

A short history of
The mapping of New Zealand's National Parks

Geoff Aitken. NewTopo NZ Ltd
geoff.aitken@xtra.co.nz

The mapping of New Zealand's fourteen National Parks has evolved in parallel with the topographic mapping of the country but has been influenced by the political constraints and directions of the governments of each period. Initially, with little accurate information to work with, the maps were sketchy but purposeful. Innovation in the presentation of the landform is evident in some cases and provides insights into the technologies and conventions of the times.

As quality mapping became available, and cartographic techniques enabled the visualisation of more comprehensive themes, informative map products were developed combining topographic mapping, land cover, tourist and tramping information, and historic and environmental text and photographs.

The financial and political landscape has now changed to the point that the Department of Conservation (DOC) no longer sees the publication of National Park mapping as its mandate and no longer has the production capacity, desire, or financial resources to publish mapping of the conservation estate for the public they serve.

Key words: Mountain mapping, topographic, history, National Parks.

The first parks:

Yellowstone in Wyoming was created a National Park in 1872 and Banff soon after in 1883. New Zealanders, too, adopted the idea of setting aside beautiful parts of the country for posterity. The core of the Tongariro National Park, adjacent to where we held the last Mountain Cartography Workshop at Taurewa, was 'gifted to the people of New Zealand' by Paramount Chief Te Heuheu Tukino IV in 1887. (Refer Appendices 1, 2.)

Other National Parks followed: Egmont, with its iconic circular boundary in 1900 (Refer App.4), and Arthur's Pass in 1929 (Refer App.5).

Today there are 14 national parks, three maritime parks and two marine reserves. (Refer App.3) Altogether about 30% of the country is under some form of environmental protection, although the Department of Conservation's politically and commercially motivated tag-line '*Conservation for prosperity*' is not seen positively by many environmental organisations.

Our first park maps:

When the first National Parks were created the country was still being explored – especially the mountain areas where the majority of the parks would eventually be established. Naturally, the first parks – Tongariro 1887, Egmont 1900, Arthur's Pass 1929 – were in areas with good access, ensuring their preservation and appreciation by both the

general public, who were fast becoming proud of their country, and tourism operators (including the government of the time) who wanted to exploit these ‘gems’ commercially.

Official maps, published by the Department of Lands and Survey, were limited to cadastral mapping supplemented by indications of the bush cover, and the terrain by variations of hachuring. These were designed for effect rather than geographic accuracy, but considering the limited mapping available the maps and posters did well to capture the landforms.

Some of the poster maps were designed to be attractive and enticing. But one particularly striking and realistic illustration is the ‘Perspective map of the Mt. Cook region of the Southern Alps, South Island, New Zealand.’ published by the Department of Lands and Survey in 1929. (Refer Appendix 6 and associated historical note).

Topographic mapping:

Although Lands and Survey began issuing inch to a mile maps in 1884 it wasn’t until the threat of invasion by the Japanese in 1935 that planning began for the national 1:63 360 topographic series designated **NZMS 1**. The first sheet was completed by plane tabling in 1939. Photogrammetry was introduced early and contributed strongly to the efficient production of the mapping. The last sheet was published in 1976. (Blick 2008. Jupp, Ed. 2011)

The move to full metrication of all measurement and monetary units from 1969 gave New Zealand the opportunity to introduce a new map projection and begin mapping the country again using modern technologies and metric units. This basic mapping series was designated **NZMS 260**. The photogrammetry was at 1:25 000 and the published maps at 1:50 000. The first sheet was published in 1977 and the last in 1997. The evolution and production of this series has been documented and published by the NZ Cartographic Society. (Jupp, Ed. 2011).

The NZMS 260 series was in its turn digitised and republished on a new projection and geodetic datum, and with a smaller sheet size. All 451 sheets in this new series – designated **Topo50** – were published simultaneously in September 2009 and are now available in various digital formats for free download, or can be purchased at a very reasonable cost as paper maps.

