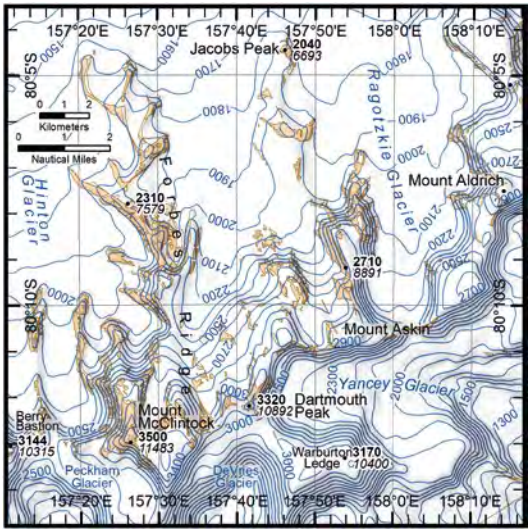
DESCRIPTION: Mount Olympus (~2500 m) lies ~11.5 km west of Mount McClintock (~3500 m).

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

INFORMATION SOURCES and DATES:

MOUNT McCLINTOCK **EAM16-09**
GRID REF: ELEV FT
GPS:



LOCATION: Britannia Range.

DESCRIPTION: Mount McClintock (~3500 m), the highest mountain in the Britannia Range and heavily glaciated, lies at the southern extremity of Forbes Ridge.

HAZARDS:
APPROACH / DEPARTURE:
COMMS:
CONTACT:
REMARKS:

RESTRICTIONS:

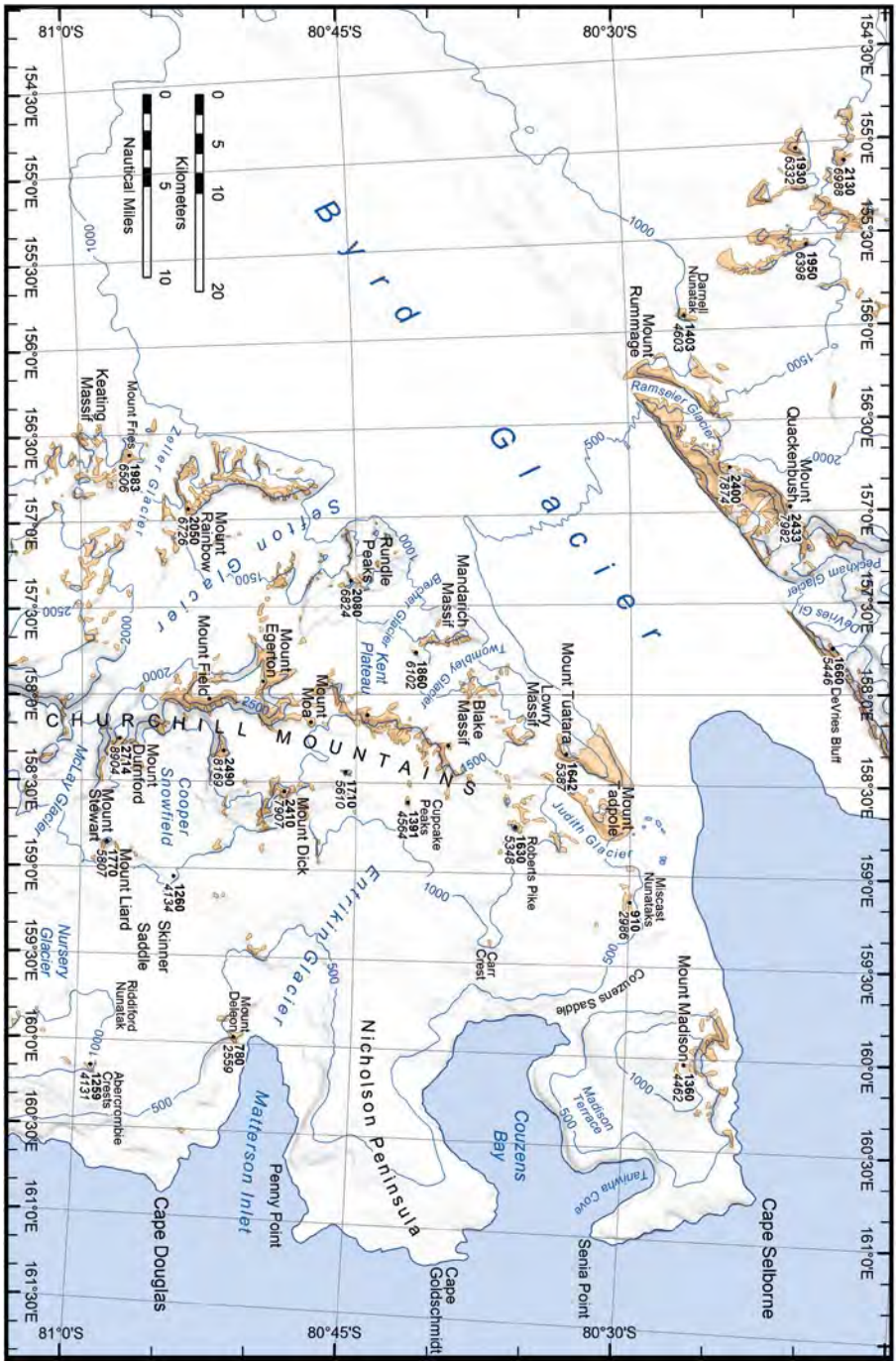
INFORMATION SOURCES and DATES:

