

1937.
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, 1937.

I have the honour to present herewith the report on survey operations for the year ended 31st March, 1937.

I have, &c.,

H. E. WALSH,

The Hon. Frank Langstone, Minister of Lands.

Surveyor-General.

REPORT.

A SUMMARY of the work executed both in the field and office during the year ended 31st March, 1937, is contained in the tables attached hereto. It may be noted that increases under practically all headings are shown.

Brief reports of the more important aspects of the operations under classified headings are given below.

FIELD.

Geodetic Triangulation.—Very good progress was made with this work during the year, an area of 6,900 square miles being covered and the observations so far as may be judged by triangular closures are fully up to the standard required. The work linked up the remaining base-line in the North Island and now covers the whole of the Island, except the North Auckland peninsula north of Helensville. Nineteen stations were occupied during the four months and a half engaged on this work and the closing errors of 60 triangles give an average close of 0·8 sec., the maximum error being under 2 sec.

Triangulation.—Second-order triangulation was also carried out by the geodetic party over practically the same area as the geodetic work. One hundred and fifty-three stations were occupied in the ten months, the average closing error of the 509 triangles closed being 1·8 sec., with a maximum error (for second order) of 5 sec. Minor or third-order work was carried out in various districts, the principal being an area of nearly 100 square miles in Hawke's Bay to control standard traverses.

Topographical.—Over 100 square miles are returned under this heading, about 80 square miles being fully contoured work, the balance mostly sketch topography. During the year air photographs covering 1,000 square miles in Hawke's Bay were received from the Air Force, and ground control and plotting from these will be proceeded with during the year.

Standard Surveys.—With the virtual completion of the rural standard surveys in Hawke's Bay, the output of this class of work will decrease. Town standard surveys in Auckland City (principally maintenance of existing work), Christchurch, and Ashburton (of small extent) were completed during the year.

Rural Surveys.—During the year 27,526 acres of settlement surveys were executed, over one-half (15,491 acres) being situated in the Auckland and North Auckland District. The costs remain at the low figure of 2s. per acre.

Town and Suburban.—During the year 275 town sections and 151 suburban sections were laid off, all districts returning areas under this heading.

Native Land.—The Auckland districts return practically the whole of the work done under this heading.

Housing.—During the latter half of the year areas aggregating 676 acres were surveyed preliminary to housing development, and final surveys of a further 102 sections for that purpose were completed.

Roads.—The greater part of the 84 miles returned under this heading are consequent upon deviations of the main highways due to improvement of grades and curves.

Inspections.—With the exception of surveys submitted by one surveyor, the fields inspections carried out show that the surveys are being faithfully executed. In the exceptional case it appeared that work was being done by an assistant without adequate supervision. This case was referred to the Survey Board for inquiry, the outcome of which being the suspension of the registration of the surveyor responsible for a period of three months.

Accuracy.—The average close for a traversed circuit under usual conditions obtaining in rural surveys remains at 0·4 of a link per mile, or 1 in 20,000, and only under the most adverse conditions does this close approach 0·8 link per mile.

Other work.—Under this heading a total of £4,501 19s. 4d. is returned. Of this amount, £1,100 comprises work of a purely survey nature such as locating old boundary lines or pegs, but which cannot be classified under the set headings requiring areas to be stated; £1,512 comprises maintenance-work and small surveys in maintaining the basic control of standard traverses and triangulation; £986 investigational and inspection surveys for purposes of check, more especially where office check raises doubts as to the correctness of surveys, old or new; £421 surveys in connection with land-development generally, not otherwise returned; £129 surveys and other work dealing with Police Court cases; £20 surveys and reports on mining privileges; £58 timber appraisals; the balance, consisting of varied expenses of office routine, transfers, &c., which cannot be allocated to any particular survey or work.

OFFICE WORK.

Examination and Recording of Plans.—The increased volume of work in this has necessitated allocating further staff to prevent an accumulation of arrears as this work is of an urgent nature and must be kept fully up to date. The work in hand at the end of the year does not disclose any excessive arrears, and consequently no delays may be attributed to this Department.

Plan-drawing.—Owing to the field staff being engaged on smaller works than formerly and usually of a more urgent nature, it has been found more economical for their plans to be drawn by the office staff, thus releasing the field officer for further field-work after sufficient computation to prove his work. This, incidentally, has improved the surveyor's method of note-taking, resulting in much clearer notes than formerly.

