Management Plan for
Antarctic Specially Managed Area No. 2
MCMURDO DRY VALLEYS, SOUTHERN VICTORIA LAND

Introduction

The McMurdo Dry Valleys are the largest relatively ice-free region in Antarctica with approximately thirty percent of the ground surface largely free of snow and ice. The region encompasses a cold desert ecosystem, whose climate is not only cold and extremely arid (in the Wright Valley the mean annual temperature is −19.8°C and annual precipitation is less than 100 mm water equivalent), but also windy. The landscape of the Area contains mountain ranges, nunataks, glaciers, ice-free valleys, coastline, ice-covered lakes, ponds, meltwater streams, arid patterned soils and permafrost, sand dunes, and interconnected watershed systems. These watersheds have a regional influence on the McMurdo Sound marine ecosystem. The Area’s location, where large-scale seasonal shifts in the water phase occur, is of great importance to the study of climate change. Through shifts in the ice-water balance over time, resulting in contraction and expansion of hydrological features and the accumulations of trace gases in ancient snow, the McMurdo Dry Valley terrain also contains records of past climate change. The extreme climate of the region serves as an important analogue for the conditions of ancient Earth and contemporary Mars, where such climate may have dominated the evolution of landscape and biota.

The Area was jointly proposed by the United States and New Zealand and adopted through Measure 1 (2004). This Management Plan aims to ensure the long-term protection of this unique environment, and to safeguard its values for the conduct of scientific research, education, and more general forms of appreciation. The Management Plan sets out the values, objectives and general rules for conduct within the region, and includes a number of maps and appendices that provide more specific guidelines for particular activities and designated zones within the Area, arranged according to the following structure:

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1. Values to be protected and activities to be managed

The McMurdo Dry Valleys are characterized by unique ecosystems of generally low macrobiotic biodiversity and reduced food web complexity, although recent research has shown evidence of highly diverse microbial communities across relatively small areas, as well as between valleys. Moreover, as the largest ice-free region in Antarctica, the McMurdo Dry Valleys also contain relatively diverse habitats compared with other ice-free areas. The Area contains unusual microhabitats and biological communities (such as endolithic and cryoconite systems) as well as rare glaciological and geological features (for example, a brine-rich sub-glacial lake, hyper-saline surface lakes, unique marine deposits and undisturbed desert pavements). These glaciological and geological features are of value because they contain an extremely long record of natural events. The McMurdo Dry Valleys contain indicators of past and present regional climate change, as well as features that play a role in influencing local climate change. A Long Term Ecological Research (LTER) site was established in the Taylor Valley in 1993, and substantial research has been conducted by the program every season for almost twenty years, not only in the Taylor Valley but also more generally across the McMurdo Dry Valleys. The long-term environmental data sets that have been collected through this program, and through a range of other research initiatives in the McMurdo Dry Valleys, are some of the longest in Antarctica. These scientific values are of global and regional importance.

The Area is a valuable resource for understanding landscape processes and the stability of Antarctic ice sheets. The McMurdo Dry Valleys contain unique surface deposits including glacially deposited and modified sediments, sand dunes, desert pavement, glacio-lacustrine sediments, and marine fjord sediments containing valuable records of planetary change. The soil, rock, water, and ice environments and their associated biota are of scientific value as model ecosystems that allow deep insights into natural processes operating throughout the biosphere. Finally, the species that reside in the McMurdo Dry Valleys provide a biological resource for understanding adaptation to extreme environments, and are true end members of ecological continua.

The isolation of the McMurdo Dry Valleys and the extreme environment has generally protected it from human introductions of species from outside of Antarctica. Many parts of the Area are only rarely visited, and one (the Barwick and Balham Valleys protected area) has been set aside as a reference area where entry has been very strictly controlled for almost 40 years and overflight is prohibited. The relatively pristine condition of the McMurdo Dry Valleys, and the
relative lack of introduced species established within the Area, are rarely observed elsewhere in the world and have both high scientific and ecological value, especially for comparative studies. Sites of historic value originating from early exploration of the Area have also been noted, such as ‘Granite House’ at Botany Bay, Granite Harbor, which was constructed by members of the 1910-1913 British Antarctic Expedition and is designated as Historic Site No. 67.

The McMurdo Dry Valleys are also valued for their aesthetic and wilderness qualities. They represent a relatively pristine environment largely undisturbed and uncontaminated by humans. The dramatic landscape, composed of precipitous mountains, high ridges and sweeping valleys, imposing layered geological formations of dark dolerite set against pale sandstones, and contrasts of ice-free and glacier-covered terrain creates unique vistas with high aesthetic value.

Activities conducted in the area include a variety of scientific research, operations in support of science, media, arts, education and other official National Program visitors, and tourism.