Before 1987:

The limited availability of accurate topographic mapping in mountain areas was reflected in sketchy national park mapping until the late 1970s, by which time a transition to metric mapping was required. Many early maps showed their multiple sources, and efforts to show the complexities of the geography and landforms were limited through lack of information. The main focus was on the size and shape of the parks through their legal boundaries and the limited facilities provided in the form of huts and tracks. The innovation shown earlier in the Tongariro and Arthur’s Pass examples was no longer evident, either through the lack of suitable skillsets or through changes in cultural conventions and technologies.

The DoSLI Days:

The formation of the Department of Survey and Land Information (DoSLI) from parts of the former Lands and Survey Department signalled a bold step by government towards a

more commercial self-funding model. The Department of Conservation (DOC) was also formed at this time. DOC ambitiously set out to confirm its rôle to the tax-paying public - and to the government that gave it its new mandate – by emphasising the opportunities for public enjoyment of the parks.

As part of this shift in emphasis, the two departments came to an agreement on an enhanced series of **Parkmaps**. DoSLI supplied cartographic expertise and DOC supplied current mapping information, and appropriate text and photographs for maps that were published in DoSLI's Infomap series. This arrangement required considerable resources from both parties and these were co-ordinated by a committee which met monthly under the chairmanship of DoSLI's Assistant Chief Cartographer. Later, when the new department Land Information New Zealand was formed, these maps were published by DOC themselves.

The continued evolution of cartographic and printing technologies allowed the development of sophisticated specifications which increased the information content and the legibility of these maps.

These modern-looking and informative maps were readily received by the public. They sold in the 1988 for \$5.50 – the equivalent of about \$10.25 today – rising to \$7.70 (\$14.35) the following year. Although the investment in production and printing were considerable, the sales were so high that long print runs were possible and kept the unit cost low. The Tongariro National Park map, the best-selling map of the series, sold more than 8,000 copies in 1987. The long-lasting educational effect of supplying the public with so much information at a reasonable price cannot be overestimated.

In the early 80s a small number of Trackmaps were published at larger scales to complement the Parkmap series. There were seven maps in 1989. Sales were respectable but not great compared with the Parkmap series.

Post DoSLI:

In 1996 the Department of Survey and Land information, including the national mapping organisation, was restructured to have a more regulatory focus. Production capability being initially relocated within State Owned Enterprises (SOEs). This new regulatory organisation, Land Information New Zealand, retained the programming and funding of core mapping through the National Topographic and Hydrographic Authority. Topographic map production (now entirely digital) was contracted to Terralink (later Terralink International) and other mapping organisations in New Zealand and Australia.

Quality control aspects of outsourcing proved difficult to manage and much of the topographic map production has now been re-established in-house.

Parkmaps now became the responsibility of the Department of Conservation. Production was contracted first to Terralink, where skilled DoSLI cartographic staff had been re-assigned, and later to GeoSmart in the Bay of Plenty, whose staff also had some digital cartographic skills. Difficulties with managing costs with the former and costs and copyright issues with the latter resulted in the cancelling of these commercial contracts.

DOC has resisted internal and external pressures to continue the Parkmap series. The residual stock of the two remaining National Park maps and few 'track maps' are distributed through Craig Potton Publishing in Nelson.

Although DOC has a GIS capability and, utilising an early version of the Geographx textured base mapping, ably produces maps on information boards, brochures and internal planning documents, they have no plans to republish the Parkmap series. Major projects are usually contracted to Geographx.

NewTopo

Since 2005 NewTopo NZ Ltd has published an increasing range of maps of interesting places to go walking in the hills. Inevitably, many of these maps are within National Parks and several cover most of a park although the administrative park boundary is deliberately not shown. These are: Taranaki Mt Egmont, Mount Ruapehu, Abel Tasman, Arthur's Pass, and Aoraki Mt Cook.

