

# 3.1. Science Facilities

2005/2006 Permanent

New Zealand

## 3.1.1 AUTOMATIC RECORDING STATIONS / OBSERVATORIES

### 3.1.1.1 Scott Base

The following information relates to long-term experiments located in permanent facilities at Scott Base Laboratories.

#### 3.1.1.1.1 Automated Weather Station

- **Title:** Climate Data Acquisition
- **Site Name:** Scott Base
- **Region:** Ross Island, McMurdo Sound
- **Latitude:** 77.9°S
- **Longitude:** 166.7°E
- **Elevation:** 14m asl
- **Parameters Recorded:** Wind speed, wind direction, air temperature, air pressure, relative humidity, solar radiation (direct, global and diffuse), tide
- **WMO Site:** 89665
- **Event:** K089
- **Institution:** National Institute Of Water and Atmospheric Research
- **Website:** [www.niwa.co.nz](http://www.niwa.co.nz)
- **Contact:** Andrew Harper
- **Data Reference:** [www.niwa.cri.nz/services/clidb/](http://www.niwa.cri.nz/services/clidb/)

#### 3.1.1.1.2 Automated Weather Station

- **Title:** Environmental Protection of Antarctic Soils
- **Site Name:** Scott Base
- **Region:** Ross Island, McMurdo Sound
- **Parameters Recorded:** Wind speed, wind direction, air temperature, soil temperature, solar radiation
- **Event:** K123
- **Institution:** Landcare Research New Zealand Limited
- **Website:** [www.landcareresearch.co.nz](http://www.landcareresearch.co.nz)
- **Contact:** Dr Jackie Aislabie

#### 3.1.1.1.3 Geomagnetic Observatory

- **Title:** Seismological and Geomagnetic Observatories
- **Site Name:** Scott Base
- **Region:** Ross Island, McMurdo Sound
- **Details:** DI-fluxgate magnetometer, proton precession magnetometer
- **Event:** K102
- **Institution:** Institute of Geological & Nuclear Sciences Ltd
- **Website:** [www.gns.cri.nz](http://www.gns.cri.nz)
- **Contact:** TBC
- **Data Reference:** [www.intermagnet.org](http://www.intermagnet.org)

#### 3.1.1.1.4 Seismic Station

- **Title:** Seismological and Geomagnetic Observatories
- **Site Name:** Scott Base
- **Region:** Ross Island, McMurdo Sound
- **Details:** IRIS / USGS GSN site, sensor located in seismic vault, instrumentation model: IRIS-2 system IV
- **Event:** K102
- **Institution:** Institute of Geological & Nuclear Sciences Ltd
- **Website:** [www.gns.cri.nz](http://www.gns.cri.nz)
- **Contact:** Andrew Harper
- **Data Reference:** [www.fdsn.org/station\\_book/IU/SBA/sba.html](http://www.fdsn.org/station_book/IU/SBA/sba.html)
- **Live seismic server:**  
[http://aslwww.cr.usgs.gov/Seismic\\_Data/telemetry\\_data/SBA\\_24hr.html](http://aslwww.cr.usgs.gov/Seismic_Data/telemetry_data/SBA_24hr.html)

#### 3.1.1.1.5 Ionospherics

- **Title:** Dynamics and Ionisation in the Antarctic Middle Atmosphere
- **Site Name:** Scott Base
- **Region:** Ross Island, McMurdo Sound
- **Parameters Recorded:** Model IPS 42, 2.9 MHz ionosonde with digital recording system
- **Event:** K055
- **Institution:** University of Canterbury; Physics Dept.
- **Website:** <http://www2.phys.canterbury.ac.nz/>

- **Contact:** Adrian McDonald
- **Data Reference:**  
<http://www.ips.gov.au/Main.php?CatID=6&SecID=1&SecName=Australasia&SubSecID=3&SubSecName=Ionogram%20Viewer>

### 3.1.1.2 Arrival Heights

The following information relates to long-term experiments located in permanent facilities at Arrival Heights. The Arrival Heights Laboratory is located in ASPA No. 122, 6km NW of Scott Base.

