



ANTARCTICA NEW ZEALAND INFORMATION SHEET

NEW ZEALAND AND ANTARCTICA

The Ross Dependency is the wedge-shaped part of Antarctica claimed by New Zealand. It is over 3000 kilometres south of New Zealand and takes in Ross Island, the Ross Sea, the Ross Ice Shelf, much of the Transantarctic Mountain range and part of the continent extending to the South Pole.

New Zealand's historical connections with Antarctica began following Captain James Cook's circumnavigation of the continent in 1772 and Sir James Clark Ross's exploration of the Ross Sea in 1841. Captain Robert Scott's and Ernest Shackleton's expeditions also left from New Zealand ports early this century.

Based on these explorers' discoveries the Ross Dependency was claimed by a British Order-in-Council as New Zealand territory in 1923.

New Zealand was a founding signatory to the Antarctic Treaty and has been active in Antarctica since Scott Base opened in 1957. The treaty system sets aside territorial claims, such as that to the Ross Dependency, and declares the area south of 60° as a region devoted to peace and science.

Antarctica New Zealand

Antarctica New Zealand is the Government agency responsible for planning and managing New Zealand's activities in Antarctica.

Its mission is to "advance knowledge, appreciation and conservation of Antarctica and the Southern Ocean for the benefit of New Zealand and the world community through leadership, partnership, and involvement in high quality Antarctic related activities."

Established in July 1996 by the New Zealand Antarctic Institute Act, Antarctica New Zealand employs about 25 permanent staff, based at the International Antarctic Centre in Christchurch.

It is involved in the strategic development of Antarctic science and research, environmental management, educational initiatives and providing a framework for tourism and commercial activity.

Antarctica New Zealand employs about 35 seasonal staff each summer to run Scott Base and support mainly Government-funded research conducted by scientists from Crown Research Institutes and Universities.

About 40 scientific research projects are undertaken each year, many with international links.

Most research is conducted in the McMurdo Sound region. This includes the Dry Valleys in the Transantarctic Mountains, the Ross Ice Shelf and volcanic Ross Island where Scott Base is sited.

Antarctica New Zealand coordinates the input of the New Zealand Defence Force which provides C130 Hercules flights, Bell 212 helicopter support and some staffing at Scott Base. Through a memorandum of understanding between governments, Antarctica New Zealand works closely with the United States, sharing air transportation between Christchurch and McMurdo Sound and helicopter resources on the ice.

It also works closely with Italy, which supplies its Terra Nova base in the Ross Sea from Christchurch.

Policy oversight of New Zealand's Antarctic interests is provided by the Ministry of Foreign Affairs and Trade.

Life at Scott Base

Scott Base, New Zealand's base in the Antarctic, was built in 1957 and a rebuilding programme began in 1976. It now consists of a series of eight modern buildings built from sheet steel encasing polyurethane foam - a bit like a cold store in reverse. This material is extremely strong and provides good insulation. The buildings are linked by corridors and each can be isolated by fire doors. The buildings are elevated off the ground so that snow can blow underneath.

Water is obtained by de-salinisation of sea water using a reverse osmosis system. The fresh water is stored in four heated tanks, each one with a 40,000 litre capacity. It is necessary to have plenty in reserve in case of fire, which is a hazard in the dry air of Antarctica. The over-wintering staff receive professional fire-fighting training in New Zealand before going to Antarctica and regular fire drills are held.

Scott Base contains thirty bedrooms, each sleeping two people in summer, and has modern bathroom and laundry facilities. A chef cooks the meals. In summer, plenty of fresh fruit and vegetables are brought in by the regular flights, but the main food supplies are brought in by ship in January. A hydroponics unit provides some fresh veges during winter. Bread is baked at the base and festive meals are prepared for special occasions.

Because of the dry atmosphere, static electricity is common, giving a mild shock to anyone touching metal objects.

Power supply is provided by diesel-powered generators. Hot water, heated by the generator exhaust, is used to warm the buildings. This is supplemented by oil-fired boilers. Inside the buildings it is warm enough to wear normal clothes, just like in New Zealand. For working outside, dressing in lots of layers is the best way to keep warm and minimise wind chill. Thermal underwear made of wool or polypropylene, wool shirts, wool or polarfleece jackets and trousers and then wind-proof jackets and overalls are provided to staff. Most of these items are made in New Zealand. Sunglasses, and goggles if it is windy, are very important in the bright sunlight reflected off the ice. Hats, balaclavas, mittens, gloves and special outer gloves with a place to wipe your runny nose are also important if working outside.