Map-drawing for Photolithography.—Increased work in other directions has drawn a number of the staff from this work. This is unfortunate (although unavoidable in the circumstances), as the standard maps, published on a scale of 1 in. to a mile, are well in arrears both as regards actual drawing and revision.

Adjustment of Triangulation and Standard Traverses.—This work has so increased that the present staff of two mathematicians will have to be strengthened to keep pace with the field-work. This staff also carries out the harmonic analysis of the tidal survey, as well as other computations.

Tidal Survey.—The work of measuring the times and heights of high and low waters at the seven standard ports for the year 1938 was carried out on the tide-predicting machine at the Tidal Institute, Liverpool University, from the harmonic constants computed by the computing staff at Head Office. The seven ports for which tables are published are Auckland, New Plymouth, Wellington, Lyttelton, Dunedin, Bluff, and Westport.

Photoprinting.—Besides the usual appliances for sunprinting installed in the various offices two machines—a Photostat in Auckland and a Lucigraph in Christchurch—are also operating. The Photostat, a new machine replacing one which had been in constant use for sixteen years, is in almost continuous operation for copying plans for data and Proclamation purposes, Fields Inspectors' reports, small farm cottage and building plans, miscellaneous drawings, and documents. During the year 10,833 prints, of which 1,508 were for other Departments, were run off. The Lucigraph is being operated approximately one day per week, 1,623 prints having been run off during the year. An increasing use of this machine may be anticipated as its value becomes better appreciated.

Map Publications.—The full details of these are contained in the report of the Chief Draughtsman, Head Office, appended hereto.

Town Schemes.—An analysis of the areas subdivided for building purposes (other than those in boroughs and town districts) is also contained in the Chief Draughtsman's report.

Warrants for Title, &c.—The following summarizes the number of Warrants and Proclamations issued for the year ending 31st March :—

Number of Warrants for issue of certificates of title	..	..	..	162
Number of Proclamations of road-lines under the Native Land Act, 1931	..	..	..	11

PROPOSED OPERATIONS, 1937-38.

Surveys.—Table 3 shows the amount of the principal classes of survey-work in sight at the end of the year. The amount shown is in itself sufficient to keep the present staff fully occupied, and it is anticipated that further work will be forthcoming during the year. Other unclassified work in hand is set out below.

Precise Levelling.—Approximately 150 miles of levelling to the standard laid down by the International Association of Geodesy for levelling of high precision is being undertaken in Canterbury. This, besides its scientific value in a country subject to seismic disturbances, will have a high practical value in co-ordinating the various systems of levels now carried out for drainage, river-protection, irrigation, &c., in that locality.

Geodetic Triangulation.—This will be continued to cover the North Auckland peninsula by the present party, consisting of Mr. T. W. Preston (in charge) and Mr. J. P. Arthurs (observer).

Aerial Surveys.—The ground control of 1,000 square miles in hand in Hawke's Bay will be completed during the year by Mr. J. A. Henderson. The plotting, contouring, and final mapping under the charge of Mr. R. J. Crawford, Senior Draughtsman, Head Office, should be well advanced. At present the work is being held up by the non-arrival of the second precise stereoscope.

Hydrographic Survey.—It is anticipated that the Admiralty survey ship, H.M.S. "Endeavour," will be commencing operations during the year. As the Department will probably be required to give accurate values for coastal triangulation stations it may be necessary to do further triangulation work for this purpose. The geodetic work already carried out has revealed large discrepancies in the old minor triangulation executed over sixty years ago, and it would appear that revision of this will have to be made.

STAFF.

I regret to have to record the death of Mr. J. A. Godfrey, who very ably carried out his duties as draughtsman in charge of plan safe, North Auckland. A number of officers have left the Department—Messrs. B. C. A. McCabe, H. R. Mottram, C. G. S. Ellis, and W. G. Nelson, joining the State Advances Corporation; Mr. K. A. Bell, the Scientific and Industrial Research Department; Messrs. R. C. Lough, P. J. Burke, and S. G. Rees, the Public Works Department. At the close of the year many changes in the higher positions were pending, among which was the retirement of Mr. A. J. Wicks, who had for the past eight years held the position of Chief Draughtsman in the Head Office, the duties of which he performed with distinction.

APPRECIATION.

The Chief Surveyors express their appreciation of the loyal co-operation of their staffs in carrying out the services of the Department. To this I would wish to add my like appreciation.

H. E. WALSH, Surveyor-General.

APPENDIX.

HEAD OFFICE, DRAUGHTING BRANCH.