ENVIRONMENTAL AWARENESS MAPS

EAM17: BYRD GLACIER
CHURCHILL MOUNTAINS, North

BYRD GLACIER OVERVIEW

EAM17

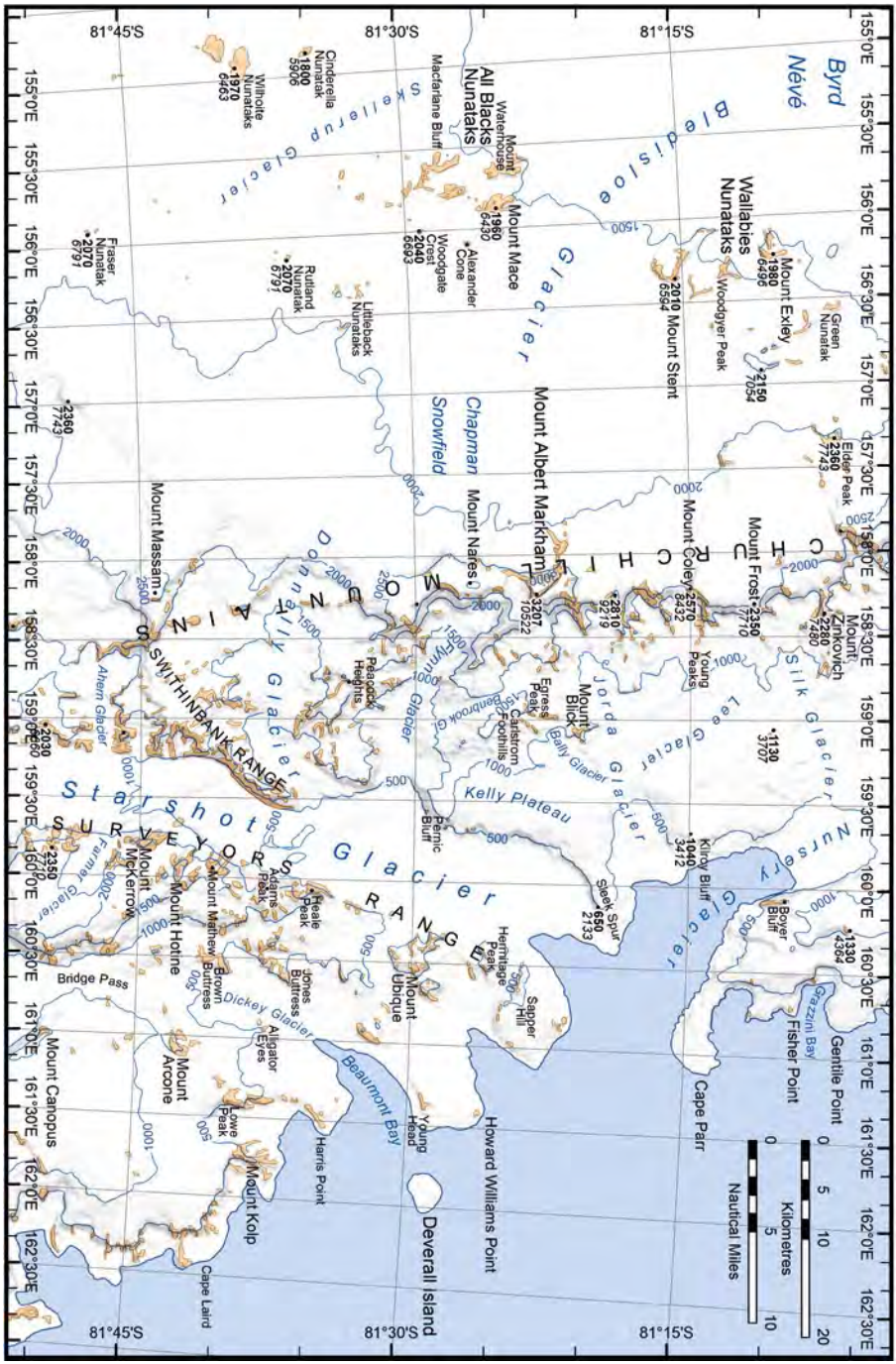


ENVIRONMENTAL AWARENESS MAPS

EAM18: STARSHOT GLACIER CHURCHILL MOUNTAINS, South

STARSHOT GLACIER OVERVIEW

EAM18



ENVIRONMENTAL AWARENESS MANUAL

PLACE NAMES INDEX

PLACE NAMES INDEX

LOCATION	MAP
Cape Laird	18-00
Cape Lankester	15-00
Cape Mackay	12-00
Cape Main	06-04
Cape McCormick	03-05
Cape McNab	01-02
Cape Moore	02-00
Cape Murray	16-00
Cape Neumayer	09-00A
Cape North	02-01
Cape Oakley	02-00
Cape Parr	18-00
Cape Philippi	09-00A
Cape Phillips	06-01
Cape Polar Sea	06-04
Cape Polar Star	06-04
Cape Reynolds	09-00A
Cape Roberts	10-08
Cape Roget	03-04
Cape Ross	10-05
Cape Royds	12-03
Cape Russell	08-08
Cape Sastrugi	08-01
Cape Scoresby	01-01
Cape Scott	02-00
Cape Selborne	17-00
Cape Sibbald	07-00
Cape Smyth	01-03
Cape Spencer Smith	14-04
Cape Spirit	14-03
Cape Teall	15-00
Cape Tennyson	12-00
Cape Timberlake	15-00
Cape Wadworth	06-03
Cape Washington	08-05
Cape Wheatstone	04-06
Capsize Glacier	07-00
Carapace Nunatak	10-00
Cargo Pond	10-04
Carleton Glacier	13-03
Carlstrom Foothills	18-00
Carlyon Glacier	15-00, 16-00
Carnein Glacier	08-00
Carr Crest	17-00
Cartographers Range	04-00
Cassidy Glacier	11-09
Castellini Bluff	14-04
Castle Rock	12-00
Cat Nunatak	11-08
Catacomb Hill	13-04
Catenary Nunatak	13-01
Cathedral Rocks	11-11
Catspaw Glacier	11-11
Caughley Beach	12-02
Cavendish Icefalls	11-10
Cavendish Rock	11-10
Chapman Glacier	02-02
Chapman Snowfield	18-00
Charcot Cove	09-00B
Chattahoochee Glacier	10-02
Cheetham Ice Tongue	09-00A, 09-00B
Cheney Bluff	16-00
Chinstrap Island	01-02
