

R E P O R T S

BY

THE INSPECTOR OF SURVEYS.

PRESENTED TO BOTH HOUSES OF THE GENERAL ASSEMBLY, BY COMMAND OF
HIS EXCELLENCY.

WELLINGTON.

—
1872.

REPORTS BY THE INSPECTOR OF SURVEYS.

No. 1.

The INSPECTOR of SURVEYS to the Hon. the NATIVE MINISTER.

Inspector of Surveys Office,
Auckland, 25th June, 1872.

SIR,—

I have the honor to submit the annual Return of the number of maps of surveys of Native land claims submitted to this office during the past year, and of the area contained in them divided between the several Provinces within which the lands they represent are situated.

The Report* furnished by me last year gave so full an account of the state of this department, of the defects in the existing system of conducting surveys of Native land claims, and of the remedies which appeared to me to be required, that I need not again go over the same ground, none of the facts having materially varied, except some diminution in the business of the Native Land Courts in this Province, which is no doubt in part owing to the difficulty claimants find in respect of surveys, and their cost. * See No. 2 of this Paper.

During the past year the triangulation has made considerable progress, but the necessity of making it available for the immediate purposes of the Public Works Department has led to its being carried over the forest country near the head of the Manawatu River, instead of the connections being completed between the Bay of Plenty and the Hawke's Bay surveys, which is needed for a reciprocal check on the accuracy of the two works, and by their union to give the whole some geographical completeness.

I forward an Index Map of the North Island, showing on a small scale all the surveyed portions, from which it may be seen at a glance how much remains to be done before the surveys of the Northern districts can be put upon a satisfactory basis.

In the course of the survey the most troublesome part of it in the district north of Auckland has been the closure with points in the topographical surveys, and, as might be expected, great discrepancies and distortions have been discovered; whenever we have approached the coast too, errors in detail in the Marine Surveys have come to light, but only one instance has yet occurred in which a mistake in a prominent position for which a latitude and longitude have been given in the *New Zealand Pilot* has been found of sufficient magnitude to call for special remark. In that case, affecting the position of Cape Turnagain, a special communication was forwarded to you on 2nd May.

I also enclose a Return of the trigonometrical work performed in the year, from which it will be seen that the cost of the field work of the Southern survey, notwithstanding the disadvantage of some forest country of a general level character, has barely reached the average of the work of this department, its actual cost having been rather less than 4-10ths of a penny per acre.

The permanent Geodetic Staff comprises at present two surveyors only—Mr. Percy Smith and Mr. Horace Baker—who are both, in their respective capacities, thoroughly able and most energetic officers. I have before written to call your attention to the fact, that these gentlemen, owing to my having selected them for their special capacity for the higher branch of surveying, are actually receiving considerably smaller salaries than ordinary surveyors of their standing. I trust that this most discouraging anomaly may be removed, and that these most meritorious officers may in future receive an equal remuneration to what they would have had if employed, as Mr. Smith was, on the public works of the Colony.

When, by direction of the Hon. Mr. Ormond, Mr. Smith went to the South, it was understood that the expense of any work specially to forward the survey of lands for sale would be refunded from the Public Works Department. As it has happened, all the work has been triangulation proper; but since it has been carried in a direction different from that it would otherwise have taken, I propose that the cost should be divided between the two departments. The work in the North (Kaipara) having been chiefly for the purpose of laying out roads, I have set down the whole cost of it to Public Works. I hope that this rather arbitrary division will be considered satisfactory for this instance, but it is my duty to point out that this division between two departments of a work, in which unity of design and execution is so essential as a trigonometrical survey, is objectionable in principle, and very inconvenient in practice; and I cannot but urge that since it is essentially a "public work," and one which ought to furnish the substratum of all public works, it would be in every way advantageous if the whole were transferred to that department. If this were done, the business of the Native Land Court branch of my office alone would be carried on under the auspices of the Native Department, and triangulation and the supervision of roads, &c., which has latterly occupied much of my time, would fall properly under the Public Works Department.

I have, &c.,
THEOP. HEALE.

REPORTS BY THE INSPECTOR OF SURVEYS.