(A. J. WICKS, Chief Draughtsman.)

Map Publication.—The tables, set out below, show a summarized statement of printing costs and of recovery of costs by the payment of royalty fees, and the sale of lithographs in district and head offices.

TABLE A.—Summary of Printing Costs of Map Publication for the Year ending 31st March, 1937.

Class of Map.	Number of Issues.	Number of Maps Printed.	Total Cost.	Average Cost per Issue.	Average Cost per Map.
			£ s. d.	£ s. d.	s. d.
Survey district (40 chains) ..	26	1,418	174 16 7	6 14 6	2 6
Survey district (80 chains) ..	17	4,250	137 13 0	8 2 0	0 9
County	2	1,000	144 18 1	72 9 0	3 0
Miscellaneous	20	9,587	776 14 8	..	..
Totals	65	16,255	1,234 2 4	..	..

Included under the heading "Miscellaneous" are special maps drawn and printed for private firms and local authorities.

TABLE B.—Summary of Map Sales and Credits for the Year ending 31st March, 1937.

Item.	Credits.
	£ s. d.
Sale of lithographs to the public	1,782 9 2
Sales of lithographs to other Departments	453 12 5
Free issues (lithograph)	1,579 9 9
Royalty fees	463 12 11
Total	4,279 4 3

The above analysis shows that, from the point of view of the recoveries made, the Department is well recouped for the publication of maps, the credit balance over printing costs being £3,045.

The major portion of the credits under the item "Free Issues" includes lithographs issued free to the Public Works Department, the Unemployment Board, and the Police Department in return for services rendered without charge to the Lands and Survey Department, the balance being for office use.

The credit shown for "Royalty Fees" has been paid, during the year, by private firms and companies for the privilege of publishing commercial maps based partly or wholly on the Department's records.

Lithographic Draughting.—There has been a marked decrease in the number of issues of 80 chain survey district and county maps published (43 for the year ending 31st March, 1936, as against 19 for the year ending 31st March, 1937). This is mainly due to the large increase in routine work throughout the Department, with the consequence that the map-drawing staff has been greatly depleted. Survey district and county maps form the basis for land tenure, title, and location purposes and are extensively used by all Government Departments, local authorities, and the public. It is essential that this branch of the Department's work be considerably revived not only to keep pace with the increased Government activity, but also to bring arrears up to date. It is anticipated that during the coming year a large number of map issues will require to be revised and reprinted.

Scheme Plans :—

TABLE C.—Summary of Town Scheme Subdivisions dealt with under Section 16 of the Land Act, 1924, for the Year ending 31st March, 1937.

District.	Number of Plans.	New Roads.	Area.	Reserves, Percentage of Total Area.	Saleable Lots.	Total Area.
Auckland and North Auckland	58	A. R. P. 29 2 32	A. R. P. 32 2 08	13	A. R. P. 187 0 36	A. R. P. 249 1 36
Gisborne	3	..	..	..	2 1 33	2 1 33
Hawke's Bay	4	..	0 1 05	3	9 0 07	9 1 12
Taranaki	2	..	..	..	2 0 03	2 0 03
Wellington	28	6 2 01	136 2 15	49	134 1 10	277 1 26
Marlborough	2	..	1 2 21	17	8 0 24	9 3 05
Nelson	15	3 3 04	0 2 28	2	30 0 26	34 2 18
Westland	7	..	..	..	7 2 21	7 2 21
Canterbury	52	16 0 35	5 0 35	3	156 1 27	177 3 17
Otago	17	..	..	..	25 1 16	25 1 16
Southland	6	3 3 12	0 3 35	4	23 0 39	28 0 06
Totals	194	60 0 04	177 3 27	21%	586 0 02	823 3 33

There has been an increase of 27 per cent. in the number of plans and 59 per cent. in the area of saleable lots dealt with during the past year compared with the returns of last year. These plans deal with the subdivision of land for residential lots outside the boundaries of cities, boroughs, and town districts.

The marked increase in the percentage of area taken for reserves is due to a large area of 129 acres comprised in a subdivision of the late Sir Francis Bell's estate in the Wellington district. Except for this area the aggregate percentage closely approximates that required by regulation—namely, 5 per cent.

The area of new roads represents a length of approximately 8 miles of new roading for subdivisional purposes.