The Area requires special management to ensure that its scientific, environmental, ecological, historic, aesthetic and wilderness values are protected, including that data sets collected over the last 100 years will continue to be of high value. Increasing human activity and potentially conflicting interests have made it necessary to manage and coordinate activities more effectively within the Area.

2. Aims and objectives

The aim of this Management Plan is to conserve and protect the unique and outstanding environment of the McMurdo Dry Valleys by managing and coordinating human activities in the Area such that the values of the McMurdo Dry Valleys are protected and sustained in the long term, especially the value of the extensive scientific datasets that have been collected.

The specific objectives of management in the Area are to:

- Facilitate scientific research while maintaining stewardship of the environment;
- Assist with the planning and coordination of human activities in the McMurdo Dry Valleys to manage actual or potential conflicts among different values (including those of different scientific disciplines), activities and operators;
- Ensure the long-term protection of scientific, ecological, aesthetic, wilderness and other values of the Area by minimizing disturbance to or degradation of these values, including disturbance to natural features and fauna and flora, and by minimizing the cumulative environmental impacts of human activities;
- Prevent the unintended introduction of species not native to the Area, and minimize as far as practicable the unintended transfer of native species within the Area;
- Minimize the footprint of all facilities and scientific experiments established in the Area, including the proliferation of field camps;
- Minimize any physical disturbance, contamination and wastes produced within the Area, and take all practical steps to contain, treat, remove or remediate these whether produced in the course of normal activities or by accident;
- Promote use of energy systems and modes of transport within the Area that have the least environmental impact, and minimize as far as practicable the use of fossil fuels for the conduct of activities within the Area;
- Improve the understanding of natural processes and human impacts in the Area, including through the conduct of monitoring programs; and
• Encourage communication and co-operation between users of the Area, in particular through dissemination of information on the Area and the provisions that apply.

3. Management activities

To achieve the aims and objectives of this Management Plan, the following management activities are to be undertaken:

• National Programs operating within the Area should convene as required, and at least annually, a McMurdo Dry Valleys Management Group (hereafter the Management Group) to oversee coordination of activities in the Area, including to:
  - facilitate and ensure effective communication among those working in or visiting the Area;
  - provide a forum to resolve any actual or potential conflicts in use;
  - help minimize the duplication of activities;
  - maintain a record of activities and, where practical, impacts in the Area;
  - develop strategies to detect and address cumulative impacts;
  - disseminate information on the Area, in particular on the activities occurring and the management measures that apply within the Area, including through maintaining this information electronically at http://www.mcmurdodryvalleys.aq/;
  - review past, existing, and future activities and evaluate the effectiveness of management measures; and
  - make recommendations on the implementation of this Management Plan.

• National Programs operating within the Area shall maintain copies of the current version of the management plan and supporting documentation in appropriate stations and research hut facilities and make these available to all persons in the Area, as well as electronically at http://www.mcmurdodryvalleys.aq/;

• National Programs operating within the Area and tour operators visiting should ensure that their personnel (including staff, crew, passengers, scientists and any other visitors) are briefed on, and are aware of, the requirements of this Management Plan, and in particular the General Environmental Guidelines (Appendix A) that applies within the Area;

• Tour operators and any other group or person responsible for planning and / or conducting non-governmental activities within the Area should coordinate their activities with National Programs operating in the Area in advance to ensure they do not pose risks to the values of the Area and that they comply with the requirements of the Management Plan;

• National Programs operating within the Area should seek to develop best practices with a view to achieving the objectives of the Management Plan, and to exchange freely such knowledge and information;

• Signs and / or markers should be erected where necessary and appropriate to show the location or boundaries of zones, research sites, landing sites or campsites within the Area. Signs and markers shall be secured and maintained in good condition, and removed when no longer necessary;

• Visits shall be made as necessary (no less than once every five years) to evaluate whether the Management Plan is effective and to ensure management measures are adequate. The Management Plan, Code of Conduct and Guidelines shall be revised and updated as necessary; and

• National Programs operating within the Area shall take such steps as are necessary and practical to ensure the requirements of the Management Plan are observed.
4. Period of designation

Designated for an indefinite period.

