

# 2020 New Zealand SCAGI Report

To the Scientific Committee on Antarctic Research's  
Standing Committee on Antarctic Geographic Information

Virtual Zoom Meeting

30 July 1am-5am (NZ time)

31 July 6pm-10pm (NZ time)

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## 1 New Zealand SCAGI Members

Wendy Shaw  
Graeme Blick

Secretary, New Zealand Geographic Board (NZGB)  
Group Manager Positioning & Resilience, Land Information  
New Zealand (LINZ)

## 2 Geodesy and Surveying

The Positioning team within LINZ operates an annual K150 Event to Scott Base that encompasses geodesy and surveying activities necessary to maintain the Ross Sea Region spatial reference system and geodetic datum. The key components of the K150 event are discussed below.

### 2.1 Tide gauges and sea level information

A part of LINZ's role in the Ross Sea Region is monitoring tides and sea levels for hydrographic charting and geodetic heighting purposes. Sea level observations are critical to the study of sea level change and for climate change scientists. LINZ operates two long-term tide gauges at Scott Base and Cape Roberts. To enhance the long-term value of the sea level records LINZ carries out tide gauge calibration checks. This is done by using GPS to measure the height of the sea ice as it rises and falls and compare it with the data from the tide gauges.



Calibration of Cape Roberts tide gauge with GNSS set up on floating ice, 30 October 2019  
Photo: Christopher Stephens



The new Scott Base tide gauge anchor being lowered into position on 3 November 2019  
Photo: Christopher Stephens

## 2.2 Continuously operating GNSS receivers

LINZ manages four continuously operating Global Navigation Satellite Station (GNSS) sites in the Ross Sea Region. These sites provide real-time positioning data about ground movement of the Antarctica continent, as well as being used as reference marks for regional science projects. We use the data to maintain the Ross Sea Region Geodetic Datum. The data from these sites underpins global reference frames and is used by the international science community.



Final installation of Zephyr3 antenna 2 November 2019 for Scott Base [SCTB] upgrade  
Photo: Christopher Stephens

### **2.3 Gravity observations**

LINZ collaborates with international groups to support the collection of absolute gravity readings at sites within the Ross Sea Region. Absolute Gravity observations provide data which is used to better define the shape of the Earth. This information is then used in models such as those which predict the impacts of sea level rise. These absolute gravity measurements also provide a local baseline for scientists who are using gravity to explore structures below the ice sheet. We typically collect gravity observations every 3-5 years. The most recent campaign was in November 2018 in conjunction with the government of Finland.

### **2.4 SBAS ground station**

The LINZ SBAS project is likely to require ground stations located in Antarctica. Initial designs indicate that Scott Base would be a preferred location. If a site were installed at Scott Base we would need the support of Antarctica NZ (AntNZ) for its construction and operation. Discussions with AntNZ to date have been positive and we have been told that in principle a station could be hosted there. We are now waiting on the outcome of the Geoscience Australia RFT process to identify a supplier to confirm the physical site requirements. This should be known in early 2021.

### **2.5 Wind turbine monitoring**

To decrease the reliance on fossil fuels Scott Base and McMurdo Station have recently been using power generated from wind turbines. The foundations of these turbines sit in permafrost and to check their stability LINZ carries out an annual survey of the towers to check their stability.

### **2.6 Local survey support for AntNZ**

LINZ supports AntNZ by capturing positioning information which is used Antarctica for projects, management and planning around Scott Base and the Ross Sea Region. These activities include erosion surveys of the shoreline around Hut Point, collecting data for defining the location of the Antarctic Specially Protected Areas (ASPA), maintaining topographic data around Scott Base and small engineering surveys, such as road layouts. This summer LINZ will be setting-out the location of the new base buildings, installing a new height reference point and mapping the Arrival Heights ASPA.



Deformation survey of Discovery Hut, Hut Point, on 7 November 2019  
Photo: Christopher Stephens

## 2.7 Supporting preservation of historic huts

LINZ supports the Antarctic Heritage Trust (AHT) and their on-going preservation efforts of four historic huts from the exploits of Captain Robert Falcon Scott, Sir Ernest Shackleton and Sir Edmund Hillary. Over the years these huts have been at increased risk due to such effects as ice accumulation, weathering, erosion, and sea level rise. LINZ undertakes regular height surveys so that AHT can consider any changes over time.

## 2.8 Impacts of COVID-19

Covid19 has impacted all national Antarctic programmes with the mutual outcome of keeping Antarctica Covid19-free. AntNZ, like all other programmes, has drastically reduced the number of supported Events in 2020-21. Only long-term science events close to Scott Base, essential base maintenance activities and base re-build events are being supported this year. K150 is classified as a science event due to its principal geodesy component supporting the long term monitoring of sea level, land movement and gravity changes. K150 is being supported by AntNZ this summer (2020/2021).

