

1933.
NEW ZEALAND.

DEPARTMENT OF LANDS AND SURVEY.

SURVEYS

(ANNUAL REPORT ON).

Presented to both Houses of the General Assembly by Command of His Excellency.

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The SURVEYOR-GENERAL to the Hon. the MINISTER OF LANDS.

SIR,—

Wellington, 1st August, 1933.

I have the honour to present herewith the report on survey operations for the year ended 31st March, 1933.

I have, &c.,

H. E. WALSH,

Surveyor-General.

The Hon. E. A. Ransom, Minister of Lands.

REPORT.

A SUMMARY of the operations carried out for the year ended 31st March, 1933, follows, grouped under appropriate headings. A concise summary of the field-work completed during the year is tabulated in Tables A, B, and 1 to 4 herewith.

Table A shows a further slight reduction in the average cost of both rural and Native surveys, and a considerable reduction in the average cost of road surveys.

Table B shows a reduction of a little more than 50 per cent. of the area surveyed compared with last year's return. The area under Native surveys was a little above last year's return, due to the definition by survey of the Crown and Native awards in the Tutira Block, Hawke's Bay District.

MINOR TRIANGULATION.

With the exception of a small amount in connection with rural standard surveys in the Hawke's Bay District, no work was carried out under this heading.

TOPOGRAPHICAL SURVEYS.

For settlement purposes an area of approximately 20,000 acres, principally in the Auckland and Hawke's Bay Districts, was surveyed.

SETTLEMENT SURVEYS.

The Crown lands and land-for-settlement surveys are set out in Table 1 under their appropriate headings for each land district.

NATIVE-LAND SURVEYS.

This work, the greater proportion of which was carried out by private surveyors, shows a slight increase on last year's return, the greater proportion of the work being in the Hawke's Bay District.

GEODETIC TRIANGULATION.

No work of this nature has been carried out during the year.

HAWKE'S BAY RE-ESTABLISHMENT OF SURVEYS.

Good progress has been made during the year with the controlling standard survey of the principal roads, of which 650 miles was completed and mapped, at an average cost of £18 16s. per mile.

The field-work of the Borough of Napier standard survey, including alignment surveys and re-parcelling surveys under the regulations issued under the Earthquake Act, 1931, is approaching completion, and the mapping is also well forward.

Nearly five hundred reproduced plans were examined and approved during the year, and a large number of data tracings in connection with surveys prior to 1931 were received and recorded.

The computations of the revised secondary triangulation have been completed and referred to the transverse mercator projection based on the meridian through the initial station A, Hawke's Bay, and portion of the network of rural standard traverses adjusted to harmony.

STANDARD SURVEYS.

With the exception of a small amount of work in Christchurch and the maintenance of existing standards, the only work carried out under this heading was the standard-survey work in connection with the re-establishment surveys in the Hawke's Bay District.

PRECISE LEVELLING.

At the request and with the co-operation of the City Council, a length of some twenty-five miles of precise levelling was carried out in the Wellington City.

The probable accidental error ($\eta\tau$) computed on the International formula is 0.0016 ft. per mile, and the probable systematic error ($\sigma\tau$) 0.00128 ft. per mile, showing that the work has been carried out to a high degree of accuracy. The datum for the heights is mean sea-level at Wellington based on seven years reading of the automatic tide-gauge.

FIELD INSPECTIONS.

Except where absolutely necessary for title purposes, no field inspections were carried out during the year.

TIDAL SURVEY.

The tide tables for the year 1934 for the seven New Zealand standard ports (Auckland, New Plymouth, Wellington, Lyttelton, Dunedin, Bluff, and Westport) for which predictions are published were received from the Hydrographer to the Admiralty. The work of measuring the times and heights of high and low water was performed by the Tidal Institute, University of Liverpool.

PROPOSED OPERATIONS, 1933-34.

Hawke's Bay Re-establishment of Surveys.—This work will be continued in the field by the rural standard traverse of the principal roads, and in the office by the collection and compilation of all obtainable existing data.

Triangulation.—It is not proposed to carry out any geodetic or minor triangulation during the coming year.

Standard Surveys.—With the exception of maintenance work, and in the hill suburbs of Christchurch the protection of original reference marks now being lost through street construction, no standard work is proposed to be done this year.

Town Section Surveys.—An area of 68 acres is at present on hand.

Rural Settlement.—Areas of about 50,000 acres, principally in the Auckland and Hawke's Bay Districts, require surveying during the coming year.

Native Land Court Surveys.—As a result of the amending legislation with regard to security for the costs of survey, the work on hand is only 4,085 acres, many prospective surveys being in abeyance.