#### 3.1.1.2.1 NO<sub>2</sub> / Ozone Research

- **Title:** Drivers of Global Change in the Antarctic: Atmospheric Remote Sensing
- **Site Name:** Arrival Heights
- **Region:** Ross Island, McMurdo Sound
- **Latitude:** 77°80'S
- **Longitude:** 166°78'E
- **Elevation:**
- **Parameters Recorded:** Dobson Spectrophotometer, Bruker 120-M, Various Spectrophotometers, Ground level Ozone sampling
- **Event:** K085
- **Institution:** National Institute Of Water and Atmospheric Research; Lauder Branch
- **Website:** [www.niwa.co.nz](http://www.niwa.co.nz)
- **Contact:** Dr Stephen Wood
- **Data Reference:**

#### 3.1.1.2.2 Air Sampling

- **Title:** Drivers of Global Change in the Antarctic: Atmospheric Air Sampling
- **Site Name:** Arrival Heights
- **Region:** Ross Island, McMurdo Sound
- **Latitude:** 77°80'S
- **Longitude:** 166°78'E
- **Elevation:**
- **Parameters Recorded:** Study of trace gas species in the Antarctic troposphere and lower stratosphere. Air samples collected at Arrival heights as well as on aircraft and ship movements between New Zealand and Ross Island
- **Event:** K087
- **Institution:** National Institute Of Water and Atmospheric Research; Wellington Branch

- **Website:** [www.niwa.co.nz](http://www.niwa.co.nz)
- **Contact:** Dr Gordon Brailsford
- **Data Reference:**

### 3.1.1.2.3 Automated Weather Station

- **Title:** Climate Data Acquisition
- **Site Name:** Arrival Heights
- **Region:** Ross Island, McMurdo Sound
- **Latitude:** 77°80'S
- **Longitude:** 166°78'E
- **Elevation:**
- **Parameters Recorded:** Wind speed, wind direction, air temperature, air pressure, global solar radiation
- **Event:** K089
- **Institution:** National Institute Of Water and Atmospheric Research
- **Website:** [www.niwa.co.nz](http://www.niwa.co.nz)
- **Contact:** Andrew Harper
- **Data Reference:** [www.niwa.cri.nz/services/clidb/](http://www.niwa.cri.nz/services/clidb/)

### 3.1.1.2.4 Space Weather

- **Title:** Monitoring Magnetosphere-Ionosphere Coupling and Space Weather in the Polar Region
- **Site Name:** Arrival Heights
- **Region:** Ross Island, McMurdo Sound
- **Latitude:** 77°80'S
- **Longitude:** 166°78'E
- **Elevation:**
- **Parameters Recorded:** Magnetometer & Optical imager (All-Sky camera)
- **Event:** K069
- **Institution:** University of Newcastle, NSW, Australia; Physics Dept.  
University of Otago; Physics Dept.
- **Website:** [www.newcastle.edu.au](http://www.newcastle.edu.au)  
[www.otago.ac.nz](http://www.otago.ac.nz)
- **Contact:** Prof Brian Fraser (Newcastle)  
Prof Richard Dowden (Otago)
- **Data Reference:**

### 3.1.1.2.5 Middle Atmosphere Research

- **Title:** Ionisation & Dynamics in the Antarctic Middle Atmosphere
- **Site Name:** Arrival Heights
- **Region:** Ross Island, McMurdo Sound
- **Latitude:** 77°80'S
- **Longitude:** 166°78'E
- **Elevation:**
- **Parameters Recorded:** The experiment utilises a radar transmitter located at Scott Base and an antenna farm with associated receivers at Arrival Heights
- **Event:** K055
- **Institution:** University of Canterbury; Physics Dept.
- **Website:** [www.canterbury.ac.nz](http://www.canterbury.ac.nz)
- **Contact:** Adrian McDonald
- **Data Reference:**

## 3.2 Operational Information

2005/2006 Permanent

New Zealand

### 3.2.A STATIONS

#### 3.2.A.1 Year-round Facility

##### Scott Base

- **Region:** Ross Island, McMurdo Sound
  - **Latitude:** 77°51'00"S
  - **Longitude:** 166°46'00"E
  - **Date opened:** 25 January 1957
  - **Maximum population:** 85 person (summer), average 10 person (winter)
  - **Medical support:** Scott Base has a first aid facility. Advanced medical care is available at McMurdo Station (United States Antarctic Program)
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#### 3.2.A.2 Summer Field Camp