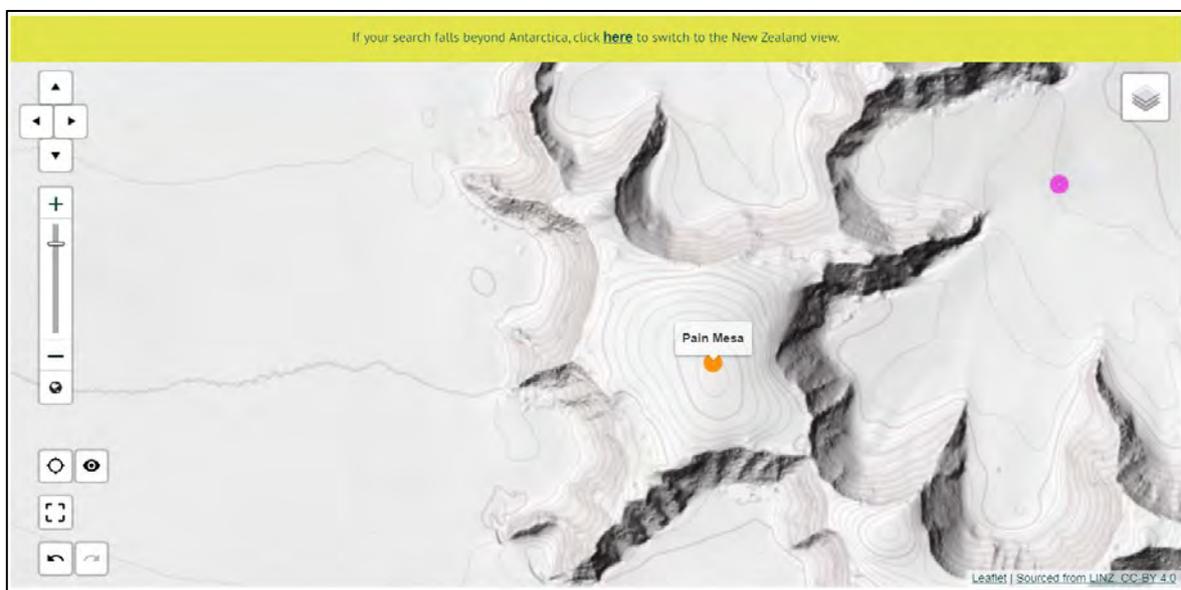
## 3 Mapping and Charting

LINZ's responsibly for topographic mapping extends to the Ross Sea Region of Antarctica and the sub-Antarctic Islands. We have published 1:50,000 scale maps of Ross Island, the Dry Valleys and the Darwin Glacier. LINZ's responsibility for hydrographic charting also extends to the Southern Ocean, the Ross Sea Region including Cape Adare and Ross Island. With the increase in the number and size of tourist ships visiting the Ross Sea

Region and the remoteness of the region, there is an increased awareness for of the need for accurate charts to ensure safe navigation.

## 4 Gazetteer and Antarctic basemap

In September 2019 the NZGB completed enhancements to the publicly available [New Zealand Gazetteer](#) which included the continent wide Antarctic basemap developed in early 2019 by LINZ. Users of the Gazetteer can now view (nearly) all New Zealand's Antarctic place names in their spatial context at 1:50,000 scale, and undersea in the Southern Ocean with 2km grid bathymetry.



Screenshot from the NZ Gazetteer (<https://gazetteer.linz.govt.nz/>), July 2020

## 5 Antarctic place naming administration

### 5.1 Antarctic Place Naming Standard for New Zealand

The NZGB is consulting on a new Standard for Antarctic place names<sup>1</sup>. This standard will provide guidelines for people making place name proposals and help the NZGB achieve quality and consistency in its decision making. The standard covers longstanding New Zealand Antarctic naming policy. It acknowledges the draft *International Principles and Procedures for Antarctic Place Names* which SCAGI hopes to finalise at this July 2020 meeting.

<sup>1</sup> <https://www.linz.govt.nz/consultation-new-zealand-geographic-board%E2%80%99s-three-place-naming-standards> - began 26 June 2020 concludes 26 August 2020

## 5.2 International Principles and Procedures for Antarctic Place Names

New Zealand contributed as a member of the SCAGI Working Group tasked with developing a modern naming guideline for use by members for new naming and for changing existing names. Excellent collaboration demonstrated goodwill to produce a document to meet the objectives of good naming practice in Antarctica and alignment with Antarctic Treaty objectives.