5. Maps and photographs

Table 1: List of maps included in the Management Plan

<table>
<thead>
<tr>
<th>Map</th>
<th>Title</th>
<th>Source Scale</th>
<th>Estimated Error (+/- m)</th>
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</thead>
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<tr>
<td><strong>Overviews</strong></td>
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<tr>
<td>Map 1</td>
<td>Overview-ASMA No.2 McMurdo Dry Valleys: boundary and zones</td>
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<td>Map 2</td>
<td>Overview-Central Dry Valleys</td>
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<td><strong>Facilities Zones</strong></td>
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<td>Map 3</td>
<td>Explorers Cove, New Harbor</td>
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<td></td>
<td>Inset: New Harbor Camp Facilities Zone</td>
<td>1:3000</td>
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<tr>
<td>Map 4</td>
<td>Lake Fryxell – Commonwealth Glacier</td>
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<td>Inset: F-6 Camp Facilities Zone</td>
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<td>Map 5</td>
<td>Lake Fryxell – Canada Glacier</td>
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<td>Inset: Lake Fryxell Camp Facilities Zone</td>
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<td>Map 6</td>
<td>Lake Hoare, Canada Glacier</td>
<td>1:25,000</td>
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<td>Map 7</td>
<td>Lake Hoare Camp Facilities Zone</td>
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<td>Map 8</td>
<td>Lake Bonney, Taylor Valley</td>
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<td>Inset: Lake Bonney Camp Facilities Zone</td>
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<td>Map 9</td>
<td>Mount Newall, Asgard Range</td>
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<td>Inset: Mount Newall Radio Repeater Facilities Zone</td>
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<td>Map 10</td>
<td>Marble Point, McMurdo Sound</td>
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<td>Inset: Marble Point Refueling Station Facilities Zone</td>
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<td>Map 11</td>
<td>Lower Wright Valley</td>
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<td>Inset: Lower Wright Hut Facilities Zone</td>
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<td>Map 12</td>
<td>Lake Vanda, Wright Valley</td>
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<td>Inset 1: Lake Vanda Hut Facilities Zone</td>
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<td>Inset 2: Bull Pass Hut Facilities Zone</td>
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<td>Map 13</td>
<td>Cape Roberts, Granite Harbor</td>
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<td></td>
<td>Inset: Cape Roberts Hut Facilities Zone</td>
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<td><strong>Scientific Zones</strong></td>
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<tr>
<td>Map 14</td>
<td>Explorers Cove Scientific Zone</td>
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<td>Map 15</td>
<td>Boulder Pavement, Wright Valley</td>
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<td></td>
<td>Inset: Boulder Pavement Scientific Zone</td>
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<td><strong>Restricted Zones</strong></td>
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<td>Map 16</td>
<td>Trough Lake Catchment Restricted Zone</td>
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<td>Map 17</td>
<td>Mount Feather – Beacon Valley</td>
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<td>Inset: Mount Feather Sirius Deposit Restricted Zone</td>
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<td>Map 18</td>
<td>Don Juan Pond, Wright Valley</td>
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<td>Inset: Don Juan Pond Restricted Zone</td>
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<td>Map 19</td>
<td>Argo Gully, Wright Valley</td>
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<td>Inset: Argo Gully Restricted Zone</td>
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</table>
6. Description of the Area

The McMurdo Dry Valleys are located in southern Victoria Land along the western coast of McMurdo Sound, southern Ross Sea, at approximately 77°30’S, 162°00’E. An area of approximately 17,500 km² is designated as an Antarctic Specially Managed Area (hereafter referred to as the ‘Area’) to manage human activities in the region for the protection of scientific, environmental, ecological, historic, aesthetic and wilderness values.

Based on the Environmental Domains Analysis for Antarctica (Resolution 3(2008)) the McMurdo Dry Valleys are located within Environment S – McMurdo – South Victoria Land geologic.

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

All geographic coordinates in this Management Plan are given in degrees and decimal minutes (dd mm.mm) format.

The Area boundaries have been defined primarily on the basis of the hydrological catchments in the McMurdo Dry Valleys, including all of the ice-free ground and adjacent areas within these catchments, all of the Convoy Range in the north, and bounded by the Koettlitz Glacier in the south (Map 1). Offshore islands, except Tripp Island in the north and Heald Island in the south, are not included within the Area. Proceeding clockwise from the northeast, the boundary of the Area is defined as follows:

From the northeastern extremity of Tripp Island (76°38.09’S, 162°42.90’E) the boundary extends southward following the coastline at the mean low tide level to DeMaster Point (situated east of Marshall Valley at 78°04.20’S, 164°25.43’E), a distance of approximately 170 km. The boundary thence follows the northwestern margin of the Koettlitz Glacier in a southwesterly direction for approximately 25 km to Walcott Bay and Trough Lake, including within the Area all of the streams and lakes along the glacier margin (Map 16). The boundary thence follows the approximate southern grounding line of the Koettlitz Glacier margin in Walcott Bay, extending east towards The Bulwark and encompassing all of Trough Lake. The boundary thence continues east following Bulwark Stream for approximately 1.5 km to the northern extremity of The Bulwark. The boundary thence extends 3 km in a straight line northeast to the northwestern coastline of Heald Island, following around the northern coastline to the eastern extremity of the island at 78°15.00’S, 163°57.80’E.