Chisholm Hills	05-00
Churchill Mountains	17-00, 18-00
Cinderella Nunatak	18-00
Clare Range	11-00
Clarke Glacier	09-00A
Clausnitzer Glacier	07-01
Clem Nunatak	13-00
Clinker Bluff	13-00
Clissold Nunatak	12-00
Colbeck Bay	03-02
Colosseum Ridge	16-01
Colwell Massif	13-02
Comberiate Glacier	13-00
Commonwealth Glacier	11-08
Condit Glacier	13-03
Conical Hill	12-00
Conrow Glacier	11-07
Convoy Range	10-00
Conway Range	15-00
Cook Mountains	15-00, 16-00
Coombs Hills	10-01, 10-03
Cooper Nunatak	16-03
Cooper Snowfield	17-00
Copper Cove	04-01
Coral Sea Glacier	04-00
Corner Glacier	07-00, 08-00
Cornwell Corner	16-00
Cosmonaut Glacier	05-00
Costa Spur	06-01
Cotter Cliffs	04-05
Cotton Glacier	10-00
Coulman Island	06-03
Couloir Cliff	10-08
Couzens Bay	17-00
Couzens Saddle	17-00
Covert Glacier	13-03
Cowie Nunatak	10-00
Coxcomb Peak	10-01
Cranfield Icefalls	16-00
Crash Nunatak	09-00B
Crater Cirque	04-07
Craw Ridge	13-03
Crescent Bay	03-02
Croll Glacier	04-00
Cuff Cape	10-07
Cupcake Peaks	17-00
Dailey Islands	12-00, 13-05
Dale Glacier	13-00
Daniell Peninsula	04-00, 06-00
Danum Platform	16-04, 16-07
Darnell Nunatak	17-00
Dartmouth Peak	16-09
Darwin Glacier	16-01, 16-02
Darwin Mountains	16-00
Datum Peak	13-04
Daughtery Peaks	05-00
David Glacier	09-00A, 09-00B
Davis Bluff	14-04
Davis Glacier	09-00B
Davis Ice Piedmont	02-01
DeAngelo Glacier	03-00
Debenham Glacier	11-00
Deception Plateau	05-00
Deep Freeze Range	07-00, 08-00
Dellbridge Islands	12-06
Delta Glacier	15-00
Dennistoun Glacier	02-00
Denton Glacier	11-07
Depot Island	10-05
Depot Nunatak	11-09
Derrick Peak	16-08
Descent Glacier	11-12
Dessent Ridge	06-06
Detour Nunatak	10-00