Office Work.—The routine examination and recording of plans, photo-lithographic drawings, Gazette notices, &c., will be continued, as also the publication of maps as present editions become exhausted. The adjustment of the rural standard traverses to harmonize with the revised triangulation will be continued.

GENERAL.

Map Publication.—The detailed figures relating to this will be found in the Chief Draughtsman's report appended hereto. The number of standard one mile maps published is much below the annual number required to keep the map publications comparatively up to date, and arrears which must be overtaken in the future are now accumulating.

Town Schemes.—These again show a diminution both in number and area, with a large proportion comprising the re-parcelling of former areas.

Proclamation of Roads, &c.—During the past year a number of applications for the proclamation of road-lines laid out by the Native Land Court under the provisions of the Native Land Acts were considered and dealt with. The statutory notices under section 487 of the Native Land Act, 1931, were forwarded to the local authorities of the districts concerned, and in the majority of cases no objections were raised to the proclamation of the road-lines as public highways.

Under the Land Transfer Act, 1915, 111 Warrants for the issue of certificates of title were examined and certified to in terms of section 13 of the Act. A number of applications to bring land under the Land Transfer Act were also considered and approved in pursuance of section 19 of the Act.

Under section 106 of the Land for Settlements Act, 1925, six Proclamations were issued closing unformed and unused roads intersecting or adjoining land acquired under that Act.

STAFF.

The technical staff has been much reduced during the year by retirements, resignations, and otherwise, so that only the most essential services can now be carried out. As times return to normal there will be considerable arrears of useful work to be brought up to date, work on which has had to be temporarily suspended meanwhile. Among the senior officers whose services have been lost to the Department are Messrs. W. Paltridge, W. Bardsley, H. S. T. Tyers, H. F. May, and Miss R. Gillanders.

APPRECIATION.

In conclusion, I would bring to your notice the appreciation of the Chief Surveyors of the services rendered by their staffs during the year, to which I also desire to add my personal thanks to the whole of the technical staff for their excellent work in carrying out their various duties.

H. E. WALSHE, Surveyor-General.

APPENDIX.

HEAD OFFICE, DRAUGHTING BRANCH.

(A. J. Wicks, Chief Draughtsman.)

Map Publications.—The total maps published during the year were 68, and the cost of printing £865 ls. 9d. The maps comprised survey districts ($\frac{1}{2}$ mile to 1 in.), 30; survey districts (1 mile to 1 in.), 20; counties (1 mile to 1 in.), 4; towns, 1; territorial (4 miles to 1 in.), 3; miscellaneous, 10. The total number of copies printed under all headings was 16,203.

Cash sales of lithos from all districts amounted to £887, as against £1,389 for the previous year, whilst maps purchased by other Departments show a return of £409, as against £289 for the previous year. Maps to the value of £829 were issued free or used in the office.

Town Schemes.—There was a further decrease in the number of town schemes, 78 only being approved, as against 99 for the previous year. More than 50 per cent. of the schemes were from the Auckland and North Auckland Districts. Analysis of the schemes show that 264 acres were subdivided into residential lots outside the boundaries of boroughs and town districts, and of this area new roads accounted for 19 acres; road access reserves, 7 acres; recreation and other public reserves, 16 acres; leaving a balance of 222 acres subdivided into lots available for sale.

Draughtsmen's and Computers' Examination.—The annual examination was held in September, 1932, when 62 candidates presented themselves for examination. The results were as follows: Draughting: 39 candidates; of whom 8 obtained first-grade passes (Messrs. F. Coleman, W. Conway, H. E. Ellis, E. A. Goldsbury, C. Holdsworth, S. J. P. Kennerley, A. Rocard, and J. K. Woodley), and 14 obtained second-grade passes (Messrs. C. Allen, A. T. Bell, K. A. Bell, B. L. Burns, S. S. Clifford Jones, J. H. Cook, R. R. Harris, C. R. Lyons, P. R. Malthus, S. V. Meyer, T. A. McLeod, W. Rogel, L. H. Skelton, and O. Wilton). Computing: First-grade, 6 candidates; of whom 3 passed (Messrs. W. S. Boyes, F. H. Jennings, and R. J. Owen); second-grade, 17 candidates; of whom 4 passed (Miss A. S. Muir, Messrs. G. L. Frank, J. Healey, and C. Holdsworth).

Standard of Length.—During the year eleven bands were compared with the standard, the total length being 58 chains. Of these, seven were field surveyors' ordinary steel bands of a length of 42 chains, and four were invar bands of a length of 16 chains.