## 5.3 Antarctic Officials Coordination Group

Following meetings with the Ministry of Foreign Affairs and Trade (MFAT) in July 2018 and August 2019, Wendy Shaw joined a newly formed Antarctic Officials Coordination Group. This Group steers cross-government policy, domestic outreach, and international engagement, in relation to New Zealand interests in Antarctica.

In late 2019 MFAT released New Zealand's statement of *Commitment to Antarctica and the Southern Ocean*<sup>2</sup> and in December 2019 the Group met for the first time with representatives from 13 New Zealand Ministries and organisations. The most recent meeting on 26 June 2020 focussed on the impact of COVID-19 to New Zealand's 20/21 season.

# 6 Antarctic place naming decisions and coordinate improvements

## 6.1 New place names for features on the ice

On 19 December 2019 the NZGB's decisions on **650** Antarctic place names became official by notification in the *New Zealand Gazette*. This action mostly covers decisions from the NZGB's Antarctic Names Committee's March 2019 meeting, previously reported to SCAGI in 2019, and some further improvements for positional accuracy. A further new name Córdova Nunatak became official on 16 July 2020, delayed from March 2020 due to COVID-19.

<sup>2</sup> <https://www.mfat.govt.nz/en/environment/antarctica/ourcommitment/>

ANC/NZGB decisions on new official names include:

<b>Name</b>	<b>Origin</b>	<b>Description</b>
<a href="#">Córdova Nunatak</a>	US-ACAN proposal	A volcanic feature at the northern end of The Pleiades, a group of volcanic cones and craters at the western head of Mariner Glacier, northern Victoria Land. For Dr France A. Córdova, astrophysicist and 14th Director of the U.S. National Science Foundation (NSF), 2014-2020.
<a href="#">Oliver Bluffs</a>	NZ public proposal	An important site for geological and fossil deposits at Dominion Range, upper Beardmore Glacier. For Dr Robin Langford Oliver (1921-2001), NZ geologist who worked from University of Adelaide, Australia.
<a href="#">Room With A View</a>	ANC proposal	A site at the northern end of Hut Point Peninsula, with excellent panoramic views. The site is on the Ross Island Trail system and used for excursions from Scott Base and McMurdo Station. A name in use since at least the early 1990's.
<a href="#">Tirohanga Hukapō</a>	ANC proposal	A Māori name meaning 'Glacier View', for a peak on Mount Morning overlooking Koettlitz Glacier and Koettlitz Névé.

## 6.2 New place names for features in the Southern Ocean

In 2019 the NZGB accepted a proposal from GNS Science Te Pū Ao to collaborate on a project to identify and determine new names for features in the Southern Ocean with suitable bathymetric coverage.

At its 2 April 2020 meeting the NZGB decided on names for 11 of 27 undersea features that had been identified and they were gazetted as official on 16 July 2020. The names will now proceed as new proposals to SCUFN<sup>3</sup> for consideration at its 9-13 November 2020 meeting.

<sup>3</sup> SCUFN – Sub Committee on Undersea Feature Names

The NZGB will continue deliberating on names for the remaining 16 features. With the assistance of Te Rūnanga o Ngāi Tahu<sup>4</sup> the NZGB is looking towards new names in te reo Māori. SCUFN reiterated its commitment on accepting Māori names during the process to finalise the 4th edition of the IHO<sup>5</sup> B-6 guidelines for Undersea Feature Naming.



Leachman Ridge, an undersea feature assigned as official 16 July 2020  
Source: NZGB Gazetteer database

## 7 SCAR CGA rationalisation

With 50% of New Zealand's ~4600 Antarctic place names now reviewed for accuracy, work has begun on rationalisation of the **4330** official place names with the SCAR CGA. In October 2019 a test batch of twenty place names were added to SCAR CGA with all coordinate review fields populated (ie Source Identifier, Name, Publisher, Scale) and with original approval dates, which are generally absent from existing CGA entries. In July 2020 a batch of 53 place names entirely missing from SCAR CGA was submitted. Another 13 place names absent from SCAR fit in the 'relic' category for features that no longer exist. Advice from SCAR CGA administrators in Italy has been requested on how they should be submitted.

Of the remaining reviewed place names 791 have an existing US and/or AUS entry, but no NZ entry, and 1215 have an existing NZ entry that will require updating. There are an unknown number of place names that also need to be removed from SCAR CGA. It is hoped that significant progress on this longstanding rationalisation exercise will be made before the end of 2020.

<sup>4</sup> Te Rūnanga of Ngāi Tahu is a governance entity of Ngāi Tahu iwi (tribe), whose takiwā (territory) covers most of the South Island of New Zealand.

<sup>5</sup> IHO – International Hydrographic Organisation