Deverall Island	18-00
Devils Punchbowl	10-07
DeVries Bluff	17-00
DeVries Glacier	16-09, 17-00
Diamond Glacier	16-03
Diamond Hill	16-03
Dibble Bluff	14-04
Dibble Peak	12-05
Dickey Glacier	18-00
Dilemma Glacier	15-00
Discovery Bluff	10-07
Discovery Glacier	13-00, 14-00
Diversion Hills	05-00
Don Juan Pond	11-06
Donnally Glacier	18-00
Donner Valley	11-06
Dot Peak	16-03
Downshire Cliffs	03-03
Drabek Peak	02-00
Dreary Isthmus	14-01
Dreikanter Head	10-06
Dubridge Range	03-00
Dubris Valley	16-04, 16-07
Dugdale Glacier	03-00
Duke of York Island	03-00
Dunbar Head	13-00, 14-00
Dunedin Range	03-00
Dunlop Island	11-04
Dunn Glacier	05-05
Dusky Ridge	16-08
Eady Ice Piedmont	14-00
Eastface Nunatak	15-00
Eastwind Glacier	12-00
Eastwind Ridge	10-02
Ebbe Glacier	02-00
Edisto Glacier	04-04
Edisto Inlet	04-00
Edmonson Point	07-03
Egress Peak	18-00
Eisenhower Range	08-00
Elder Glacier	04-00
Elder Peak	18-00
Elevation Point	11-11
Eliza Cone	01-02
Elkhorn Ridge	10-02
Ellipsoid Hill	11-13
Emerging Island	06-00
Emmanuel Glacier	13-02, 13-06
Endeavour Massif	10-00
Endeavour Piedmont Glacier	12-00
Engberg Bluff	06-00
Entrikin Glacier	17-00
Erebus Bay	12-06
Erebus Glacier	12-00
Erebus Glacier Tongue	12-06
Erewhon Basin	16-02
Escalade Peak	13-00
Evans Cove	08-08
Evans Heights	09-00A
Evans Piedmont Glacier	10-05, 10-06
Evteev Glacier	15-00
Exodus Glacier	16-01
Exodus Valley	16-01
Explorers Cove	11-08
Exposure Hill	05-04
Fang Glacier	12-04
Fang Ridge	12-04
Farmer Glacier	18-00
Felsite Island	04-04
Ferrar Glacier	11-00, 13-00
Festive Plateau	15-00
Findlay Ridge	13-07
Finger Mountain	11-10
Finger Point	10-07
Finley Glacier	05-05
Fireman Glacier	11-09