Scott Base operates a normal 8-5 working day, and after work staff can read or write letters, watch videos, relax in the bar or library, or go for a walk. There are mountain bikes and a small ski field a short distance away. Staff can use phones, faxes and internet links, and in summer weekly mail deliveries, so there is not the same degree of isolation as in the early days of Antarctic expeditions. The last flight of the summer is in late February and there is no physical contact in winter with the outside world until Winfly flights in August. Regular flights begin again in October.

Because of this isolation, it is essential people working at Scott Base work well as a team and get on socially in the small community. Positions are advertised in February for jobs such as the chef, cleaners, technicians, mechanic, electrician and field training instructors.

Staff have a thorough medical and dental check-up before they go. There is a trained first aider at Scott Base and a hospital at nearby McMurdo Station.

Once they get to Antarctica, new arrivals spend the first two days doing field training. They build a snow mound or trench and sleep in it to learn how to cope with the cold (which may be -20°C). The very dry air also needs adjusting to; despite the cold it is necessary to drink a lot of water.

Transport

New Zealand, USA and Italy co-operate to transport the scientists, base staff and cargo to Antarctica. Large cargo and fuel are transported by ship once the sea ice has broken up in January and February. Other equipment and personnel are flown by Hercules, Globemaster and Starlifter planes which land on a sea ice runway in McMurdo Sound in spring. In summer when the sea ice has begun to melt, the snow surface of the Ross Ice Shelf is used for ski-equipped Hercules.

Aircraft are also used for aerial photography, penguin counts, magnetometry and other work. Fixed-wing planes and helicopters are used to transport scientists and field staff to remote locations.

Four-wheel-drive trucks are used to commute to the ice runway and McMurdo Station. Hagglunds (vehicles with tracks like a bulldozer) support science projects on the polar plateau, the Ross Ice Shelf, the sea ice and for search and rescue. Skidoos are used by parties traversing large areas on field trips. They can tow sledges weighing up to 500kg.

Travelling by any vehicle on the polar plateau, glaciers or ice shelves can be dangerous because of hidden crevasses (deep cracks in glaciers), the rough surface or blizzard conditions. Vehicles have to be "plugged in" at night to an electric heater to prevent their engines from freezing. Husky dogs are no longer used in Antarctica.

Environmental Protection

Antarctica New Zealand is committed to responsible environmental management in Antarctica.

It demonstrated this, in 1994, by completing the first independent environmental audit of any country operating in the Antarctic.

Environmental management has become an integral part of all operational activities. Personnel are trained in an environmental code of conduct, waste management procedures, oil handling and spill contingencies.

At Scott Base sewage and domestic liquids are processed in a purpose built wastewater plant. All other wastes are returned to New Zealand.

These practices are consistent with the Protocol on Environmental Protection to the Antarctic Treaty to which New Zealand is a signatory.

While New Zealand's base and research activities have localised impacts, a more significant threat to the Antarctic environment comes from sources generated outside the continent: these include ozone depletion (caused by CFCs) and climate warming (from greenhouse gases).

Antarctic science can help us understand the effects of human activity on the Antarctic environment and the earth's natural systems.

A Focus for Science

There are geological links between New Zealand and the Ross Dependency that can be traced back to Gondwana. Antarctica formed the central portion of this super-continent which broke apart over 100 million years ago.

Antarctic geology can tell us much about the history of this and other Southern Hemisphere countries and the forces which continue to shape them.

The atmosphere above Antarctica provides unique opportunities to study processes that are crucial from both a national and global perspective. The most topical of these are ozone depletion and climate change, and New Zealand scientists play an important part in understanding these processes.

Antarctic biological research is concerned with the study of organisms and ecosystems that are subject to extreme environmental conditions and the ways they have adapted to these conditions. How, for example, do Antarctic fish survive in temperatures of -2°C and how can mosses and lichens survive when water is frozen for much of the year?

The Dry Valleys offer New Zealanders the chance to study one of the most unusual environments on Earth. This ice-free oasis is a cold desert - where it hasn't rained there for two million years. Its primitive life forms - cyanobacteria slimes - are similar to the organisms that enabled life on Earth to develop by making oxygen.

Often research projects span several seasons and involve different scientific disciplines. The study of sea ice, for instance, involves work on physical and mechanical properties, the transmission of wave energy, and the pattern of formation and break-up using satellite imagery.

New Zealand research is focused on the themes of: Antarctic Physical Environments Research; Southern Ocean Research and Antarctic Ecosystems Research.