##### LGP

- **Region:** Cape Hallett, Northern Victoria Land, Ross Sea Region
  - **Latitude:** 72°19'13"S
  - **Longitude:** 170°13'34"E
  - **Period of operations:** November to February annually
  - **Maximum population:** 15 persons
  - **Medical support:** Camp staff with pre-hospital emergency training. Field camp first aid box with additions and survival gear.
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#### 3.2.A.3 Refuge Huts

##### Cape Royds Hut

- **Region:** Cape Royds, Ross Island
- **Latitude:** 77°33'02.5"S
- **Longitude:** 166°10'20"E
- **Medical facilities:** Survival box
- **Accommodation capacity:** 2 person

##### Cape Evans Hut

- **Region:** Cape Evans on the west coast of Ross Island at northern entrance to Erebus Bay

- **Latitude:** 77°38'18"S
- **Longitude:** 166°24'25"E
- **Medical facilities:** Nil
- **Accommodation capacity:** 4 person in two small huts

### Lower Wright Hut

- **Region:** South side of Wright Valley (approximately 1 mile west of Wright Lower Glacier)
- **Latitude:** 77°26.5'S
- **Longitude:** 162°39.1'E  
(NOTE: this hut's position is incorrect on both USCG 1:250,000 & 1: 50,000 maps)
- **Medical facilities:** Survival box
- **Accommodation capacity:** 2 person

### Bratina Island Hut

- **Region:** Near northern tip of Brown Peninsula
- **Latitude:** 78°01'S
- **Longitude:** 165°32'E
- **Medical facilities:** Nil
- **Accommodation capacity:** 3 very small huts accommodate 6 maximum

### Cape Bird Hut

- **Region:** Adjacent to Adelie penguin rookeries at northern tip of Macdonalds Beach
- **Latitude:** 77°13'06"S
- **Longitude:** 166°26'10"E
- **Medical facilities:** Survival box on beach below hut (77°13'10"S 166°25" 48"E)
- **Accommodation capacity:** 8 person

### Lake Vanda

- **Region:** Wright Valley, near the mouth of the Onyx River
- **Latitude:** 77°31'S
- **Longitude:** 161°40'E
- **Medical facilities:** Nil
- **Accommodation capacity:** 8 person

## Cape Roberts

- **Region:** Situated on promontory on south east edge of Granite Harbour
- **Latitude:** 77°02'S
- **Longitude:** 163°12'E
- **Medical facilities:** Survival box
- **Accommodation capacity:** 4 person

## Cape Hallett (joint US/NZ station abandoned in 1973)

- **Region:** Seabee Hook
  - **Latitude:** 72°19'S
  - **Longitude:** 170°16'E
  - **Medical facilities:** Survival box
  - **Accommodation capacity:** Nil (NOTE: all huts were removed during the 2003-04 season)
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## 3.2.B VESSELS

### 3.2.B.1 Vessels

- **Vessel:** RV Tangaroa
  - **Country of registration:** New Zealand
  - **Voyage dates:** Various during summer season
  - **Area of operation:** Ross Sea
  - **Port of departure and arrival:** Lyttelton, New Zealand
  - **Purpose of voyage:** Scientific research cruise
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## 3.2.C AIRCRAFT

### 3.2.C.1 Aircraft

#### C130H Hercules

- **Number and type of aircraft:** 2 x Lockheed C-130H Hercules
- **Planned number of flights:** 15
- **Period of flights:** November to December annually
- **Routes:** Christchurch/McMurdo and McMurdo/Christchurch
- **Purpose:** Delivery of personnel and supplies from New Zealand to Ross Island

#### Bell 212 Helicopter

- **Number and type of aircraft:** 1 x Bell 212
- **Planned number of flights:** Various
- **Period of flights:** November to January annually

- **Routes:** Operations within 100nm of Scott Base
- **Purpose:** Delivery of personnel and supplies from Scott Base to field camp sites

### **P3K Orion**

- **Number and type of aircraft:** Various P3K Orion
- **Planned number of flights:** Various
- **Period of flights:** Year round
- **Routes:** Various
- **Purpose:** Surveillance in support of the CCAMLR System of Inspection

## **3.2.D AIRCRAFT LANDING FACILITIES**

### **3.2.D.1 Aircraft Landing Facilities**

#### **Helicopter pad**

- **Basic Helicopter pad:** Scott Base
- **Latitude:** 77°51'00"S
- **Longitude:** 166°46'00"E

NOTE: There is no hangar or fuel available at this helicopter pad.