The full range of 35 maps is available for online purchase through www.newtopo.co.nz. The formats are standardised on A3 or A1 (single or double sided) and vary in scale from 1:38 000 to 1:130 000 to suit the area of activity. About half of NewTopo map sales are through the many DOC Visitor Centres throughout the country. Total sales seem to be stabilising at about 6000 maps per year. Costs are kept low, prices are kept 'reasonable' and revenues re-cycled into the business.

The maps are based on LINZ's NZTopo data updated with information from any reliable source. The thematic information is obtained from the Department of Conservation's website (and other sources) and verified by DOC or regional authority field staff wherever possible. The design attempts to balance the impression of the physical landscape with the thematic information, maintaining legibility and an attractive appearance. (Patterson 2010) The relief image is specially prepared by Geographx to a NewTopo specification. It contains no black to improve the legibility of coloured text in shadow areas.

The design evolution of NewTopo maps has been previously published. (Aitken 1972, 2006, 2010, 2012). The tracks previously covered by DoSLI's Trackmap series have been covered as well as many other popular areas.

Geographx

As well as the base map support given to DOC which is mentioned above, Geographx regularly produces unique oblique views of large areas of back country for the NZ Wilderness Magazine to illustrate focussed editions. Geographx has also produced maps in their style for a number of tramping and guide books. A few especially designed/focussed poster-maps are available for sale through the website www.geographx.co.nz

In December 2013 Geographx, in collaboration with Craig Potton Publishing, published the first five of eight maps of DOC's 'Great Walks' – all of them within National Parks. The final five in this series were published in March 2014. These are available for purchase through Craig Potton Publishing www.craigpotton.co.nz and selected retailers.

These maps are in an innovative, bold new style and are printed on 'Rockstock' environmentally sustainable paper. Roger Smith will present more details on the inspiration and design of this new series in a paper at this workshop.

The future of park mapping

For DOC to resurrect the Parkmap series there would need to be both political redirection and internal funding changes. DOC would need to be refocused with a more informational, parks-for-the-people emphasis. At present the direction appears to be on science and asset building, though community involvement has been mooted as a way of stretching funding in some areas. The cost of the redevelopment of one of its backcountry huts would be sufficient to fund a map publishing programme with a wider felt effect.

New Zealand's size and relatively small population (4.4 million, 2012) means that the market for map sales is quite small and, perhaps, uneconomic by most measures. It is unlikely that private companies will ever produce a Parkmap equivalent, although this does not debar innovation and new products. The examples quoted above in the 'DoSLI Days' indicate that if price and informational quality are seen to converge in perceived value the map-buying public are very willing to invest in paper map products.

GPS hand-held devices are useful personal locators at large scales (i.e. in the immediate vicinity), and may be increasingly used in popular areas as a means of information sharing and crowd control (!!), but cannot give an overview of the extent and complexity of any but the smallest parks. Batteries not included.

Examples of the evolution and innovation in presentation of national park mapping, for Tongariro, Arthur's Pass, and Aoraki Mt Cook National Parks are given in the oral presentation.

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Appendices:

- 1 The chronology of the establishment and official mapping of the National Parks
- 2 Tongariro National Park, map 1887
- 3 Map of New Zealand's National Parks and conservation land.
- 4 The iconic boundary of Egmont National Park
- 5 Arthur's Pass National Park, map 1931
- 6 'Perspective map of the Mt. Cook region of the Southern Alps, South Island, New Zealand.'

Further examples of the evolution and innovation in presentation of national park mapping, for Tongariro, Arthur's Pass, and Aoraki Mt Cook National Parks are given in the oral presentation.