The boundary extends from Heald Island approximately 14.8 km southwest to the summit of The Pyramid (854 m) (78°20.64’S, 163°29.95’E). The boundary thence continues southwest approximately 13.3 km to the foot of Highway Ridge (78°23.97’S, 162°58.57’E), from where it follows up the ridgeline in a northwesterly direction approximately 3.8 km to the summit of Shark Fin (2242 m) (78°22.11’S, 162°54.66’E). The boundary extends from Shark Fin northwest...
approximately 6.7 km to the summit of Mount Kempe (3004 m) (78°19.35'S, 162°43.18'E). The boundary continues northwest in a straight line from the summit of Mount Kempe approximately 83 km to the summit of Mount Wisneski (2320 m) (77°57.65'S, 159°33.73'E), which is the most southerly peak of the Lashley Mountains.

From Mount Wisneski, the boundary extends northwards for approximately 8.7 km to Mount Crean (2550 m) (77°53.00'S, 159°30.66'E), the highest peak in the Lashley Mountains. The boundary continues 5.6 km northward to the summit of Mount Koger (2450 m) (77°50.05'S, 159°33.09'E), the most northerly peak in the Lashley Mountains. The boundary thence extends northeast approximately 15.3 km to Depot Nunatak (1980 m) (77°44.88'S, 160°03.19'E), and thence northwest approximately 19.6 km to the western extremity of the ice-free ground at Horseshoe Mountain (77°34.52'S, 159°53.72'E). The boundary continues north approximately 40 km to the summit of Mount DeWitt (2190 m) (77°13.05'S, 159°50.30'E), thence extends northwest approximately 38.4 km to the summit of Carapace Nunatak (2321 m) (76°53.31'S, 159°23.76'E), and continues a further 39 km north to the summit of Battlements Nunatak (2128 m) (76°32.27'S, 159°21.41'E).

The boundary extends east from Battlements Nunatak approximately 51 km to the summit of Mount Douglas (1750 m) (76°31.25'S, 161°18.64'E), and thence approximately 18 km in a southeasterly direction to the summit of Mount Endeavour (1870 m) (76°32.49'S, 161°59.97'E). The boundary extends southeast from Mount Endeavour approximately 21.3 km to the northeastern extremity of Tripp Island.

The principal basis for the coordinates given above is the USGS / LINZ 1:50,000 digital base map prepared for the McMurdo Dry Valleys, which has an estimated maximum error of +/- 50 m. Because this map does not extend to cover the western boundary, coordinates in these areas are from the USGS 1:250,000 map, with an estimated maximum error of +/- 200 m. Accurate mapping with a maximum error of +/- 2 m is available for a limited number of sites within the Area (see Table 1), mostly in the Taylor Valley, and accurate GPS coordinates are available to describe only parts of the boundaries. The 1:50,000 series was selected as the primary map base for boundary coordinates to ensure that these are given using a map datum that is defined to a consistent standard over most of the Area. For these reasons, GPS coordinates for the boundaries are likely to differ from the coordinates given above by up to 50 m, or in the west by up to ~200 m.

6(ii) Restricted and managed zones within the Area

This Management Plan establishes four types of zones within the Area: Facilities, Scientific, Restricted and Visitor. The management objectives of the different types of zones are set out in Table 2. Maps 1 and 2 show the location of the different types of zones, and Maps 3-24 (which appear in the relevant appendices) show each zone in its context of surrounding geography and the detailed features or infrastructure present at each site (usually shown within an inset). A new zone or zone type may be considered by the Management Group as the need arises, and those no longer needed may be delisted. Zoning updates should be given particular consideration at the time of Management Plan reviews.
Table 2: Management Zones designated within the Area and their specific objectives.

<table>
<thead>
<tr>
<th>Management Zones</th>
<th>Specific Zone Objectives</th>
<th>Plan Appendix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities Zone</td>
<td>To ensure that science support facilities and related human activities within the Area are contained and managed within designated areas.</td>
<td>C</td>
</tr>
<tr>
<td>Scientific Zone</td>
<td>To ensure those planning science or logistics within the Area, and all visitors to the Area, are aware of sites of current or long-term scientific investigation that may be sensitive to disturbance or have sensitive scientific equipment installed, so these may be taken into account during the planning and conduct of activities within the Area.</td>
<td>D</td>
</tr>
<tr>
<td>Restricted Zone</td>
<td>To restrict access into a particular part of the Area and/or activities within it for a range of reasons, e.g. owing to special scientific or ecological values, because of sensitivity, presence of hazards, or to restrict emissions or constructions at a particular site. Access into Restricted Zones should normally be for compelling reasons that cannot be served elsewhere within the Area.</td>
<td>E</td>
</tr>
<tr>
<td>Visitor Zone</td>
<td>To provide a means of managing the activities of visitors, including program personnel and/or tourists, so their impacts may be contained and, as appropriate, monitored and managed.</td>
<td>F</td>
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</tbody>
</table>

The overall policies applying within the zones are outlined in the sections below, while site-specific guidelines for the conduct of activities at each zone are found in Appendices D to F.