RETURN showing the NUMBER and GROSS AREA of MAPS of NATIVE LAND COURT CLAIMS received at the Inspectors of Surveys Office, Auckland, from 1st July, 1871, to 30th June, 1872.

RETURN.	No. OF MAPS.	AREA.	RETURN.	No. OF MAPS.	AREA.
		A. R. P.			A. R. P.
AUCKLAND—			MIDDLE ISLAND—		
Prior to June 30, 1871 ...	1,666	2,182,028 0 0	Prior to June 30, 1871 ...	57	21,769 0 0
In year ending June 30, 1872	161	243,001 0 0	In year ending June 30, 1872	Nil.	Nil.
	1,827	2,425,029 0 0		57	21,769 0 0
HAWKE'S BAY—					
Prior to June 30, 1871 ...	200	911,724 0 0			
In year ending June 30, 1872	36	321,515 0 0			
	236	1,233,239 0 0			
WELLINGTON—			TOTAL.		
Prior to June 30, 1871 ...	284	229,936 0 0	Auckland ...	1,827	2,425,029 0 0
In year ending June 30, 1872	8	603,641 0 0	Hawke's Bay ...	236	1,233,239 0 0
	292	833,577 0 0	Wellington ...	292	833,577 0 0
			Middle Island ...	57	21,769 0 0
			Grand Total ...	2,412	4,513,614 0 0

J. E. ALLEN,
Chief Draftsman.

RETURN showing EXTENT and Cost of TRIANGULATION executed by the Inspector of Surveys Department, from 1st July, 1871, to 30th June, 1872.

RETURN.	AREA.	COST.
	A. R. P.	£ s. d.
KAIPARA—		
Completed ...	82,656 0 0	
Stations erected on 175,400, say equal to two-thirds ...	117,000 0 0	
Total ...	199,656 0 0	587 0 0
Cost per acre, 7-10ths of a penny.		
Road exploration and Triangulation between the Bay of Islands & Wairoa	...	457 0 0
HAWKE'S BAY, 70-MILE BUSH—		
Completed ...	850,000 0 0	1,371 0 0
Cost per acre, 4-10ths of a penny.		

THEOP. HEALE,
Inspector of Surveys.

No. 2.

The INSPECTOR of SURVEYS to the Hon. the NATIVE MINISTER.

Inspector of Survey's Office,
Auckland, 5th July, 1871.

SIR,—

I have the honor to forward Returns of the number of maps of Native land claims which have been received by my department during the year ending 30th June, 1871; and of the area they include within each province, also a Return showing the progress of the trigonometrical surveys and the cost incurred upon each; accompanied by an outline map of the North Island, on which are shown all the triangulations hitherto made, with the exception of those in the Province of Wellington.

It has been the constant object of my reports to urge the unanswerable truth, that the only economical, safe, and efficient mode of land survey is to base the whole on a sound practical system of triangulation, to insist on every detail survey being made on that only as its basis, on the reception of every map in the survey office to lay it down immediately on the general maps constructed from the trigonometrical elements, and so to maintain from the the first record maps demonstrably true within small and known limits; and which accordingly furnish irrefragable evidence of the position and boundaries of every granted estate; and I have repeatedly pointed out the magnitude of the evils, both in respect of first cost as well as of its ultimate results, which have arisen from the practice hitherto adopted in the northern provinces of measuring each piece independently, from time to time as required, with no better provision for parallelism than that afforded by the compass, and no standard of length but the surveyor's chain, and generally with no better means of establishing relative positions than some greater or less degree of accordance in the form of the boundaries of adjacent estates; and I have shown that to have allowed such a system to be expanded over the whole country under the operation of the Native Land Act, would speedily have led to hopeless confusion of titles.

I have also explained that, as a temporary means of preventing overlap and gross mistakes, I adopted a rigorous system of invariably collating all maps on district maps before issuing certificates of titles, but since the only safe and permanent remedy must lie in the extension of triangulation over

the whole country, it has been the object of my constant endeavor to push that on as far as practicable with the limited means provided and under the many discouragements I have met with.

The accompanying map shows how limited, as well as desultory and unconnected, the work has had to be.