Draughtsmen and Computers' Examinations.—At the annual examinations held in October, 1936, twenty-six candidates presented themselves for examination. The results were as follows:—

First-grade Draughtsmen—

E. T. Healy (Auckland).
E. N. Muir (Auckland).
C. R. Lyons (Christchurch).
G. L. Redward (Napier).

Second-grade Draughtsmen—

W. F. Cree (Head Office).
J. Leather (Auckland).
J. R. Johannson (Dunedin).
E. A. Williamson (Gisborne).

Second-grade Computers—

R. R. Harris (Auckland).
A. Rocard (Auckland).
C. R. Lyons (Christchurch).
N. J. Neal (Napier).
J. K. Woodley (Napier).

The candidates for these examinations show that a keen interest is taken in the routine and technical qualifications required by draughtsmen in the Department. The examinations have proved to be of considerable benefit to the individual officers and the Department. The high standard maintained, particularly in the draughting, is a credit to the candidates.

Standard of Length.—The following is a return of the number of chain lengths tested with the standard of length for the year ending 31st March, 1937: Number of bands, 50; number of chains, 289.

It is the practice of the Department to make a charge of 1s. per chain for testing. This charge was found to be necessary as there was a tendency for surveyors to obtain a departmental test for working chains that should by regulation be tested with standard bands in their possession.

Special Feature Maps.—For the year ending 31st March the following special feature maps have been completed or are in course of preparation by the Head Office Draughting Staff:—

Tararua Trampers' Map (completed)—

This map comprises an area in the Tararua Mountains and was drawn to supply the need for a compilation showing tracks in the area for the guidance of trampers.

North Auckland Publicity Map (completed)—

A special map drawn for the Publicity Department comprising the North Auckland district in a scale of 10 miles to an inch.

Aerial Strips (Sheets 1, 3, 4, and 5), (completed)—

It was hoped that the complete set of these maps, drawn specially for the guidance of aviators, would be completed this year, but were held up on account of further necessary amendments to the drawings. Sheets 2 and 6 are well in hand and will be completed early in the coming year.

International Map Series (SK. 59), (Completed)—

A third series map (SK. 59), printed by the Ordnance Survey of Great Britain, is now on sale. This map is on a scale of 1/1,000,000, is drawn in Head Office, but printed in Great Britain, as it forms part of a special series map of the world on the scale mentioned.

Wellington City Street Map, South Island Road Map, and Wellington District (special one-day tour map)—

These three maps are in the course of preparation and will be completed before the end of the year.

New Plymouth Street Map (completed)—

This map was prepared by the New Plymouth office and is now available for sale.

Invercargill Street Map—

The drawing of this map was completed during the year and will be available for sale early in the next financial year.

Ngaruawahia Military Map (completed)—

This map was drawn for the Defence Department by the Auckland Office, and comprises an area around the Ngaruawahia and Taupiri districts, specially grided for military purposes.

Aerial maps—

During the past year a large area in the Hawke's Bay district was covered by an aerial survey. The mapping of this survey is in charge of Mr. R. J. Crawford, Head Office, who is at present training junior officers in the use of the precise stereoscope. A further increase in staff will be necessary if this work is extended throughout the Dominion.

Stores.—Due to the depression and the resulting economy measures departmental technical stores were considerably depleted. Theodolites and survey equipment issued ten years ago require reconditioning and replacement. Orders for new equipment have been forwarded to instrument firms in Great Britain, but supplies are slow in coming to hand, no doubt due to the concentration of these firms on other manufactures.

Photostat Machines.—The photostat machines installed in the Auckland and Christchurch district offices are proving useful and economical. The Auckland machine is in daily use, with a consequent large saving in draughting costs. The installation of photostat machines in some of the district offices would facilitate the work of the Department. Draughtsmen at present employed on detailed tracings would be released for other urgent and important work.

General.—During the year eighteen cadets were appointed to the draughting staff. These appointments have only partially supplied the need for experienced officers, due to the non-appointment of cadets during the depression. The draughting staff have carried out their duties during the past year with credit. Routine work has generally been kept up to date, but this has only been possible by the depletion of the staff employed in cadastral map-drawing.

REPORT OF THE SURVEY BOARD FOR THE YEAR ENDING 31st MARCH, 1937.

Secretary and Registrar.—During the year, owing to an alteration in the finances of the Board, the office of Secretary and Registrar to the Survey Board was added to the duties of the Chief Draughtsman, Head Office. This office has been held for twenty-two years by Mr. M. Crompton Smith, in which capacity he had rendered loyal and faithful service. The Board, while accepting his resignation with regret, recorded its sincere appreciation of his services and assistance.