Facilities Zones

Facilities Zones have been established to contain temporary and semi-permanent facilities within pre-defined areas and thereby control their distribution and footprint. Facilities Zones may be areas where human presence is intended to be semi-permanent or for a defined period of time in which significant activity is occurring. They may also be areas where human presence is expected to have regular occupation and/or repetitive activity such as field camps. The establishment of new Facilities Zones should be designed to minimize the footprint of facilities and associated materials.

The following provisions should be observed for Facilities Zones:

- Substantial and repeatedly used facilities, camping sites, helicopter pads, and materials / supplies stores should be located within the boundaries of the Facilities Zones;
- Existing infrastructure, camping and storage sites within the Facilities Zones should be re-used where practicable;
- Provisions for fuel storage and handling within the Facilities Zones should take account of the requirements set out in the General Environmental Guidelines for the McMurdo Dry Valleys (Appendix A) by providing secondary containment, appropriate equipment for
refilling, decanting or servicing operations, secure storage and appropriate spill response materials;

- Alternative energy sources and energy efficiency should be considered in the planning and maintenance of activities within the Facilities Zones;
- Waste minimization and management should be considered in the planning and maintenance of activities within the Facilities Zone and all waste should be stored securely and then be removed; and
- Contingency plans for emergencies should be developed as appropriate, to take into account the special needs of specific Facilities Zones.

Facilities Zones should not be located within Restricted Zones or Antarctic Specially Protected Areas (ASPAs), or at sites that could otherwise jeopardize the values of the Area.

Facilities Zones are listed in Appendix C with locations, boundary and infrastructure descriptions, designated landing sites, and maps.

**Scientific Zones**

The Scientific Zones listed in Appendix D have been designated to raise visitor awareness of specific sites of current and on-going scientific research in order to help ensure important scientific values or experiments are not disturbed. There are no general access restrictions that apply within Scientific Zones, although visitors should familiarize themselves with the provisions set out in Appendix D prior to visiting or planning work at these zones.

**Restricted Zones**

Restricted Zones have been designated at sites of high scientific value and which are particularly sensitive to human disturbance. Restricted Zones are outlined in Appendix E with a brief description of the boundaries, site features, impacts, and any specific guidelines for access and activities. Access to Restricted Zones should be for compelling reasons that cannot be served elsewhere within the Area, and any additional measures to ensure their protection as specified in Appendix E should be strictly observed when visits are made.

**Visitor Zones**

The Taylor Valley Visitor Zone is designated in order to manage visits by tourists or non-governmental expeditions to the Area within a defined area where the exceptional aesthetic and wilderness values of the McMurdo Dry Valleys can be appreciated at the same time as ensuring that potential impacts by tourist visits on other values present within the Area, particularly scientific and environmental values, are minimized.

The Taylor Valley Visitor Zone is located in the Taylor Valley near the Canada Glacier terminus (Map 24), at a site where safe and relatively easy access and movement can be reasonably assured with minimal impact to science activities or the environment. This site was selected following consultation among the National Programs operating in the Area, tour operators and International Association of Antarctic Tour Operators (IAATO). Specific guidelines for the conduct of activities within the Visitor Zone are included in Appendix F as the Antarctic Treaty Visitor Site Guide: Taylor Valley, Southern Victoria Land, Ross Sea.

6(iii) **Structures within and near the Area**

The main structures within the Area are located in the Facilities Zones designated within the central McMurdo Dry Valleys (Maps 2 and 13). The Taylor Valley has five semi-permanent field camps (Maps 3-8), and three semi-permanent field camps are present in the Wright Valley (Maps
The most substantial structures are located at the Marble Point Refueling Facility (Map 10), and buildings are also located at Mount Newall (Map 9) and at Cape Roberts (Map 13). There are a number of sites of scientific and operational instrumentation located throughout the Area outside of Facilities Zones, the most substantial of which are listed in Table 3. Other structures not listed include several Automatic Weather Stations (AWS), radio repeater sites (Mount Cerverus, Mount JJ Thompson), stream weirs and glacier mass balance devices.

**Table 3: Structures within the Area outside of Facilities Zones.**

<table>
<thead>
<tr>
<th>Name</th>
<th>MP¹</th>
<th>Location²</th>
<th>Location Description</th>
<th>Structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mount Coates Radio Repeater</td>
<td>US</td>
<td>77° 47.16'S 161° 58.23'E</td>
<td>Near summit of Mount Coates (1894 m), Kukri Hills. ~14 km from Lake Bonney Facilities Zone, Taylor Valley.</td>
<td>Radio repeater and associated equipment contained in two orange plastic cases. There is one antenna at the site.</td>
</tr>
<tr>
<td>Hjorth Hill Radio Repeater</td>
<td>US</td>
<td>77° 30.97'S 163° 37.22'E</td>
<td>Near summit of Hjorth Hill (790 m) ~ 6 km from Cape Bernacchi, northeast of Explorers Cove and the Taylor Valley.</td>
<td>Radio repeater and associated equipment at small hut (2.4m x 2.6m). The antenna is installed on the hut.</td>
</tr>
</tbody>
</table>

1. Maintaining Party
2. Coordinates approximate

There are also several sites in the McMurdo Dry Valleys where semi-permanent camps have been decommissioned and removed (Table 4).