Maps, &c.—During the year good progress has been made with the 4-mile series of maps, and also with the standard maps on 1 mile to 1 in. scale. The preparation of tracings and searching for existing data in connection with the Hawke's Bay re-establishment has continued to occupy a considerable portion of the draughtsmen's time.

TABLE A.

Class of Work.	Area.	Average Cost.	Total Cost.
			£ s. d.
Topographical survey for settlement	20,074 acres	2-62d. per acre	219 1 11
Rural by staff	55,593 acres	1-64s. per acre	4,548 18 11
Suburban	308 acres	21-03s. per acre	323 16 3
Town	69 acres	£1-39 per section	254 12 9
Native Land Court, by staff	6,211 acres	3-62s. per acre	1,124 2 10
Native Land Court, by private surveyors ..	40,000 acres	2-05s. per acre	4,090 17 7
Roads by staff	266·9 miles	£20·13 per mile	5,372 14 8
Roads by private surveyors	497·7 miles	£18·94 per mile	9,428 5 9
Other work by staff .. .. .	..	..	2,915 5 0
Total cost of completed work .. .. .	..	..	28,277 15 8

TABLE B.

Land District.	Rural Survey.	Native Land Court.
	Acres.	Acres.
Auckland and North Auckland	21,097	8,538
Gisborne .. .. .	..	2,739
Hawke's Bay	17,439	24,682
Taranaki	6,608	468
Wellington	1,112	8,575
Marlborough	820	1,076
Nelson	2,315	..
Westland	2,827	..
Canterbury	1,372	101
Otago	1,055	32
Southland	948	..
Totals	55,593	46,211

Table 1.—RETURN OF FIELD-WORK EXECUTED BY THE STAFF AND CONTRACT SURVEYORS ON LANDS ADMINISTERED BY THE LANDS AND SURVEY DEPARTMENT FROM 1ST APRIL, 1932, TO 31ST MARCH, 1933.

District.	Topographical Survey for Settlement.				Rural.				Village and Suburban.					
	Acres.	Cost per Acre.	Total Cost.	Number of Sections.	Acres.	Cost per Acre.	Total Cost.	Number of Sections.	Acres.	Cost per Acre.	Total Cost.	Number of Sections.	Cost per Acre.	Total Cost.
Auckland and North Auckland	6,124	0.88	£ 22 7 6	21,097	1.71	£ 1,804 5 3	21	182.0	17.55	£ 159 14 7				
Gisborne	12,160	2.29	116 0 0	17,439	0.81	704 10 0								
Hawke's Bay	510	6.77	14 8 0	6,608	0.75	249 6 9								
Taranaki				1,112	1.59	88 4 8								
Wellington				820	2.90	119 5 0								
Marlborough				2,315	4.86	562 17 7	4	4.2	76.63	16 3 1				
Nelson	1,280	12.43	66 6 5	2,827	3.61	510 10 9	5	22.6	44.63	50 10 6				
Westland				1,372	2.56	175 14 8	15	50.3	34.49	86 15 1				
Canterbury				1,055	5.56	293 13 10								
Otago				948	0.85	40 10 5	3	48.9	4.12	10 13 0				
Southland														
Totals	20,074	2.62	219 1 11	55,593	1.64	4,548 18 11	38	308.0	21.03	323 16 3				

District.	Town Section Survey.				Roads, Railways, and Water-races.				Other Work.				
	Acres.	Number of Sections.	Cost per Section.	Total Cost.	Miles.	Cost per Mile.	Total Cost.	Number of Sections.	Acres.	Cost per Acre.	Total Cost.	Number of Sections.	Cost.
Auckland and North Auckland	13.70	36	1.62	£ 58 6 2	69.8	19.7	£ 1,374 14 11	21	182.0	17.55	£ 159 14 7		
Gisborne													
Hawke's Bay													
Taranaki													
Wellington	1.53	7	3.28	22 19 4									
Marlborough													
Nelson	0.01	1	1.95	1 19 0									
Westland	11.08	73	1.05	76 17 11									
Canterbury	42.37	63	1.45	91 9 9									
Otago													
Southland	0.08	4	0.75	3 0 7									
Totals	68.77	184	1.39	254 12 9	756.9	19.4	14,660 14 8	2,436	9 2	22,443 13 8			

Table 2.—RETURN OF FIELD-WORK EXECUTED BY THE STAFF AND CONTRACT SURVEYORS ON LANDS ADMINISTERED BY OTHER DEPARTMENTS FROM 1ST APRIL, 1932, TO 31ST MARCH, 1933.