Thanks to:

Igor Drecki and the GeoDataHub interdisciplinary interdepartmental team that is scanning the historical mapping published by all government departments and available through:
http://gdh.auckland.ac.nz/government_maps/NZMS/

New Zealand's National Parks: The chronology of their establishment and official mapping

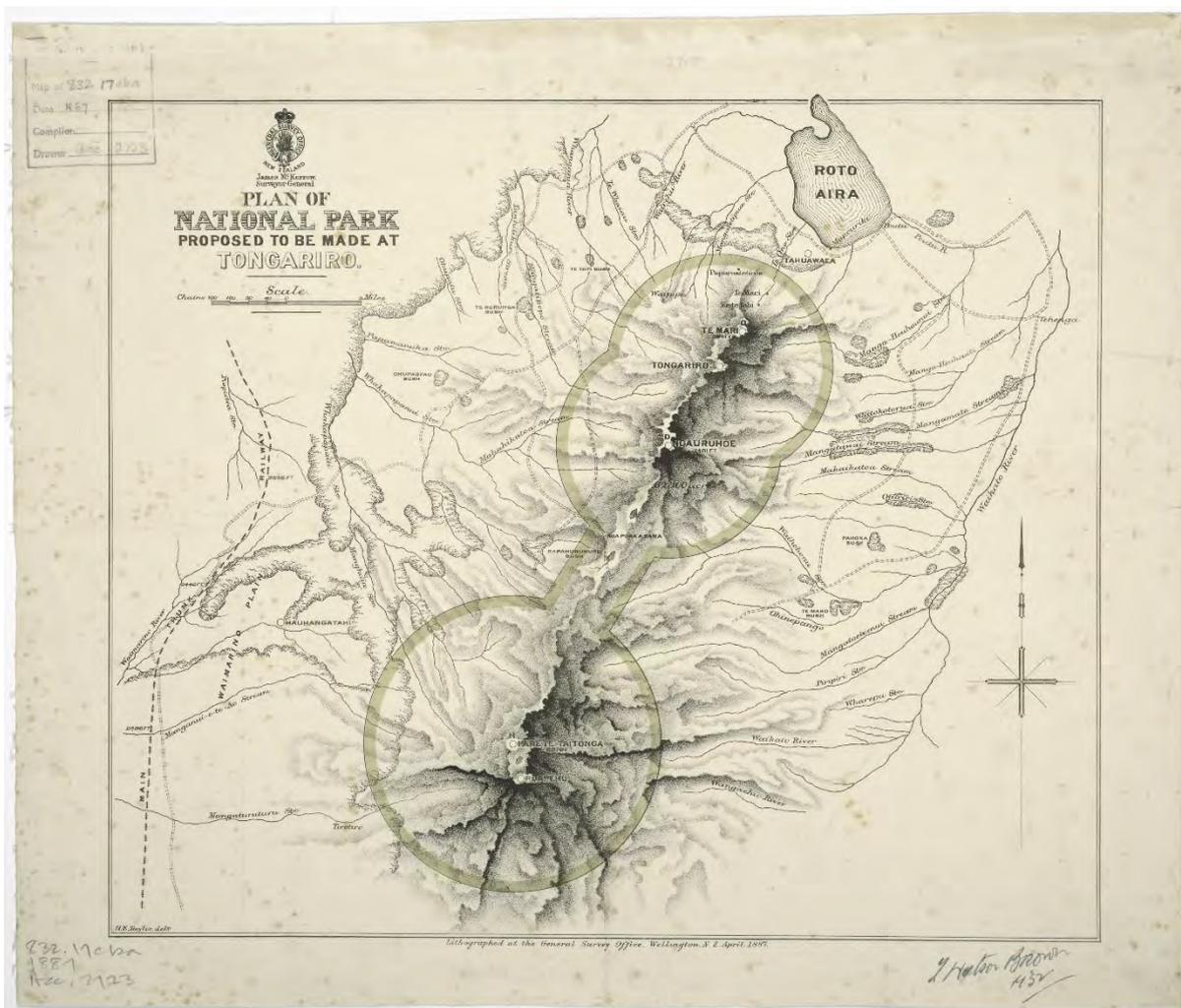
Established:

1887	Tongariro	
	Plan of TNP. 1:95 040	Ed.1 1909
	NZMS 150. 1:80 000	Ed.1 1958, Ed.2 1963, Ed.3 1969, Ed.4 1973,
	NZMS 192. 1:190 000	Ed.1 1972
	Parkmap 273/04. 1:80 000	Ed.1 1977, Ed.2 1980, Ed. 3 1985, Ed.4 1987, Ltd.Rev. 1991, Ed.5 1996, Ltd.Rev 2000, Ed.6 2004
	<i>Ruapehu and Tongariro recreation areas 1:50 000 Ed.1 2002, Ed.3 2004 (Terralink, no edition 2)</i>	
1900	Egmont	
	NZMS 169. 1:40 000	Ed.1 1960, Ed.2 1963, Ed.3 1968, Ed.4 1974, Ed.5 1979, Ed.6 1983, Ed.7 1986
	Parkmap 273/09. 1:50 000	Ed.1 1991, Ed.2 1994, Ltd.Rev 1998, Ed.3 2003
1929	Arthur's Pass	
	Plan of APNP. 1:63 360	Ed.1? 1931
	NZMS 194. 1:80 000	Ed.1 1961, Ed.2 1962, Ed.3 1969, Ed.4 1971
	Parkmap 273/1. 1:80 000.	Ed.1 1980, Ed.2 1983, Ed.3 1985, Ed.4 1992, Ed.5 1995,
1942	Abel Tasman	
	NZMS 183. 1:40 000	Ed.1 1969, Ed.2 1973, Ed.3 1980, Ed.4 1984,
	Parkmap 273/07. 1:50 000.	Ed.1 1987, Ed.2 1989, Ltd.Rev. 1991, Ed.3 1992, Ed.4 1995, Ltd.Rev. 1998
1952	Fiordland	
	NZMS 122. 1:300 000.	Ed.1 1955, Ed.2 1958, Ed.3 1962, Ed.4 1968, reprinted 1973
	Parkmap 273/03. 1:250 000.	Ed.1 1977, Ed.2 1982, Ed.3 1988, Ltd.Rev. 1991, Ltd.Rev. 1993, Ed.4 1996, Ed.5 2004
1953	Aoraki Mount Cook	
	NZMS 180. 1:100 000.	Ed.1 1961, Ed.2 1961, Ed.3 1964, Ed.4 1973, Ed.5 1980, Ed.6 1985
	Parkmap 273/10. 1:100 000	Ed.1 1991, Ltd.Rev 1992, Ed.5 1999 (editions 2, 3, and 4 were not published)
	<i>Aoraki Mt Cook Alpine Area 1:50 000</i>	<i>Ed.1 1999, Ed.2 2003, Ed.3 2005 (Terralink)</i>
1954	Te Urewera	
	NZMS 170. 1:100 000.	Ed.1 1962, Ed.2 1965, Ed.3 1971, Ed.4 1978, Ed.5 1985
	Parkmap 273/08. 1:130 000	Ed.1 1993, Ed.2 1997
1956	Nelson Lakes	
	NZMS 164. 1:80 000	Ed.1 1961, Ed.2 1962, Ed.3 1972, reprinted 1977, Ed.4 1980
	Parkmap 273/5. 1:100 000	Ed.1 1986, Ed.2 1995, Ed.3 2005
1960	Westland Tai Poutini	
	Mount Cook and Westland National Parks. See Aoraki Mount Cook above.	
1964	Mount Aspiring	
	Parkmap 273/02. 1:150 000	Ed.1 1976, Ed.2 1981, Ed.3 1987, Ed.4 1996, Ed.5 2004
1986	Whanganui	
	Parkmap 273/06. 1:160 000	Ed.1 1991
1987	Paparoa	
	Parkmap 273/12. 1: 50 000.	Ed.1 1990
1996	Kahurangi (formerly NW Nelson Forest Park)	
	Parkmap 274/13. 1:150 000	Ed.1 1987, Ed.2 1993, Ed.3 1997, Ed.4 2004
2002	Rakiura	
	NZMS 219. 1:126 720	Ed.1 1966, Ed.2 1992, Ed.3 1975, Ed.4 1980
	Parkmap 336/10. 1:150 000	Ed.1 1987, Ed.2 1992, Ed.3 1997, Ed.4 2005 (1:95 000)

This listing may not be definitive. Additions and corrections are welcome.