Provided for out of a small sum voted in each year for contingencies for my department, it has been impossible to create a permanent staff; and since the funds are understood to be by way of advances for carrying out the Native Lands Act, it has been felt to be improper to expend any portion of them except upon Native land required to be surveyed for adjudication before the Native Lands Court. Thus it is clear that the northern triangulations ought to be connected upon Auckland in order to furnish a mutual verification, as well as to make them really useful to the public, for the verification and correction of past surveys and to secure the accuracy of new ones; but this cannot be done because granted, or Crown land, intervenes. And although the wise liberality of the Provincial Government of Auckland, in furnishing funds for portions of the work, the superintendence of which I have with your sanction undertaken, will enable some of those gaps to the north of Auckland to be filled in, still the work must remain imperfect, both in design and in its execution, until it is recognised as a colonial necessity, and its execution permanently provided for.

At the inception of the existing Native land system, the employment of surveyors was left to the land claimants. This plan was then unavoidable, owing to the extreme jealousy of Government surveyors, which had been engendered by the previous system. It has worked disastrously, especially towards the Natives in deference to whose prejudices it was established.

The Native claimants being rarely able to pay a surveyor have been obliged, generally by the help of a Native agent, to get the work done on credit, by promising payments often quite out of all proportion to the real value of the work; they have then, in many instances, been induced to sign legal instruments, on which the surveyor has been enabled to ground actions at law, and so to defeat the sixty-ninth clause of the "Native Lands Act, 1865," which provides that the Native Land Court shall enquire into and decide upon "any dispute which shall arise between any surveyor and his Native employer;" and by this evasion several flagrant instances have occurred in which judgments have been obtained against Natives for survey expenses, without any reference to the quality of the work performed or to the reasonableness of the charges for it; and in some cases arrests of Native chiefs have been attempted, which have endangered the peace of the country; and in others the land has been sold to meet the bare survey expenses. In other instances, surveyors who have executed surveys conscientiously, and made moderate charges for their work, have been involved in ruin by their nonpayment for years.

These evils have become so glaring, and so much discontent has been produced, that it is probable that the legislature will apply some remedy to them; but it seems that the only way to do so effectually must be for the Government to retake the surveys into its own hands, and resume a function which has been always held to be one of the most important in a new country, but which here it has practically abdicated. Should this be so, the necessity for systematic and complete triangulation will become still more immediately pressing.

I beg, therefore, again to recommend that a small permanent geodetic staff should be created, having for its object the complete triangulation of the Island; closing points in the old surveys, so as to reduce them generally to their true position, and furnishing everywhere truly determined points from which all new surveys may start, and the means of checking and of properly recording them. Such a staff, with the necessary officers and other appliances, might be very efficiently organised for about £4,000 per annum on a sufficient scale to meet all pressing demands outside the Province of Wellington. Within that province triangulation has been carried on so well, and considering the means available, so energetically, that I should be sorry to recommend anything that would disturb its continuance under the very efficient direction of Mr. Jackson; the elements which it will furnish will enable closures to be made without any difficulty wherever it becomes conterminal with those executed under my intermediate direction, and the whole will form one continuous work.

The Provincial Government urgently requires that this and other surveys should be largely expanded; unless therefore the Government should be prepared to unite all the surveys in the North Island into one system, and to execute for the provinces any special surveys they might require, which would unquestionably be the most efficient and economical plan, I would repeat the recommendation I have several times made before, that the General Government should pay a rateable contribution towards the Wellington trigonometrical survey, on condition of its being extended over all parts of the province on a concerted scale, and of all its elements being freely imparted to this department for incorporation in the general work, and for the use of surveyors whether for Native or other purposes.