Son of the late Mr. Percy Smith, Surveyor-General from 1889 to 1900, Mr. M. Crompton Smith has worthily upheld the honoured name of his father. He will be remembered for many years hence by surveyors for the kindly and helpful advice given during student days.

Surveyors' Examinations.—These examinations, held in March and September each year, are carried out simultaneously with the Australian States, papers being set in turn by the various State Boards and the New Zealand Board. The papers set by reciprocal arrangement between these Boards are as follows:—

Written Papers—

- (1) Laws and regulations affecting surveys.

This paper is set independently by each Board to cover the various State and Dominion laws governing surveying in its various spheres.

- (2) Plotting and plan drawing.
- (3) Physics, geology, and forestry.
- (4) Computations A.
- (5) Computations B.
- (6) Engineering surveying.
- (7) Astronomy and geodesy.
- (8) Land surveying design.
- (9) Preparation of field notes and plan therefrom.
- (10) Town planning.

Oral and Practical—

- (11) Field practice.
- (12) Adjustment and use of instruments.
- (13) Practical field astronomy.
- (14) Practical levelling.

Besides these papers each candidate must submit, with his application for examination, plans and field notes of five surveys carried out by him, namely—

- (1) Survey of rural area (not less than 40 acres).
- (2) Survey of town lots (showing buildings).
- (3) Engineering survey of a road, railway, or drainage work.
- (4) Survey of a base-line and connecting triangulation.
- (5) Topographical survey (not less than 1 square mile).

The examination rules provide that the candidate must obtain 60 per cent. of the marks allotted for each subject.

Subject to the approval of the Board, certain exemptions can be claimed by the candidate on the production of the equivalent University examination qualifications.

At the examination held in September, 1936, set by the West Australian Survey Board, twenty candidates presented themselves for the whole or part of the examination, final passes being granted by the Board to the following:—

R. C. Davies (Auckland).
W. J. Larkin (Wellington).
A. G. Longley (Auckland).

At the examination held in March, 1937, set by the New South Wales Survey Board, eighteen candidates presented themselves for the whole or part of the examination, final passes being granted by the Board to the following:—

R. Congreve (Wellington).
K. H. Lazarus (Wanganui).
S. A. Tetzner (Auckland).

Articles of Indenture.—Before a candidate can present himself for examination he must supply evidence of having passed the Matriculation Examination and must be under articles of indenture to a registered surveyor for a period of four years. At the end of two years he may present himself for examination in the first four written subjects.

During the year the following cadets were registered under articles of indenture to registered surveyors, namely—

C. C. Brebner (Auckland).	T. McNeight (Westland).
R. G. Grant (Otago).	R. H. Logie (Otago).
G. McWilliams (Wanganui).	C. Thorpe (Auckland).

The following survey cadets were appointed to the Lands and Survey Department for the year ending 31st March, 1937 :—

T. P. Gibson (Auckland).
E. N. Muir (Auckland).
C. Allen (Christchurch).

W. S. Boyes (Dunedin).
L. L. Elder (Napier).
C. M. Rainsford (Wellington).

Registration of Surveyors.—The annual list of registered surveyors in the Dominion as gazetted on the 18th February, 1937, numbered 482 registered surveyors.

Members of the Board.—In terms of the Surveyors Registration Act, 1928, the following appointments to the Board were gazetted in February, 1937 :—

Government nominees—

Messrs. G. H. Bullard and M. Crompton Smith.

Institute of Surveyors' nominees—

Messrs. A. H. Bogle and C. K. Grierson.

The Surveyor-General (Mr. H. E. Walshe), is, *ex officio*, Chairman of the Board.

Owing to the pressure of official duties Mr. W. Stewart (Valuer-General) resigned from the Board, and Mr. M. Crompton Smith was appointed in his stead.

General.—It has been decided by the Board to include in the written examination, commencing September, 1937, a paper entitled the "Laws and Practice of Valuation." This paper will supply a need that is felt throughout the profession for a more detailed knowledge of land valuation in New Zealand by the practising surveyor. It is hoped that this paper will be included in the curriculum of the examination, at a later date, by reciprocating Boards in the Australian States. At present it will be a special paper set only by the New Zealand Board.

A. J. WICKS, Secretary.

TABLE A.