LOCATION	MAP
Lake Karentz	11-02
Lake Miers	13-07
Lake Thomas	11-03
Lake Vanda	11-06
Lake Vashka	11-02
Lake Vida	11-02
Lake Wilson	16-03
Lamplugh Island	09-00A, 09-00B
Lange Peak	03-00
Langevad Glacier	06-00
Larsen Glacier	08-09
Lashley Glacier	11-09, 13-00
Lashley Mountains	13-00
Lavalee Point	10-01
Lawson Glacier	04-00
Leander Glacier	03-00
Lee Glacier	18-00
Lee Lake	10-07
Lemanis Valley	16-07
Lemasters Bluff	05-01
Lewis Bay	12-00
Lichen Hills	05-01
Lieske Glacier	16-08
Lindum Valley	16-07
Line Glacier	06-00
Linnaeus Terrace	11-06
Lion Island	10-06
Lister Glacier	13-03
Little Razorback	12-06
Littleback Nunataks	18-00
Lowe Peak	18-00
Lower Staircase	13-00
Lowry Bluff	07-00, 08-00
Lowry Massif	17-00
Luther Peak	04-02
Lyall Islands	02-03
MacAyeal Peak	16-00
MacDonald Point	16-00
MacDonald Ridge	10-01
Macfarlane Bluff	18-00
Mackay Glacier	10-00
Mackay Glacier Tongue	10-07
MacMillan Point	13-05
Madison Terrace	17-00
Magnis Valley	16-07, 16-08
Maiden Castle	10-01
Malta Plateau	04-00
Mandarich Massif	17-00
Mandible Cirque	06-01
Manhaul Glacier	04-02, 04-04
Man-o-War Glacier	03-00
Marble Point	11-08
Marin Glacier	09-00B
Marinelli Head	13-05
Mariner Glacier	06-00
Mariner Glacier Tongue	06-00
Markham Island	08-04
Marshall Cirque	14-04
Marshall Valley	13-04
Marston Glacier	10-06
Marvin Nunatak	11-09
Mason Glacier	15-00
Mason Spur	13-00, 14-00
Matataua Glacier	13-02
Matchless Mountain	10-00
Matterhorn Glacier	11-11
Matterson Inlet	17-00
Mawson Flat	09-00B
Mawson Glacier	09-00B
Maya Mountain	11-10

LOCATION	MAP
McCarthy Ridge	08-00
McCleary Glacier	16-00
McClintock Point	11-08
McCraw Glacier	16-08
McDaniel Nunatak	09-00A, 09-00B
McDermott Glacier	13-00
McDonald Beach	12-02
McElroy Glacier	02-00
McElroy Ridge	04-00
McIntosh Cliffs	14-00
McKellar Glacier	04-00
McKelvey Valley	11-02
McLay Glacier	17-00
McLea Nunatak	09-00B
McMahon Glacier	02-01
McMurdo Ice Shelf	12-00, 14-00
McMurdo Sound	12-00
Meander Glacier	05-00, 06-00
Medusa Peak	16-00
Merrell Valley	10-04
Merrick Glacier	16-00
Mesa Range	05-00
Meserve Glacier	11-07
Metaris Valley	16-08
Meteorite Hills	16-00
Midnight Plateau	16-05
Midship Glacier	10-04
Miers Valley	13-07
Miller Glacier	11-00
Minerva Glacier	16-00
Minna Bluff	14-00
Minna Hook	14-00
Minna Saddle	14-00
Minna Saddle	14-02
Miscast Nunataks	17-00
Missen Ridge	02-02
Mistake Peak	11-05
Mitchell Glacier	13-03
Monastery Nunatak	13-01
Moraine Strait	14-00
Moraine Bluff	15-00
Moraine Strait	14-01
Morning Glacier	13-09
Morning Lake	13-09
Morris Basin	09-01
Moubray Bay	03-04, 04-03
Moubray Glacier	03-00
Moubray Piedmont Gl.	03-04
Mount Abbott	08-07
Mount Achilles	03-00
Mount Adamson	07-00
Mount Aeolus	11-06
Mount Ajax	03-00
Mount Albert Markham	18-00
Mount Alberts	06-00
Mount Aldrich	16-09
Mount Allen	11-03
Mount Arcone	18-00
Mount Armytage	09-00B
Mount Ash	16-05
Mount Askin	16-09
Mount Aurora	14-03
Mount Ballou	05-02
Mount Bastion	11-01
Mount Basurto	10-04
Mount Bellingshausen	09-00A
Mount Bergen	10-04
Mount Billing	09-00A, 09-00B
Mount Bird	12-02
Mount Blackwelder	13-01