The other survey duties which have come under my direction, are those in relation to the Tauranga District Lands Act, and a number of occasional small surveys and rectifications within the confiscated lands. The surveys under the former head have made very little progress indeed during the past year. Since the Government has undertaken to give Crown Grants for all that extensive area of land, the claims of the individuals entitled will have to be surveyed as they are determined, but so little is now being done in the matter that the services of the very efficient officer who was appointed to execute the surveys have been made available to the Public Works Department, by which half his salary is paid. The remains of the Waikato surveys are in the most unsatisfactory position of all; surveys are from time to time required to fulfil engagements with the Waikato immigrants, occasionally for purchases; and, in the early part of this year, many blocks which were formerly awarded to tribes or hapus of Natives were ordered to be subdivided for individual families. The murder of one of the surveyors engaged has stopped this class of work, and, it is presumed, will prevent it for the future; but constant demands upon the department are made for road maps, for rectification of lines, and for the small surveys I have referred to, and the very bad state of the surveys generally makes these services onerous and most unsatisfactory. As an illustration of the state of these surveys it is sufficient to observe that the relative position of Waikato Heads, of Ngaruawahia, or of any part of Upper

Waikato and Auckland, cannot be determined within at least three miles, which makes record maps over all that district impossible.

I have occasionally been referred to for rules for surveys to be performed on confiscated lands at Taranaki, Patea, and elsewhere,—districts which I have not myself explored, and where it is not proposed that I should personally superintend the surveys. In such cases it is clear that it is impossible to give special instructions; I therefore prepared some slight general rules of practice, the observance of which will secure uniformity in the mode of executing the work, and facilitate the closing of the whole together whenever the present subdivisions shall have passed away. These instructions have been printed, and I propose to distribute them to surveyors employed by the Government. It will be understood that they are not intended to supersede or to dispense with special instructions, which will still be required in most cases, but they merely propound in a very brief form a simple, cheap, and efficient system of survey, such as, under some modifications to meet local circumstances, is pursued in all countries where the subject has been scientifically considered, but which has been consistently ignored in many parts of this colony; and they lay down the rules and precautions which, in my opinion, ought to be invariably followed by surveyors *in the field*.

I have, &c.,
THEOP. HEALE,
Inspector of Surveys.

RETURN showing the NUMBER and GROSS AREA of MAPS of NATIVE LAND COURT CLAIMS received at the Inspector of Surveys Office, Auckland, from 1st July, 1870, to 30th June, 1871.

RETURN.	No. OF MAPS.	AREA.	RETURN.	No. OF MAPS.	AREA.
		A. R. P.			A. R. P.
AUCKLAND—			MIDDLE ISLAND—		
Previous to June 30, 1870 ...	1 392	1,863,423 0 0	Prior to June 30, 1870 ...	56	21,715 0 0
In year ending June 30, 1871	274	318,605 0 0	In year ending June 30, 1871	1	54 0 0
	1,666	2,182,028 0 0		57	21,769 0 0
HAWKE'S BAY—					
Prior to June, 30, 1870 ...	146	509,133 0 0			
In year ending June 30, 1871	54	89,411 0 0			
19 blocks, passed the Native Land Court, but not surveyed	313,180 0 0			
	200	911,724 0 0			
WELLINGTON—			TOTAL.		
Prior to June 30, 1870 ...	250	161,153 0 0	Auckland ...	1,666	2,182,028 0 0
In year ending June 30, 1871	34	68,778 0 0	Hawke's Bay ...	200	911,724 0 0
	284	229,936 0 0	Wellington ...	284	229,936 0 0
			Middle Island ...	57	21,769 0 0
			Grand Total ...	2,207	3,345,457 0 0

THEOP. HEALE,
Inspector of Surveys.

RETURN showing EXTENT and COST of TRIANGULATION executed by the Inspector of Surveys Department, from 1st July, 1870, to 30th June, 1871.

RETURN.	EXPENDITURE.	AREA TRIANGULATED.
	£ s. d.	A R. P.
KAIPARA—		
Cost to 30th June, 1870 ...	270 14 6	
Cost to 30th June, 1871 ...	1,141 5 6	
Total ...	1,412 0 0	573,671 0 0
Cost per acre 0·59 of a penny.		
TAUPO, FROM NAPIER—		
For the year ending 1871 ...	800 0 0	320,147 0 0
Cost per acre, 0·58 of a penny.		

THEOP. HEALE,
Inspector of Surveys.

EXECUTED BY THE
INSPECTOR OF SURVEYS DEPT.
June 1872.