Class of Work.	Area or Mileage.	Average Cost.	Total Cost.
			£ s. d.
Geodetic triangulation (1st Order)	6,900 square miles	4.74s. per sq. mile	1,635 11 0
Triangulation (2nd Order)	4,200 square miles	17.35s. per sq. mile	3,648 4 4
Triangulation (3rd Order)	122 square miles	39.01s. per sq. mile	238 0 0
Standard traverses	60.5 miles	£45.21 per mile	2,735 7 8
Topographical survey for settlement, &c. ..	66,751 acres	4.08d. per acre	1,135 10 2
Rural survey	27,526 acres	2.15s. per acre	2,963 15 2
Suburban survey	1,696 acres	14.19s. per acre	1,203 7 0
Town survey	388 acres	£2.64 per section	725 6 0
Native land survey, by staff	19,795 acres	0.39s. per acre	386 19 1
Native land survey, by private surveyor ..	2,336 acres	2.73s. per acre	318 7 9
Housing surveys	692 acres	16.52s. per acre	571 15 10
Roads, &c., survey	84.2 miles	£19.53 per mile	1,644 17 2
Other work .. .. .	..	..	4,501 19 4
Total cost of completed work .. .. .	..	..	21,709 0 6

TABLE B.

Land District.	Rural Survey.	Native Land Court.
	Acres.	Acres.
Auckland and North Auckland	15,491	20,833
Gisborne	2,481	1,642
Hawke's Bay	2,005	..
Taranaki	1,244	648
Wellington .. .. .	..	607
Marlborough	1,299	..
Nelson	98	..
Westland	2,532	..
Canterbury	1,384	43
Otago	609	..
Southland	383	..
Total	27,526	23,773

TABLE C.—RETURN OF FIELD-WORK EXECUTED BY HEAD OFFICE FROM 1ST APRIL, 1936, TO 31ST MARCH, 1937.

District.	Geodetic (First Order) Triangulation.		Second Order Triangulation.		Total Cost.
	Square Miles.	Cost.	Square Miles.	Cost.	
Auckland	6,900	£ s. d. 1,635 11 0	4,200	£ s. d. 3,648 4 4	£ s. d. 5,283 15 4

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, 1936, TO 31ST MARCH, 1937.

District.	Minor Triangulation.				Topographical Survey for Settlement, &c.				Standard Survey.				Rural Survey.			
	Acres.	Cost per Acre.	Total Cost.	Acres.	Cost per Acre.	Total Cost.	Miles.	Cost per Mile.	Total Cost.	Acres.	Cost per Acre.	Total Cost.	Acres.	Cost per Acre.	Total Cost.	
																d.
Auckland and North Auckland	3,840	1.31	£ 20 19 0	5,793	8.40	£ 202 17 2	19.88	26.05	£ 517 19 5	14,666	2.16	£ 1,584 3 5	14,666	2.16	£ 1,584 3 5	
Gisborne	..	..	..	6,745	2.17	61 1 6	..	..	..	2,481	0.81	99 17 8	2,481	0.81	99 17 8
Hawke's Bay	58,400	0.57	138 11 0	..	..	..	24.50	53.08	1,300 8 3	2,005	2.76	277 3 11	2,005	2.76	277 3 11
Taranaki	640	2.25	6 0 0	5,440	4.31	97 12 4	..	..	..	1,244	3.10	192 17 4	1,244	3.10	192 17 4
Wellington	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Marlborough	..	..	..	..	..	..	..	..	..	1,299	1.15	74 16 3	1,299	1.15	74 16 3
Nelson	..	..	..	..	..	..	..	..	..	98	4.28	21 0 0	98	4.28	21 0 0
Westland	..	..	..	637	10.45	27 14 10	..	..	..	2,532	2.51	316 19 7	2,532	2.51	316 19 7
Canterbury	..	..	..	48,000	3.68	735 11 0	16.13	56.85	917 0 0	1,305	1.60	104 8 5	1,305	1.60	104 8 5
Otago	15,250	1.14	72 10 0	136	18.82	10 13 4	..	..	..	1,609	2.10	63 19 6	1,609	2.10	63 19 6
Southland	..	..	..	..	..	..	..	..	..	383	0.74	14 4 0	383	0.74	14 4 0
Totals	78,130	0.73	238 0 0	66,751	4.08	1,135 10 2	60.51	45.21	2,735 7 8	26,622	2.07	2,749 10 1	26,622	2.07	2,749 10 1	

