

1934.  
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,—  
I have the honour to present herewith the report on survey operations for the year ended 31st March, 1934.

Wellington, 1st August, 1934.

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, 1934, 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 considerable reduction in the cost of Native surveys, with a slight increase in the cost of rural and road surveys.

Table B shows a further reduction in the area under rural surveys, while, with the exception of some 17,000 acres in the Auckland District, very little Native survey work has been done.

## MINOR TRIANGULATION.

The work under this heading was principally in connection with rural standard surveys in the Hawke's Bay District.

## TOPOGRAPHICAL SURVEYS.

Some 72,000 acres, principally in the Auckland District, was surveyed during the year.

## SETTLEMENT SURVEYS.

There was a considerable falling-off in the area of Crown lands and land-for-settlement surveys during the year. The areas are set out in Table 1 under their appropriate headings for each land district.

## NATIVE-LAND SURVEYS.

The greater proportion of this work was carried out by private surveyors and was chiefly in the Auckland Land District.

## GEODETIC TRIANGULATION.

No work under this head was carried out during the past year.

## HAWKE'S BAY RE-ESTABLISHMENT OF SURVEYS.

Very good progress was made with the controlling rural standard survey work in Hawke's Bay, a distance of 344 miles being completed during the year by Staff Surveyors at an average cost of £21 9s. per mile.

The field-work of the standard survey of Napier Borough has been completed and plan work is well in hand. Good progress has been made with the standard survey of Hastings Borough, the field-work of which will probably be completed by the end of March next.

A total of 471 reproduced plans (Land Transfer and Native) were examined and approved during the year, and a considerable amount of other survey data was received and recorded.

The copying of essential matter from old Crown grants has been taken in hand, and the preparation of new tenure and record maps is making good progress.

*Accuracy of Field-work.*—In the ordinary rural traverses the calculations show the circuit closures to average 0.4 link to 1 mile or 1 in 20,000. In the standard traverses the closures are of the order 1 in 50,000, while it has been demonstrated in the field that with little extra precaution an accuracy of 1 in 250,000 or equal to geodetic standard can be maintained.

## STANDARD SURVEYS.

With the exception of the standard survey work in connection with the re-establishment surveys in Hawke's Bay District and the maintenance of existing standards, no work was carried out under this heading during the year.

## FIELD INSPECTIONS.

Only where necessary for title purposes were field inspections made.

## TIDAL SURVEY.

The tide-tables for the year 1935 for the seven 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, 1934–35.

*Hawke's Bay Re-establishment of Surveys.*—The control traversing of the principal roads will be continued in the field. The adjustment of these traverses into harmony with the triangulation and the collection and compilation of outstanding survey data will be the principal office work.

*Triangulation.*—It is anticipated that certain necessary geodetic work will be undertaken next field season.

*Standard Surveys.*—No work of this class is proposed to be done though it will be necessary to carry out the usual maintenance and inspection of existing standards.

## PRECISE LEVELLING.

Requests have been made that work to co-ordinate various blocks of levelling already made for different purposes be carried out and these separate works placed in terms of mean sea-level as determined by automatic tide-gauges. It is anticipated that this will be put in hand during the coming season.

*Town Section Surveys.*—A total area of 56 acres is proposed to be subdivided during the coming year, principally in the Taranaki and Canterbury Districts.

*Rural Settlement.*—A total area of 57,000 acres is in hand for survey during the coming year, Auckland and Hawke's Bay accounting for the greater part of this total.

*Native Land Court Surveys.*—Under 3,000 acres are at present in sight, but it is expected that at least five times this area will be brought forward during the year and surveyed.

*Office Work.*—The routine examination and recording of plans, photo-lithographic drawings, Gazette notices, &c., will be continued during the year. The publication of maps as present editions become obsolete will also be done. In the computing branch further harmonic constants for the standard ports will be evaluated as well as the readjustment of triangulation as it becomes necessary.

## GENERAL.

*Map Publications.*—The detailed figures relating to this will be found in the Chief Draughtsman's report appended. It is to be noted that the number of standard map editions is still below that required to keep stocks reasonably up to date and arrears are accumulating.

*Crown Copyright in Maps.*—There is noted a growing tendency for the Department's maps being used very freely and not always with permission in the preparation of maps for commercial or advertising purposes. The attention of persons likely to use our maps for such purposes has been drawn to the provisions of the Copyright Act, and to the intention to safeguard the Crown's interest in the maps compiled and published by the Department.