LOCATION	MAP
Mount Blick	18-00
Mount Bockheim	13-02
Mount Bolt	02-00
Mount Borgstrom	07-00
Mount Bowen	09-00A, 09-00B
Mount Brabec	05-05
Mount Brewster	06-01
Mount Brocklehurst	09-00B
Mount Brooke	10-03
Mount Browning	08-02
Mount Burrows	07-00
Mount Canopus	18-00
Mount Carson	05-04
Mount Caveney	07-00
Mount Chalmers	15-00
Mount Chiang	13-03
Mount Coates	11-11
Mount Coley	18-00
Mount Crummer	08-10
Mount Dalmeny	02-00
Mount Dawson-Lambton	15-00
Mount de Gerlache	08-10
Mount Dearborn	11-01
Mount Deleon	17-00
Mount DeWitt	11-00
Mount Dick	17-00
Mount Dickason	07-00, 08-00
Mount Dido	11-06
Mount Discovery	14-02
Mount Douglas	10-00
Mount Durnford	17-00
Mount Egerton	17-00
Mount Elliot	02-00
Mount Emison	07-00
Mount Emmerson	03-00
Mount Endeavour	10-00
Mount England	10-07
Mount Eos	03-00
Mount Erebus	12-04
Mount Estes	14-03
Mount Evans	11-03
Mount Ewart	14-03
Mount Exley	18-00
Mount Fazio	05-04
Mount Fearon	09-00A
Mount Feather	13-01
Mount Fenton	08-00
Mount Field	17-00
Mount Fleming	11-05
Mount Francis	04-00
Mount Freeman	04-00
Mount Fries	17-00
Mount Frost	18-00
Mount Frustum	05-04
Mount Gaberlein	08-09
Mount Gauss	09-00B
Mount George	09-00B
Mount Gibbs	07-00
Mount Gniewek	15-00
Mount Gran	10-04
Mount Griffen	02-00
Mount Griffin	09-00B
Mount Gudmundson	15-00
Mount Gunn	10-04
Mount Hancox	04-00
Mount Handsley	13-02
Mount Harker	11-03
Mount Harrington	04-00
Mount Harwood	02-01
Mount Hayward	14-04

Mount Lister (4025 m), Royal Society Range, from Lake Colleen, upper Garwood Valley. Photo: © C. Harris, ERA, 19 Nov 2024.

ANTARCTIC SPECIALLY MANAGED AREAS

ASMA	LOCATION	MAP
2	McMurdo Dry Valleys	10-00, 11-00, 13-00
2	**FACILITIES ZONES**	
	Cape Roberts Hut	10-08-1
	Marble Point Refueling Facility	11-04-1
	Lake Vanda Hut (delisting proposed)	11-06-3
	Bull Pass Hut	11-06-3
	Lower Wright Hut	11-07-1
	Mount Newall Radio Repeater	11-07-2
	Lake Hoare Camp	11-07-4
	Lake Fryxell Camp	11-08-3
	F6 Camp	11-08-4
	New Harbor Camp	11-08-5
	Lake Bonney Camp	11-11-1

ASMA	LOCATION	MAP
2	**RESTRICTED ZONES**	
	Battleship Promontory	10-04-1
	Victoria Valley Sand Dunes	11-03-1
	Don Juan Pond	11-06-1
	Argo Gully	11-06-5
	Prospect Mesa	11-06-6
	Hart Ash Deposit Restricted Zone	11-07
	Mount Feather	13-01-1
	Trough Lake Catchment	13-07-1
2	**SCIENTIFIC ZONES**	
	Boulder Pavement	11-06-4
	Explorers Cove	11-08-5
2	**VISITOR ZONE**	
	Taylor Valley	11-08-2