District.	Village and Suburban Survey.				Town Section Survey.				Road Survey.				Total Cost of Completed Work.
	Acres.	Number of Sections.	Cost per Acre.	Total Cost.	Acres.	Number of Sections.	Cost per Section.	Total Cost.	Miles.	Cost per Mile.	Total Cost.	Other Work (Cost).	
Auckland and North Auckland	193.7	17	11.87	£ 114 18 9	69.51	99	£ 1.81	£ 179 5 3	14.9	11.36	£ 169 6 6	£ 2,176 8 10	£ 4,965 18 4
Gisborne	..	..	..	..	..	..	..	..	..	..	..	..	..
Hawke's Bay	29.0	5	36.95	53 11 8	..	7	6.04	42 5 3	3.5	22.17	77 12 1	5 6 4	166 5 6
Taranaki	78.4	7	15.89	62 6 4	..	7	4.89	34 4 8	1.4	49.89	69 17 0	689 19 5	2,525 19 11
Wellington	6.3	1	31.21	9 16 7	..	20	2.14	42 14 6	2.3	22.34	51 7 6	114 16 0	464 17 4
Marlborough	612.0	19	5.73	175 10 0	..	60	1.48	89 0 0	6.8	12.79	87 0 0	272 0 5	438 8 5
Nelson	143.4	21	15.59	111 15 7	..	11	7.96	87 11 2	0.8	47.24	37 15 8	205 3 0	383 17 10
Westland	133.2	10	9.98	66 9 8	..	12	1.72	20 12 3	1.9	20.77	39 9 3	147 0 0	519 10 0
Canterbury	259.2	23	19.35	250 15 11	..	47	2.45	115 7 5	2.0	15.71	31 8 6	263 3 10	617 9 5
Otago	130.6	7	7.49	48 17 11	..	1	2.25	2 5 0	..	..	..	412 11 9	2,146 14 5
Southland	..	..	..	..	..	..	..	..	..	..	..	23 2 6	957 6 5
Totals	1,585.8	110	11.28	894 2 5	368.65	264	2.32	613 5 6	33.6	16.78	563 16 6	4,345 4 8	13,274 17 0

Table 2.—RETURN OF FIELD-WORK EXECUTED BY THE STAFF AND CONTRACT SURVEYORS ON LANDS ADMINISTERED BY OTHER DEPARTMENTS FROM 1ST APRIL, 1936, TO 21ST MARCH, 1937.

District.	Rural Survey.			Village and Suburban Survey.			Town Section Survey.			Housing Subdivision Survey.					
	Acres.	Cost per Acre.		Acres.	Number of Sections.	Total Cost.		Acres.	Number of Sections.	Total Cost.		Acres.	Number of Sections.	Total Cost.	
		s.	£ s. d.			s.	£ s. d.			£	s. d.			s.	£ s. d.
Auckland and North Auckland	825	4.35	£ 179 7 10	57.7	20	72.84	£ 210 3 2	19.01	8	9.83	£ 78 12 7	..	..	..	£ s. d.
Gisborne	..	..	..	3.3	2	94.85	15 13 0	..	..	..	..	..	..	..	..
Hawke's Bay	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Taranaki	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Wellington	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Marlborough	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Nelson	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Westland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Canterbury	79	8.83	£ 34 17 3	6.4	3	135.31	43 5 11	0.66	3	11.13	£ 33 7 11	..	..	..	..
Otago	..	..	..	43.2	16	18.57	40 2 6	..	..	..	..	..	..	..	..
Southland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Totals	904	4.74	£ 214 5 1	110.6	41	55.92	309 4 7	19.67	11	10.18	£ 112 0 6	16.36	102	1.24	£ 126 9 3

District.	Housing Schemes (Preliminary).			Native Land Survey.			Road and Railway Survey.			Total Cost of Completed Work.		
	Acres.	Cost per Acre.		Acres.	Number of Sections.	Total Cost.		Miles.	Total Cost.		£ s. d.	£ s. d.
		s.	£ s. d.			£	s. d.		£	s. d.		
Auckland and North Auckland	216.8	28.72	£ 312 7 10	20,833	52	524 17 5	19.0	15.02	285 8 10	66 19 10	£ 1,657 17 6	£ s. d. 43 6 0
Gisborne	31.0	17.84	27 13 0	1,642*	32	..	..	..	..	..	..	..
Hawke's Bay	..	..	..	..	..	..	..	..	..	..	..	..
Taranaki	129.8	5.36	£ 34 15 1	648	22	96 13 0	3.4	44.78	152 5 4	..	£ 283 13 5	£ s. d. 682 11 2
Wellington	298.0	4.74	70 10 8	607	10	69 18 8	16.0	27.23	435 12 7	..	..	..
Marlborough	..	..	..	..	..	..	..	..	..	..	..	..
Nelson	..	..	..	..	..	..	..	..	..	..	..	..
Westland	..	..	..	..	..	..	..	..	..	..	..	..
Canterbury	..	..	..	43	2	13 17 9	6.3	25.38	159 13 5	89 14 10	£ 395 2 1	£ s. d. 87 18 0
Otago	..	..	..	..	..	..	5.9	8.10	47 15 6	..	..	..
Southland	..	..	..	..	..	..	..	..	..	..	..	..
Totals	675.6	13.18	£ 445 6 7	23,773	86	705 6 10	50.6	21.36	1,081 0 8	156 14 8	£ 3,150 8 2	£ s. d. 87 18 0