*Town Schemes.*—The number of these schemes is again low, but there appears to be an indication of a slight increase for the coming year.

*Warrants for Title, &c.*—One hundred and seven Warrants for the issue of certificates of title were examined and certified to under the provisions of section 13 of the Land Transfer Act, 1915. Several applications under section 19 of that Act were also considered and approved. No Proclamation of road-lines under the Native Land Act were dealt with, and one only under section 106 of the Land for Settlements Act, 1925.

## STANDARD OF LENGTH.

It is now nearly twenty years since the fundamental standards were examined and compared with the Imperial standards. Former comparisons have shown slight variations, and it is intended therefore to forward one of our standards to National Physical Laboratory for comparison during the coming year.

## STAFF.

The field and indoor technical staff have been kept exceedingly busy during the year, quite a considerable part of the work being due to the present conditions and which would not be required in normal times. The Department has lost the services in the field of Messrs. P. S. Sherratt (by retirement), T. R. Burt and J. T. H. Buttress (by resignation), and in the office Messrs. R. W. Grigor (retirement), T. M. Logie and E. G. W. Selby (resignation), and F. R. Wilson (deceased).

## APPRECIATION.

Your attention is directed to the appreciation of the Chief Surveyors of the services of their staffs during the year, and I also desire to express my own personal thanks to the whole of the staff for the excellent manner in which the work of the technical branch has been carried out.

H. E. WALSHE, Surveyor-General.

## APPENDIX.

## HEAD OFFICE, DRAUGHTING BRANCH.

(A. J. Wicks, Chief Draughtsman.)

*Map Publications.*—The number of editions of maps published during the year was 72, and the cost of printing £812. The maps comprised survey districts ( $\frac{1}{2}$  mile to 1 in.), 20; survey districts (1 mile to 1 in.), 29; counties (1 mile to 1 in.), 8; territorial (4 miles to 1 in.), 1; towns, 4; miscellaneous, 10. The total number of copies printed under all headings was 18,628.

Cash sales of litho maps from all districts amounted to £1,204, the purchases by other Departments show a return of £237, while the value of maps issued free or used in the office amounted to £943.

*Town Schemes.*—The number of town schemes approved was practically the same as for the previous year, 76 being approved, about 40 per cent. of which were in the Auckland and North Auckland Districts. Analysis of the schemes show that 298 acres were subdivided into residential lots outside the boundaries of boroughs and town districts and of this area new roads accounted for 23 acres, recreation and other public reserves 20 acres, leaving a balance of 255 acres subdivided into lots available for sale.

*Draughtsmen's and Computers' Examination.*—The annual examination was held in September, 1933, when 53 candidates presented themselves for examination. The results were as follow: Draughting—40 candidates, of whom 5 obtained first-grade passes (Messrs. C. Allen, R. R. Harris, J. A. Hayward, G. R. Galbreath, and O. H. Wilton), and 14 obtained second-grade passes (Miss M. Pirrit, Messrs. A. V. Brown, S. J. Bryers, J. C. R. Fabian (Valuation Department), W. A. Fraser, D. W. E. Hayward, E. T. Healy, C. R. Lane, E. Leikis, A. J. Reid, A. J. Stewart, W. S. Taylor, C. T. T. Webb, and J. A. Whitcombe). Computing—Two candidates (Messrs. K. W. T. Holcroft and G. T. Railton) completed the first-grade examination; second-grade, 11 candidates; of whom 5 passed (Messrs. J. C. R. Fabian (Valuation Department), J. Leather, E. N. Muir, K. P. Potete, and H. F. Tomlinson).

*Standard of Length.*—During the year 72 bands were compared with the standard, the total length being 314 chains. Of these, 30 were steel bands of a length of 190 chains and 42 were invar bands of a length of 124 chains.

*Maps, &c.*—During the year good progress was made with the 4-mile series of maps, as also with the standard maps on the 1 mile to 1 in. scale. The preparation of tracings still continues in connection with the Hawke's Bay re-establishment.

TABLE A.

Class of Work.	Area.	Average Cost.	Total Cost.
			£ s. d.
Minor triangulation.. .. .	70,720 acres	1·08d. per acre	318 8 1
Topographical survey for settlement .. ..	72,394 acres	2·32d. per acre	700 15 7
Rural, by staff .. .. .	30,912 acres	1·98s. per acre	3,066 3 2
Suburban, by staff .. .. .	679 acres	9·60s. per acre	333 10 0
Town, by staff .. .. .	161 acres	£2·85 per section	828 5 9
Native Land Court, by staff .. .. .	2,749 acres	1·64s. per acre	225 2 6
Native Land Court, by private surveyors ..	15,415 acres	1·30s. per acre	1,005 10 8
Roads, by staff .. .. .	407·5 miles	£21·1 per mile	8,593 8 9
Roads, by private surveyors .. .. .	17·0 miles	£34·9 per mile	593 9 10
Other work by staff .. .. .	..	..	4,073 17 8
Total cost of completed work.. .. .	..	..	19,738 12 0

TABLE B.