Sources:

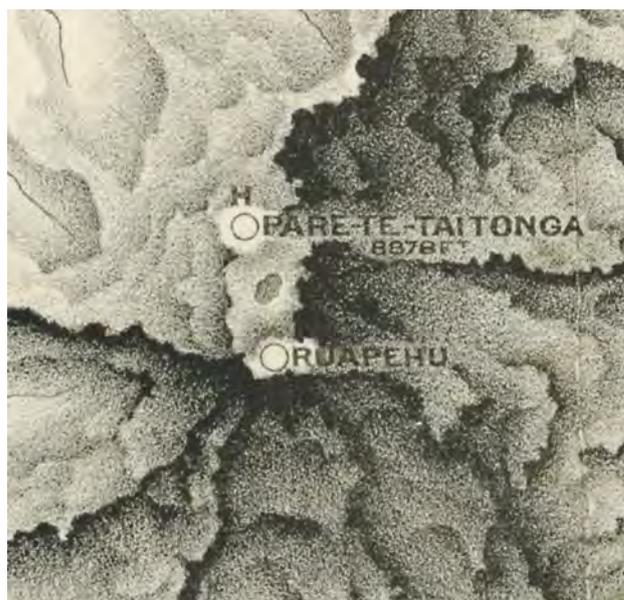
Alexander Turnbull Library, National Library of New Zealand. <http://natlib.govt.nz/collections>
GeoDataHub, University of Auckland, NZ. http://gdh.auckland.ac.nz/government_maps/NZMS/
WorldCat Library Network: www.WorldCat.org



Above: The original Tongariro National Park 'gifted to the people of New Zealand' by Paramount Chief Te Heuheu Tukino IV in 1887.

Source: Alexander Turnbull Library, National Library of New Zealand.
 Ref: Plan of National Park proposed to be made at Tongariro, General Survey Office, Wellington. 1887.

Right: Detail showing relief technique.