## **3.2.E COMMUNICATIONS FACILITIES AND FREQUENCIES**

### **3.2.E.1 Communications Facilities and Frequencies**

#### **Scott Base Station**

- **Latitude:** 77°51'00"S
- **Longitude:** 166°46'00"E
- **Type of service available:** VHF voice advisory service
- **Call sign / ID:** Scott Base
- **Type of emission:** Voice
- **Frequencies used:** 126.0 MHz
- **Normal calendar dates and hours of operation:** 10 October – 15 February annually. Continuous operation.
- **Language used:** English
- **Name of Operating Authority:** Antarctica New Zealand

### **VHF Use**

- **Channel 4**
- **Transmit TX:** 139.3 MHz
- **Receive RX:** 143.8 MHz

### **Listening Watch**

- **Maintained on Primary HF:** 5400 kHz
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## 3.3. Waste Management Plans

2005/2006 Permanent

New Zealand

### 3.3.1 WASTE MANAGEMENT PLANS

The following planning documents are in place for Scott Base and New Zealand field operations:

- Antarctica New Zealand Waste Management Policy (last updated July 2005)
- Antarctica New Zealand Waste Management Handbook (last updated October 2005).

These are available on Antarctica New Zealand's website [www.antarcticanz.govt.nz](http://www.antarcticanz.govt.nz).

During the past year, waste has been separated, stored, transported and disposed of in accordance with these documents. Efforts to minimise waste by source reduction are ongoing. All wastes other than sewage and domestic wastewater are returned to New Zealand for disposal (items recyclable within New Zealand are sent to appropriate agencies for recycling).

A wastewater treatment plant for Scott Base has been installed and became operational in October 2002.

## 3.4. Contingency Plans

2005/2006 Permanent

New Zealand

### 3.4.1 CONTINGENCY PLANS

The following contingency planning documents are in place for Scott Base and New Zealand field operations:

- Antarctica New Zealand Disaster Recovery Manual
- Various spill response policies and procedures

Copies of these documents are available on application to Antarctica New Zealand

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## 3.5. Inventory of Past Activities

2005/2006 Permanent

New Zealand

### 3.5.1 INVENTORY OF PAST ACTIVITIES

NAME / DESCRIPTION	LOCATION	PERIOD OF ACTIVITY	STATUS
<b>Huts and camps:</b>			
Asgard Hut	77.5833°S, 161.6°E	1969-? (Inspected Jan 1990)	Removed
Brownworth Hut	77.45°S, 162.8833°E Taylor Valley	Relocated 1983/84	Removed
Bull Pass Hut	77.5169°S, 161.8513°E Wright Valley	1969?-2003	Removed (US facilities at site remain)
'Camp Herb' Herbertson Glacier	77°39', 164°12' E	Inspected Nov 1988, Jan 1992	Unknown
Cape Hallett Station	72°19' S, 170°13' E	1957-1973	Only fuel tanks remain, scheduled for removal 2005/06
Cape Roberts Project facilities storage	77 02' S, 163 10' E	Cape Roberts Project 1995-2000	Two huts dating from 1980s and toilet shelter remain
Cape Chocolate Hut		Inspected Nov 1983, Dec 1987	Unknown
Commonwealth Glacier Camp	77.5824°S, 163.5969°E	Dry Valleys Drilling Project 1975/76	Removed
Lake Fryxell Hut	77.6167°S, 163.05°E	1978-1994	Removed
'McGraw's Crate' New Harbour		1960	Remains, assessment underway
Miers Valley Hut	78°06' S, 164°00' E	Pre 1984-1994	Removed
Vanda Station	77.5267°S, 161.6683°E	1967-1995	Removed
<b>Weirs and flumes (contd):</b>			