ANTARCTIC SPECIALLY PROTECTED AREAS

ASPA	LOCATION	MAP
104	Sabrina Island	01-02
105	Beaufort Island	12-01
106	Cape Hallett	04-03
116	New College Valley	12-02
121	Cape Royds	12-03
122	Arrival Heights	12-07
123	Barwick & Balham Valleys	11-01
124	Cape Crozier	12-05
131	Canada Glacier	11-08-1
137	NW White Island	14-04
138	Linnaeus Terrace	11-06-2
154	Botany Bay, Granite Harbour	10-07-1
155	Cape Evans	12-06

ASPA	LOCATION	MAP
156	Lewis Bay	12-04-3
157	Backdoor Bay	12-03
158	Hut Point	12-07
159	Cape Adare	03-01
161	Terra Nova Bay	08-07
165	Edmonson Point	07-03
172	Lower Taylor Glacier & Blood Falls	11-10, 11-11-1
173	Cape Washington & Silverfish Bay	08-04, 08-05
175	Mount Rittman	05-05
175	Mount Melbourne	07-04, 08-00
175	Tramway Ridge	12-04
178	Inexpressible Island & Seaview Bay	08-08

HISTORIC SITES AND MONUMENTS

HSM	LOCATION	MAP
14	Ice cave site, Inexpressible Island	08-08
15	Shackleton's Hut at Cape Royds	12-03
16	Scott's Hut at Cape Evans	12-06-1
17	Cross on Wind Vane Hill, Cape Evans	12-06-1
18	Scott's Hut at Hut Point, Ross Island	12-07-1
19	Vince's Cross at Hut Point, Ross Island	12-07-1
20	Cross on Observation Hill, Ross Island	12-07-1
21	Wilson's stone hut at Cape Crozier	12-05-1
22	Borchgrevink's Hut, Cape Adare	03-01
23	Hanson's Grave, Cape Adare	03-01
54	Richard E. Byrd memorial, McMurdo Station	12-07-1

HSM	LOCATION	MAP
65	Message post, Foyn Island	03-05
67	'Granite House' rock shelter, Cape Geology	10-07-2
68	Depot site, Hells Gate, Inexpressible Island	08-08
69	Cape Crozier Message post	12-05-1
70	Coulman Island Message post	06-03
73	Memorial Cross for Mount Erebus crash	12-04-3
75	Hut of Scott Base, Pram Point	12-07-1
85	Plaque, Nuclear Plant, McMurdo Station	12-07-1
89	Terra Nova Expedition, Upper Erebus	12-04
90	Terra Nova Expedition, Lower Erebus	12-04

IMPORTANT BIRD AREAS

STATIONS & FACILITIES

VISITOR SITE GUIDELINES

Lake Vanda, Wright Valley, ASMA No.2. Photo: © C. Harris, ERA, 16 Nov 2024.

MAP LEGEND

Wildlife

- Breeding locality (overviews only)
- Emperor penguin colony
- Adélie / Chinstrap penguin colony
- Flying bird colony
- Seal colony

Designated areas

- Antarctic Specially Managed Area (ASMA)
- Antarctic Specially Protected Area (ASPA)
- Important Bird Area (IBA)
- Historic Site & Monument (HSM)
- Visitor Site Guidelines (VSG) (Site no. given)

Natural features

- Permanent ice
- Ice shelf
- Ice-free ground
- Lakes
- Ocean
- Rich vegetation

Infrastructure

- Station, Year-Round
- Station, Seasonal
- Refuge, Seasonal

Elevations

- Contour (200 m or 100 m)
- Bathymetry (200m)
- **Metres** / *Feet* Spot elevation

Aircraft operations

- Helicopter landing site
- Airfield, Seasonal
- Airstrip (permanent, gravel)
- Airstrip (seasonal, sea ice)
- Fuel cache

Antarctica New Zealand

Federal Ministry for the Environment, Nature Conservation and Nuclear Safety

NSF

KOPRI
Korea Polar Research Institute

PROGRAMMA NAZIONALE DI RICERCHE IN ANTARTIDE
ITALIANTARTIDE

environmental research & assessment
era

ISBN 978-0-9575208-5-1

Pages Recyclable

Erebus Bay, 2009