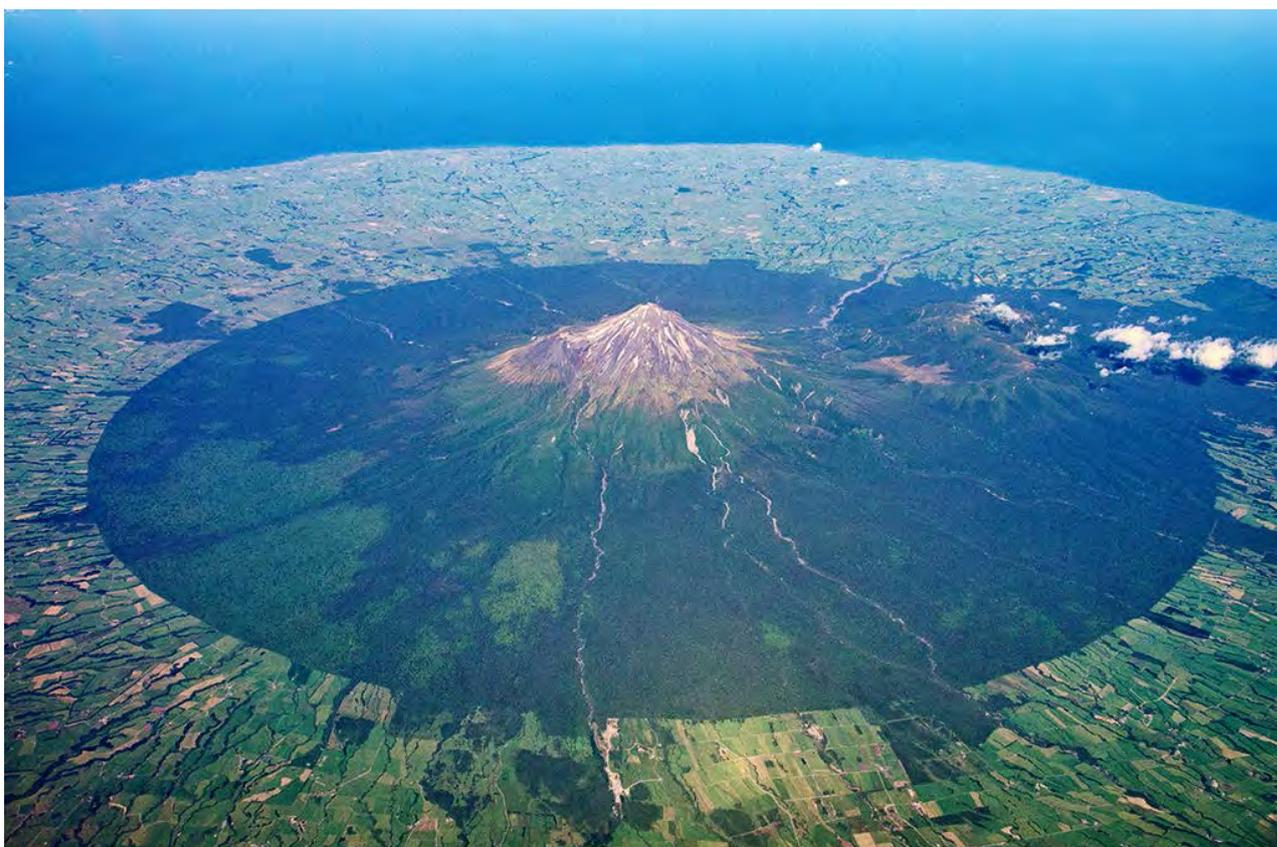




Land with some form of conservation status.

Source: **New Zealand's Wilderness Heritage** by Les Molloy and Craig Potton, - maps by Geographx.