District.	Native Land Survey.				Roads, Railways, and Water-races.			Other Work (Cost).		Total Cost of Completed Work.	
	Acres.	Number of Sections.	Cost per Acre.	Total Cost.	Miles.	Cost per Mile.	Total Cost.	£	s. d.	£	s. d.
Auckland and North Auckland	8,538	239	s. 5.53	£ 2,359 2 2	..	..	..	£ 386	4 5	£ 2,745	6 7
Gisborne	2,739	53	5.85	800 11 8	1.7	26.64	45 5 9	..	..	845	17 5
Hawke's Bay	24,682	30	0.85	1,055 0 0	..	..	..	..	..	1,055	0 0
Taranaki	468	10	4.87	113 19 9	..	..	..	..	..	113	19 9
Wellington	8,575	51	1.26	539 13 3	..	..	..	£ 6	14 11	546	8 2
Marlborough	1,076	25	3.22	173 9 9	..	..	..	..	..	173	9 9
Nelson	..	..	..	..	..	..	..	..	..	..	..
Westland	..	..	..	..	..	..	..	£ 39	0 0	39	0 0
Canterbury	101	25	3.11	157 12 10	1.0	19.00	19 0 0	£ 16	0 0	192	12 10
Otago	32	4	9.71	15 11 0	5.0	15.20	76 0 0	£ 30	16 6	122	7 6
Southland	..	..	..	..	..	..	..	..	..	..	..
Totals	46,211	437	2.26	5,215 0 5	7.7	18.22	140 5 9	£ 478	15 10	5,834	2 0

Table 3.—RETURN SHOWING SURVEYORS EMPLOYED AND WORK ON HAND ON 1ST APRIL, 1933.

Chief Surveyors.	Surveyors employed.		District.	Work on Hand.				Standard Traverse.	
	Staff.	Contract.		Settlement.	Native.	Roads, &c.	Towns.	City.	Rural.
R. G. Macmorran	7	11	Auckland and North Auckland	Acres. 16,000	Acres. 978	Miles. 42	Acres. 6	Miles. ..	Miles. ..
H. L. Primrose	1	..	Gisborne	..	1,107	..	..	..	..
F. R. Burnley	8	3	Hawke's Bay	30,522	..	1	..	40	292
W. D. Armit	1	..	Taranaki	2,486	612	0.4	11	..	..
F. H. Waters	1	1	Wellington	..	1,363	..	..	..	..
P. R. Wilkinson	1	..	Marlborough	260	..	0.5	..	4	..
A. F. Waters	1	..	Nelson	..	..	20	20	..	..
T. Cagney	1	..	Westland	50	..	..	..	..	..
W. Stewart	1	..	Canterbury	2,764	25	7.2	25	6	..
N. C. Kensington	1	..	Otago	500	..	..	4	..	..
B. C. McCabe	1	..	Southland	..	..	..	2	..	..
Totals	24	15	..	52,582	4,085	71.1	68	50	292

Table 4.—PRINCIPAL CLASSES OF OFFICE-WORK DONE FROM 1ST APRIL, 1932, TO 31ST MARCH, 1933.

Land District.	Plans placed on Instruments of Title.				Deeds and other Instruments passed.	Plans examined and passed.				Maps drawn for Lithography.		Lithographs sold.
	Crown.		Native Land.	Land Transfer.		Crown.	Native.	Land Transfer.	Other Departments.	Standard Publications.	Sale Plans, &c.	
	Leases, Licenses.	Freehold.										
Auckland and North Auckland	927	338	878	11,314	6,265	315	76	426	157	21	123	£ 178 13 0
Gisborne	78	..	84	395	..	15	15	21	11	4	5	34 4 6
Hawke's Bay	501	424	108	843	1,766	24	111	436	15	..	4	35 15 2
Taranaki	272	..	70	658	331	8	12	54	27	2	39	80 1 7
Wellington	305	116	291	2,157	1,263	16	24	118	86	..	6	53 4 6
Marlborough	162	4	42	144	..	18	14	7	16	..	2	16 16 0
Nelson	333	66	..	1,610	..	28	..	73	15	1	..	58 4 3
Westland	253	..	2	364	..	25	1	20	17	..	..	41 12 6
Canterbury	633	50	66	1,360	786	45	12	108	33	1	..	96 17 6
Otago	320	..	8	2,876	1,581	51	2	64	26	2	47	77 8 6
Southland	103	40	..	387	729	9	..	33	10	..	1	56 8 0
Head Office	..	..	..	..	..	..	..	..	..	8	..	567 10 0
Totals	3,887	1,038	1,549	22,108	12,721	554	267	1,360	413	39	227	£ 1,296 15 6

Approximate Cost of Paper.—Preparation, not given; printing (950 copies), £9 10s.

By Authority: G. H. LONEY, Government Printer, Wellington.—1933.