Land District.	Rural Survey.	Native Land Court.
	Acres.	Acres.
Auckland and North Auckland.. ..	19,145	17,004
Gisborne .. .. .	..	522
Hawke's Bay .. .. .	2,676	426
Taranaki .. .. .	1,417	212
Wellington .. .. .	1,875	..
Marlborough.. .. .	1,387	..
Nelson .. .. .	103	..
Westland .. .. .	612	..
Canterbury .. .. .	1,997	..
Otago .. .. .	1,700	..
Southland .. .. .	..	..
Total .. .. .	30,912	18,164

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, 1933, TO 31ST MARCH, 1934.

District.	Minor Triangulation.				Topographical Survey for Settlement.				Rural.				Village and Suburban.			
	Acres.	Cost per Acre.	Total Cost.	£ s. d.	Acres.	Cost per Acre.	Total Cost.	£ s. d.	Acres.	Cost per Acre.	Total Cost.	£ s. d.	Acres.	Number of Sections.	Cost per Acre.	Total Cost.
Auckland and North Auckland	9,600	d. 0.30	£ 16 8 1		63,179	d. 1.95	£ 513 19 10		19,145	s. 1.93	£ 1,846 11 3		112	9	s. 13.39	£ 74 19 7
Gisborne ..	..	..	..	..	2,055	4.56	39 0 11	..	..	..	..	..	333	65	4.40	72 0 0
Hawke's Bay ..	59,870	1.13	282 0 0	..	3,160	5.29	69 13 7	..	2,676	1.44	193 0 0	..	..	..	..	..
Taranaki ..	..	..	..	..	..	..	..	..	1,417	1.38	98 4 10	..	..	..	..	..
Wellington ..	..	..	..	..	..	..	..	..	1,875	3.19	299 7 2	..	..	..	..	..
Marlborough ..	..	..	..	..	..	..	..	..	1,387	1.26	87 3 7	..	13.5	11	29.26	26 0 0
Nelson ..	1,250	3.82	20 0 0	..	..	..	..	..	103	14.37	73 13 4	..	..	..	..	..
Westland ..	..	..	..	..	4,000	4.68	78 1 3	..	612	3.97	121 8 9	..	96.0	7	19.24	92 6 9
Canterbury ..	..	..	..	..	..	..	..	..	1,997	1.12	111 11 3	..	70.1	7	14.64	51 6 11
Otago ..	..	..	..	..	..	..	..	..	1,700	2.77	235 3 0	..	54.6	2	6.18	16 17 4
Southland ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals ..	70,720	1.08	318 8 1	..	72,394	2.32	700 15 7	..	30,912	1.98	3,066 3 2	..	679.2	101	9.60	333 10 0

District.	Town Section Survey.				Roads, Railways, and Water-races.				Other Work.				Total Cost of Completed Work.			
	Acres.	Number of Sections.	Cost per Section.	Total Cost.	Miles.	Cost per Mile.	Total Cost.	£ s. d.	Cost.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Auckland and North Auckland	16.58	34	£ 1.84	£ 62 9 8	21.9	£ 17.8	£ 388 18 5									
Gisborne ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hawke's Bay ..	3.50	7	3.29	23 0 0	344.0	21.9	7,535 0 0									
Taranaki ..	..	..	..	..	0.8	20.0	16 2 0									
Wellington ..	0.47	1	11.21	11 4 3	..	..	..									
Marlborough ..	10	10	3.23	32 5 0	1.8	21.8	39 3 11									
Nelson ..	43.68	149	2.19	325 18 1	25.6	16.5	423 3 8									
Westland ..	59.95	67	4.24	284 5 9	..	..	..									
Canterbury ..	1.82	2	8.02	16 1 0	9.0	11.6	103 14 7									
Otago ..	28.40	18	3.56	64 3 0	1.0	11.0	11 0 0									
Southland ..	2.01	2	4.48	8 19 0	1.1	3.1	3 8 0									
Totals ..	161.11	290	2.85	828 5 9	405.2	21.0	8,520 10 7									

Table 2.—RETURN OF FIELD-WORK EXECUTED BY THE STAFF AND CONTRACT SURVEYORS ON LANDS ADMINISTERED BY OTHER DEPARTMENTS FROM 1ST APRIL, 1933, TO 31ST MARCH, 1934.