Appendix 4



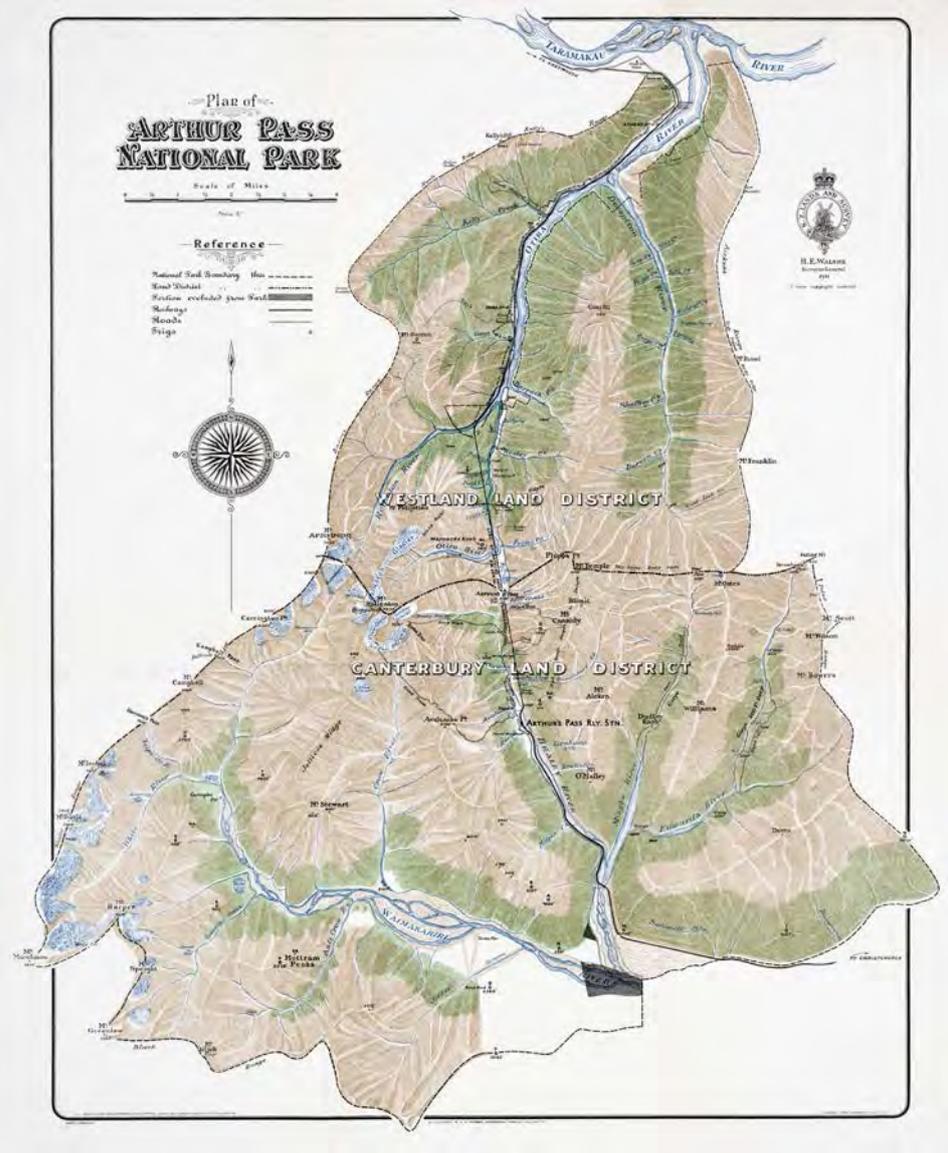
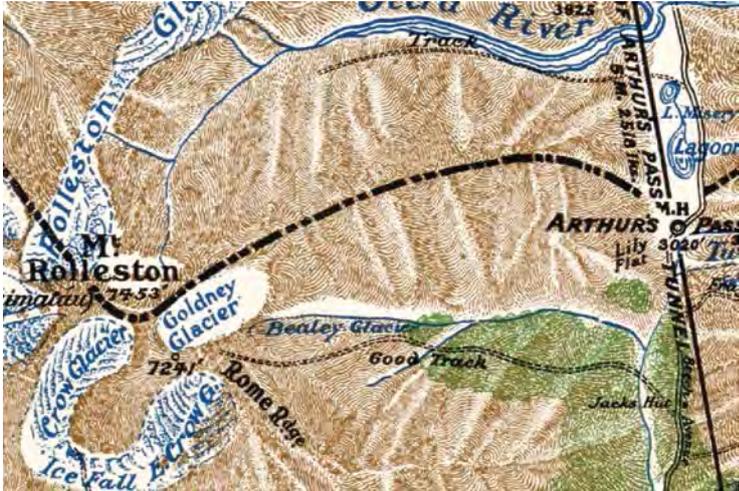
The iconic boundary of Egmont National Park

Source: <http://bellblocknz.files.wordpress.com/2013/09/dsc06906.jpg>

Below: **Arthur's Pass National Park 1931**

Right: Detail showing relief technique

Source:
Alexander Turnbull Library, National Library of New Zealand.
Ref: NZMS058_ArthurPass_1931_200ppi



'Perspective map of the Mt. Cook region of the Southern Alps, South Island, New Zealand.'

Drawn by B.A. Broadhead of the Lands and Survey Department, and published by the Department in 1929.

In recognition of the quality and unique perspective of the original, a facsimile edition was published as L&S324 by the Department of Lands and Survey in 1980.

Image source: **Alexander Turnbull Library**, National Library of New Zealand.
Ref: LS324_NZAlpineRegions_base_bw_raw_200ppi

Further information on the background and technique can be found at http://nzetc.victoria.ac.nz/tm/scholarly/tei-Gov04_06Rail-t1-body-d14.html
In the New Zealand Railways Magazine, Volume 4, Issue 6 (October 1, 1929)