NAME / DESCRIPTION	LOCATION	PERIOD OF ACTIVITY	STATUS
Adams Stream Weir	78.13 S 163.75 E 150-200m downstream of Adams Glacier, Miers Valley	Installed 1988/89 Last flow record 1990/91	Possibly washed out in 2001/02.
Upper Miers Stream flume	78.09 S 163.75 E 150m downstream from Miers Glacier snout, Miers Valley	Installed 1988/89	Possibly washed out in 2001/02.
Garwood Stream at Lake Colleen Weir	78.02 S 163.91 E 500m downstream of Lake Colleen	Last flow record 1988/89	Unknown
Upper Victoria River Weir	77.33 S 161.12 E At lake outlet, longitude uncertain.	Installed 1988/89 Last flow record 1988/89	Unknown
Onyx River at Lower Wright Weir	77.44 S 162.65 E Coordinates from 1996-97 GPS measurements at centre of weir, Wright Valley		Now maintained by LTER
Onyx River at Lake Vanda Weir	77.52 S 161.69 E Coordinates taken from 1996-97 GPS measurements at centre of weir. Wright Valley	Installed 1969/70	Now maintained by LTER
Lower Miers Stream Weir	78.10 S 163.90 E Downstream from Lake Miers, Miers Valley	Installed 1988/89 Last flow record 1990/91	Removed 2000/01
Bartley East Weir, Wright Valley	77.51 S 162.18 E	Last flow record 1984/85	Could not be located in 2000/01. Possibly relocated 1988/89.
Bartley Stream flume	77.51 S 162.01 E Wright Valley	Last flow record 1983/84	
Bartley West weir	77.51 S 162.15 E Wright Valley	Last flow record 1984/85	
Clark Stream at Lower Wright Weir	77.44 S 163.62 E Wright Valley	Last flow record 1982/83	
Meserve Stream	77.50 S 162.24 E		Most remains

NAME / DESCRIPTION	LOCATION	PERIOD OF ACTIVITY	STATUS
flume	Wright Valley		removed 2000/01
<b>Caches:</b>			
Cache - jerry cans, wooden boxes, scattered cans	Allan Hills	1972	Last seen 2000
Haskell depot. Wooden box, food and supplies, fuel containers. Scatter of cans, broken glass and newspaper.	Foggydog Glacier. 50-100m south of base camp. 5m from melt pool. (Base camp 79°48'32.39"S 158°36'11.42"E)	1962	Last seen 2001
Cardboard box containing food	Labyrinth. North side of valley on slope above pond. 77°31'19.7" S 160°44'46.0"E Datum NZGD 1949	Victoria University of Wellington Antarctic Expedition VIII 1963/64	Removed
Depots containing 10kg food fuel, personal effects and human waste, marked by 1.5m high snow cairn with a nylon stuff bag on top.	Ross Ice Shelf 80o25.907'S 171°12.533'E and 82°09.344'S 173°57.398'E and 78°37.290'S 168°23.645'E. Shackleton Glacier 84°26.953S 176°1.274E	1998/99	Not able to be relocated in 1999/00
<b>Lost science equipment:</b>			
12.5 kg of 40% sulphuric acid sealed in Lead Acid batteries in a vibracorer lost on the sea floor	Granite Harbour 76°56.6S, 162°48.1E	1993/94	Unrecoverable
SIPRE auger 1.2m long steel and aluminium corer unable to be retrieved from approx. 2m depth in the frozen lake.	Popplewell, Lake	1999/00	Unrecoverable

## 3.6. Relevant National Legislation

2005/2006 Permanent

New Zealand

### 3.6.1 RELEVANT NATIONAL LEGISLATION

New Zealand has domestic laws implementing the Antarctic Treaty, the Convention for the Conservation of Antarctic Marine Living Resources and the Protocol on Environmental Protection to the Antarctic Treaty.

These are:

Antarctica Act 1960

Antarctic Marine Living Resources Act 1981

Antarctica (Environmental Protection) Act 1994

These are available at [http://www.legislation.govt.nz/browse\\_vw.asp?content-set=pal\\_statutes](http://www.legislation.govt.nz/browse_vw.asp?content-set=pal_statutes).