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.			
Auckland and North Auckland	17,004	105	s. 1-70	£ 1,005 s. d. 1 5	17-0	£ 34-9	£ 593 s. d. 9 10	£ 140 s. d. 13 4	£ 1,739 s. d. 4 7	
Gisborne ..	522	10	3-13	86 7 11	..	..	..	..	86 7 11	
Hawke's Bay ..	426	21	4-01	85 10 0	..	..	..	..	85 10 0	
Taranaki ..	212	9	5-01	53 13 10	..	..	..	..	53 13 10	
Wellington ..	..	..	..	..	..	..	..	..	..	
Marlborough ..	..	..	..	..	..	..	..	..	..	
Nelson ..	..	..	..	..	..	..	..	..	..	
Westland ..	..	..	..	..	..	..	..	51 5 8	51 5 8	
Canterbury ..	..	..	..	..	0-4	59-35	22 5 2	33 12 1	55 17 3	
Otago ..	..	..	..	..	1-9	27-08	50 13 0	44 16 0	95 9 0	
Southland ..	..	..	..	..	..	..	..	37 7 2	37 7 2	
Totals ..	18,164	145	1-36	1,230 13 2	19-3	34-5	666 8 0	307 14 3	2,204 15 5	

Table 3.—RETURN SHOWING SURVEYORS EMPLOYED AND WORK ON HAND ON 1ST APRIL, 1934.

Chief Surveyors.	Surveyors employed.		District.	Work on Hand.					Standard Traverse.	
	Staff.	Contract.		Topographical.	Settlement.	Native.	Roads, &c.	Towns.	City.	Rural.
R. G. Macmorran ..	7	9	Auckland and North Auckland	Sq. Miles. 19	Acres. 27,637	Acres. 956	Miles. 36	Acres. 0-5	Miles. ..	Miles. ..
H. L. Primrose ..	..	..	Gisborne ..	..	..	..	..	..	..	..
F. R. Burnley ..	5	..	Hawke's Bay ..	..	13,500	..	..	..	40	146
F. H. Waters ..	2	1	Taranaki ..	233	4,642	482	10	11	..	..
L. J. Poff ..	3	1	Wellington ..	..	..	1,363	19	..	..	1
P. R. Wilkinson ..	1	..	Marlborough ..	..	2,054	..	..	..	..	..
A. F. Waters ..	1	..	Nelson ..	..	103	..	2	..	..	..
T. Cagney ..	1	..	Westland ..	..	100	..	..	..	..	..
W. Stewart ..	1	..	Canterbury ..	..	6,033	..	20	40	5	..
N. C. Kensington ..	1	..	Otago ..	..	2,900	..	3	5	..	..
B. C. McCabe ..	1	..	Southland ..	..	52	..	..	..	..	..
	23	11	..	252	57,021	2,801	90	56-5	45	147

Table 4.—PRINCIPAL CLASSES OF OFFICE-WORK DONE FROM 1ST APRIL, 1933, TO 31ST MARCH, 1934.

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	813	324	186	11,013	6,481	288	56	427	166	24	52	£ s. d. 170 17 0
Gisborne ..	61	..	198	305	..	14	3	17	5	1	10	39 11 0
Hawke's Bay ..	173	382	84	430	1,072	18	93	435	10	..	4	45 3 9
Taranaki ..	123	..	30	586	368	5	11	57	15	3	9	23 13 3
Wellington ..	217	66	46	1,986	1,160	10	4	115	74	2	1	105 4 6
Marlborough ..	64	10	..	82	..	14	..	7	21	2	..	10 13 0
Nelson ..	180	38	..	925	..	48	..	90	3	2	..	47 6 3
Westland ..	188	..	..	325	11	29	..	12	29	..	..	25 9 0
Canterbury ..	313	58	6	1,468	860	45	2	138	18	..	..	102 4 8
Otago ..	216	..	..	3,163	1,790	47	..	68	23	..	..	115 0 6
Southland ..	191	44	..	523	..	5	..	60	12	..	..	49 1 6
Head Office ..	..	..	..	..	..	..	..	..	..	..	..	470 5 6
Totals ..	2,539	922	550	20,806	11,742	523	169	1,426	376	34	76	1,204 9 11

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