**Table 4: Known sites of decommissioned semi-permanent camps in the Area.**

<table>
<thead>
<tr>
<th>Decommissioned site</th>
<th>RP¹</th>
<th>Geographic coordinates²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asgard Hut</td>
<td>NZ</td>
<td>77° 35'S, 161° 36'E</td>
</tr>
<tr>
<td>Brownworth Hut</td>
<td>NZ</td>
<td>77° 27'S, 162° 53'E</td>
</tr>
<tr>
<td>Bull Pass Hut (US structures at Bull Pass Hut Facilities Zone remain)</td>
<td>NZ</td>
<td>77° 31.01'S, 161° 51.08'E</td>
</tr>
<tr>
<td>Meserve Glacier Camp</td>
<td>US</td>
<td>77° 30.8'S, 162° 17'E</td>
</tr>
<tr>
<td>Miers Valley Hut</td>
<td>NZ</td>
<td>78° 08'S, 163° 50'E</td>
</tr>
<tr>
<td>Old Lake Bonney Hut</td>
<td>US</td>
<td>77° 42.2'S, 162° 30.6'E</td>
</tr>
<tr>
<td>Lake Fryxell Hut</td>
<td>NZ</td>
<td>77° 37'S, 163° 03'E</td>
</tr>
<tr>
<td>Vanda Station (some structures relocated to Lake Vanda Hut Facilities Zone)</td>
<td>NZ</td>
<td>77° 31.6'S, 161° 40.1'E</td>
</tr>
<tr>
<td>Commonwealth Glacier Camp</td>
<td>NZ</td>
<td>77° 34.94'S, 163° 35.81'E</td>
</tr>
<tr>
<td>Old New Harbor Camp</td>
<td>US</td>
<td>77° 34.5'S, 163° 29.9'E</td>
</tr>
<tr>
<td>Odell Glacier Camp</td>
<td>US</td>
<td>76° 40.86'S, 159° 54.8'E</td>
</tr>
</tbody>
</table>

1. Responsible Party
2. Coordinates approximate

Eight sites within the Area were drilled, several with multiple boreholes, as a part of the McMurdo Dry Valley Drilling Project (DVDP) carried out between 1971 and 1975. Drill sites for the project are located at Lake Vanda (DVDP 4) (drilled 85.8 m below ice surface), Don Juan
Pond (DVDP 5, 3.4 m; DVDP 13, 75 m), Wright Valley North Fork basin (DVDP 14, 78 m), Lake Vida (DVDP 6, 305.8 m; permanently capped and closed by the US Program in 2006-07 and now several meters below the lake surface), Lake Fryxell (DVDP 7, 11.1 m), New Harbor (DVDP 8, 157.5 m; DVDP 9, 38.3 m; DVDP 10, 187 m), Commonwealth Glacier (DVDP 11, 328 m), and Lake Hoare (DVDP 12, 185 m).

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

Entry to an Antarctic Specially Protected Area (ASPA) is prohibited unless a permit for entry has been issued by a national authority. Four ASPAs are designated within the Area (Maps 1 and 2):
- ASPA No. 123 Barwick and Balham Valleys, Southern Victoria Land (Maps 1, 2);
- ASPA No. 131 Canada Glacier, Lake Fryxell, Taylor Valley, Victoria Land (Maps 2, 5, 24);
- ASPA No. 138 Linnaeus Terrace, Asgard Range, Victoria Land (Maps 2, 18);
- ASPA No. 154 Botany Bay, Cape Geology, Victoria Land (Map 1).

7. Code of Conduct

The Code of Conduct in this section is the main instrument for the management of activities in the Area. It outlines the overall management and operational principles for the Area.

In addition, further guidance is provided in the General Environmental Guidelines for the McMurdo Dry Valleys (Appendix A), Environmental Guidelines for Scientific Research (Appendix B), and in the List of Facilities Zone (Appendix C), Scientific Zones (Appendix D), Restricted Zones (Appendix E), and the Visitor Zone (Appendix F). All visitors to the McMurdo Dry Valleys should be aware of the General Environmental Guidelines in Appendix A, as a minimum, before entering the Area.