* Cost not available (section 493, Native Land Act, 1931).

Table 3.—RETURN SHOWING SURVEYORS EMPLOYED AND WORK ON HAND AT 1ST APRIL, 1937.

Chief Surveyors.	Surveyors employed.		District.	Work on Hand.					Standard Traverse.	
	Staff.	Contract.		Topographical.	Settlement.	Native.	Roads, &c.	Towns.	City.	Rural.
R. G. Macmorran ..	11	14	Auckland and North Auckland	Sq. Miles. 32	Acres. 35,500	Acres. 20,850	Miles. 83	Acres. 483	Miles. 25	Miles. 71
H. L. Primrose ..	1	1	Gisborne ..	..	28	3	..	..	..	40
P. W. G. Barlow ..	2	..	Hawke's Bay ..	..	20,234	..	..	..	..	5
F. H. Waters ..	2	2	Taranaki ..	4	2,800	..	..	..	..	33
J. D. Clapperton ..	2	4	Wellington ..	2	..	1,913	..	21	..	..
P. R. Wilkinson ..	1	..	Marlborough ..	..	..	..	6	..	50	20
A. F. Waters ..	1	..	Nelson ..	20	108	..	15	..	..	..
C. H. Morison ..	..	..	Westland ..	..	1,050	..	3	..	..	..
L. J. Poff ..	2	..	Canterbury ..	..	2,681	..	59	44	..	..
N. C. Kensington ..	3	..	Otago ..	..	12,736	..	7	10	12	..
T. S. McMillan ..	1	..	Southland ..	..	703	..	7	..	..	..
Totals ..	26	21	..	58	75,840	22,766	180	558	87	169

Table 4.—PRINCIPAL CLASSES OF OFFICE-WORK DONE FROM 1ST APRIL, 1936, TO 31ST MARCH, 1937.

District.	Plans placed on Instruments of Title.				Deeds and other Instruments passed.	Plans examined and passed.				Maps drawn for Lithography.		Lithographs, Publications, &c., sold.
	Crown.		Native Land.	Land Transfer.		Crown.	Native.	Land Transfer.	Other Departments.	Standard Publications.	Sale Plans, &c.	
	Leases and Licenses.	Freehold.										
Auckland and North Auckland	665	730	558	12,098	7,239	323	73	746	241	..	3	£ 549 14 9
Gisborne ..	109	40	145	708	..	12	13	42	34	..	..	54 15 6
Hawke's Bay ..	79	48	58	802	684	98	26	242	33	..	..	83 10 9
Taranaki ..	212	46	62	709	640	12	28	73	33	..	..	71 17 6
Wellington ..	205	220	93	3,571	2,009	27	8	209	114	..	..	153 5 1
Marlborough ..	76	18	..	158	..	12	..	21	35	..	..	27 15 9
Nelson ..	697	52	..	756	..	36	..	117	20	..	..	68 11 3
Westland ..	255	53	..	569	42	37	..	42	22	..	..	46 7 6
Canterbury ..	374	60	8	2,670	1,478	35	1	246	40	..	..	236 10 2
Otago ..	270	19	..	3,489	2,028	63	..	230	38	..	..	173 10 0
Southland ..	259	32	..	938	814	16	..	88	18	..	..	111 3 9
Head Office ..	..	..	..	..	..	..	..	..	..	..	..	895 8 8
Totals ..	3,201	1,318	924	26,468	14,934	671	149	2,056	628	..	3	2,472 10 8

Approximate Cost of Paper.—Preparation, not given; printing (965 copies), £15 10s.

By Authority: E. V. PAUL, Acting Government Printer, Wellington.—1937.

Price 6d.]