7(i) Access to and movement within the Area

The Area is large and has numerous potential access points. Access to the Area is normally made by helicopter from Ross Island, or over sea ice via New Harbor or Marble Point. Where practical, designated helicopter landing sites should be used: these are listed and shown on maps in Appendices C-F describing the management zones. Designated landing sites within ASPAs are defined and mapped in their relevant Management Plans. Where designated landing sites are unavailable, previously used landing sites should be selected when possible. Where it is expected that helicopters will be used for repetitive access to a particular location, consideration should be given to establishing a designated site for landing. Such suggestions should be referred to the Management Group. Overflight restrictions apply over ASPA No. 123 in the Barwick and Balham Valleys, ASPA No. 131 at Canada Glacier, ASPA No. 154 at Botany Bay, and over the Don Juan Pond and Victoria Valley Sand Dunes Restricted Zones.

All pedestrian access routes and movement within the Area should be undertaken so as to minimize disturbance to the soil and vegetated surfaces. There are a number of walking routes in the Area. In the Taylor Valley, these include routes between F-6 Camp and Lake Fryxell Camp, F-6 Camp and Lake Hoare Camp, Lake Hoare Camp and Lake Fryxell Camp, and Lake Hoare Camp and Lake Bonney Camp. There is a route from the edge of Lake Fryxell to the weir at Canada Stream. There are also routes outside the immediate vicinity of F-6, Lake Fryxell, Lake Bonney, and Lake Hoare camps. A route is defined to manage pedestrian movements within the Taylor Valley Visitor Zone (Appendix F). In the Wright Valley, there is a route between the Vanda Weir and the Vanda Huts. A loosely defined route exists along the Onyx River between Lake Vanda and Lake Brownworth, and tracks from overland vehicles moving along this route in the 1970’s remain in evidence.
In some places where there has been sustained activity, foot tracks have developed in loose moraine soils, forming well-defined routes such as may be found near Facilities Zones and at field sites such as along the northern margin of the lower Taylor Glacier. In such cases, pedestrians should by preference use the existing tracks, unless it becomes evident that to do so would be either unsafe or result in greater impact than following an alternative route.

The use of vehicles within the Area should be restricted to lake ice or sea ice except where specifically authorized to operate on land at Marble Point (Map 11), New Harbor (Maps 3 and 14), and Cape Roberts (Map 13), where vehicles should use existing vehicle tracks.

Access into Restricted Zones should be avoided unless required for compelling reasons, and should be coordinated with National Programs operating within the Area.

Access by tourists and non-governmental expeditions should only be made to the Taylor Valley Visitor Zone in accordance with the guidelines adopted in Appendix F, and shall be coordinated in advance with National Programs operating within the Area.

7(ii) Activities that may be conducted in the Area

Activities which may be conducted in the area include scientific research; operations in support of science; media, arts, education or other official national program visitors; management activities including maintenance or removal of facilities; and tourism visits within the Visitor Zone, where these activities do not jeopardize the values of the Area.

All activities in the McMurdo Dry Valleys should be conducted in such a manner as to minimize impacts on the environment. Alternative energy sources (e.g. solar, wind, fuel cells) should be used wherever practicable in order to minimize fossil fuel usage. Specific guidelines for the conduct of activities in the Area are provided in Appendices A-E.

Tourism and non-governmental expeditions should additionally ensure their activities have minimal impact on the scientific activities being conducted within the Area, and are carried out in accordance with the Antarctic Treaty Visitor Site Guide: Taylor Valley (Appendix F).

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

Care should be exercised when locating and establishing installations to minimize their impact on the environment. Consideration should be given to maximizing the use of existing facilities or sharing those of other programs before new facilities are constructed, and the footprint of all installations should be kept to the minimum practicable. Past installation sites should be re-used where possible and appropriate. In general, permanent or semi-permanent structures should not be installed outside of Facilities Zones, unless they are small in size and pose no significant threat to the values of the Area (e.g. an Automatic Weather Station (AWS) or a small solar- and battery-powered radio repeater with minimal associated infrastructure).

All installations should be maintained while operational and removed when no longer necessary. Installations should be identified by the National Program responsible, name of the principal investigator and year of installation. The types of installations and their coordinates should be recorded, with information provided to the responsible National Program and then shared by the Management Group.

National Programs should exchange information though the Management Group on proposals for new installations in advance of their construction, with the aim of coordinating activities and minimizing the need for new or potentially disruptive or duplicative installations.
7(iv) Field camps

In the McMurdo Dry Valleys, a field camp is considered to be a small temporary camp set up for research in a field season, and generally may comprise a number of tents and include temporary shelters for laboratory work or cooking. Field camps should generally only be established when the work they are intended to support cannot be accomplished practically by access from within one of the Facilities Zones.

Care should be exercised when locating and establishing field camps to minimize their impact on the environment. Consideration should be given to maximizing the use of past or existing field camp sites, or sharing those of other programs before new field camps are established, and the footprint of all field camps should be kept to the minimum practicable.

All field camps should be maintained while operational and removed when no longer necessary. Special care should be taken to secure camp equipment from dispersal by wind.

The coordinates of field camp sites should be recorded, with information provided to the responsible National Program and then shared by the Management Group.

Designated field camp sites outside of Facilities Zones or other zones within the Area are listed in Table 5.

Table 5: Designated field camp sites outside of Facilities Zones or other zones within the Area.

<table>
<thead>
<tr>
<th>Name</th>
<th>MP1</th>
<th>Location</th>
<th>Location Description</th>
<th>Field camp description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood Falls field camp site</td>
<td>US</td>
<td>77°43.24' S 162°16.29' E</td>
<td>Northwestern shore of Lake Bonney ~100 m from the terminus of Taylor Glacier and Blood Falls.</td>
<td>Slopes extending ~100 m upslope above the lake shoreline and for ~200 m northeast from Lawson Creek to a permanent survey benchmark (TP02) ~20 m from the lake shore. Tent sites are marked by stone circles. The designated helicopter landing site is located close to a cluster of tent sites in the southwest part of the field camp site.</td>
</tr>
</tbody>
</table>

1. Maintaining Party

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

Taking or harmful interference with native flora or fauna is prohibited, except in accordance with a permit issued under Article 3 of Annex II to the Protocol by the appropriate national authority specifically for that purpose. Where animal taking or harmful interference is involved, this should, as a minimum standard, be in accordance with the Scientific Committee on Antarctic Research (SCAR) Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

To help maintain the ecological and scientific values of the Area visitors should take special precautions against the introduction of non-native species. Of particular concern are introductions from other Antarctic sites, including stations, or from regions outside Antarctica. Visitors should ensure that sampling equipment and markers brought into the Area are clean. Visitors should thoroughly clean all equipment (including backpacks, carry-bags and tents), clothing and footwear before entering the Area. Visitors should also be aware of the risk of transfer of species...
from one part of the Dry Valleys to another, which may also affect the values of the Area. In particular, visitors should aim to minimize the movement of soils from one site to another within the Dry Valleys by cleaning their equipment (e.g. camping and sampling equipment, vehicles, footwear) before transfer to another site.

7(vi) Collection or removal of material found in the Area

Material not covered by 7(v) above should only be collected or removed from the Area for scientific and associated educational purposes or essential management purposes and should be limited to the minimum necessary for those needs. Any meteorites taken are to be collected and curated according to accepted scientific standards, and made available for scientific purposes. Material of human origin likely to compromise the values of the Area should be removed unless the impact of removal is likely to be greater than leaving the material in place. If this is the case the appropriate authority should be notified.

7(vii) Waste management

All materials taken into the Area should, to the maximum extent practicable, be collected and removed from the Area when no longer required. Water used for any human purposes, including scientific purposes, should be removed and/or treated in a gray water evaporator (and residuals removed). All human wastes should be removed from the Area, including residues from incineration.

In accordance with Article 4 of Annex III to the Protocol, wastes shall not be disposed of onto ice-free areas, into freshwater systems or onto snow or in deep ice pits in ice which terminates in ice free areas or in areas of high ablation.

7(viii) Requirements for reports

Reports of activities in the Area should be maintained by the Management Group to the maximum extent practicable, and made available to all Parties.

In accordance with Article 10 of Annex V to the Protocol, arrangements shall be made for collection and exchange of reports of inspection visits and on any significant changes or damage within the Area.

Tour operators should record their visits to the Area, including the number of visitors, dates, and incidents in the Area, and submit these data in accordance with the procedures for reporting on expeditions adopted by the Antarctic Treaty Parties and IAATO.

8. Provisions for the exchange of information in advance of proposed activities

In addition to the normal exchange of information by means of the annual, national reports to the Parties of the Antarctic Treaty, and to SCAR and Council of Managers of National Antarctic Programs (COMNAP), Parties operating in the Area should exchange information through the Management Group.

9. Supporting documentation

Electronic information

National Programs operating within the Area have established a website for the purpose of providing additional information and supporting documentation on the McMurdo Dry Valleys, including up-to-date management documents, protected area management plans, maps, descriptions and policies. This information may be accessed at http://www.mcmurdodryvalleys.aq
Management Plans

Management Plan for Antarctic Specially Protected Area No. 123 Barwick and Balham Valleys, South Victoria Land.

Management Plan for Antarctic Specially Protected Area No. 131 Canada Glacier, Taylor Valley, Victoria Land.

Management Plan for Antarctic Specially Protected Area No. 138 Linnaeus Terrace, Asgard Range, Victoria Land.

Management Plan for Antarctic Specially Protected Area No. 154 Botany Bay, Cape Geology, Victoria Land.