

1924.
NEW ZEALAND.

DEPARTMENT OF LANDS AND SURVEY.

RANGITAIKI LAND DRAINAGE.

REPORT FOR THE YEAR ENDED 31st MARCH, 1924, TOGETHER WITH STATEMENT
OF ACCOUNTS.

*Presented to both Houses of the General Assembly pursuant to Section 10 of the Rangitaiki Land
Drainage Act, 1910.*

SIR,— Department of Lands and Survey, Wellington, 5th August, 1924.
I have the honour to submit herewith the report upon drainage operations in the Rangitaiki
Plains for the year ended 31st March, 1924, pursuant to the provisions of the Rangitaiki Land
Drainage Act, 1910.

The accompanying statement of cash transactions and balance-sheet shows the financial transactions
for the year, and the position of the account as at the 31st March last. A plan showing operations
is attached.

The Hon. A. D. McLeod, Minister of Lands.

I have, &c.,

J. B. THOMPSON, Under-Secretary.

REPORT OF CHIEF DRAINAGE ENGINEER.

SIR,— In accordance with the provisions of the Rangitaiki Land Drainage Act, 1910, I have the
honour to submit my annual report for the year ended 31st March, 1924.

Throughout the period under review very satisfactory progress has been made, and, as anticipated,
with the exception of several dredging projects, very little construction work remains to be done.
It can now be safely said that the major portion of the swamp is receiving the full benefit likely to
accrue from the drainage-system, and is ready for a vigorous prosecution of farming activities. This
must, of course, go hand in hand with internal subdivisional drainage. The dairying industry has
made great strides on the plains during the year, and the farmers have shown progressive foresight
in the erection of a new and very up-to-date butter-factory in a central position on the Rangitaiki
River. The amount of butter manufactured during the year was 633 tons, an increase of 79½ tons
over last year's production; and the amount paid to suppliers was £80,861. The Tarawera Cheese-
factory turned out 320 tons of cheese, and paid its suppliers £35,840.

The works remaining to be done will be pushed on to completion as quickly as possible so that
the remainder of area can be brought to full production.

Rainfall.—The total rainfall for the year was 60.11 in., the wettest month being September, with
a fall of 6.69 in., and the driest, November, with a fall of 1.31 in. The average rainfall for the past
six years was 49.09 in. From this it will be noted that this year's was an abnormal fall.

EASTERN DISTRICT.

The various drains and outfalls in this locality have been periodically cleaned and maintained,
and in many cases deepened where extra depth was obtainable consequent on dredge operations in the
main outfalls. Before the coming winter it is hoped to have all drains completed to their final depths
and in good order, and any future work will be purely maintenance. The cleaning and improvement
of the Orini Stream by Monighan dredge No. 17 has filled a much-needed want in this locality, and
immediate benefit is being felt from its completion. The opening of the Kopeopeo outfall and the
erection of a flood-gate at the Whakatane River end have made this outfall a splendid catchwater for
the many drains leading into it, and have given the area served the full benefit of low water in the
Whakatane River. The remaining construction work of any moment will be in the White-pine Bush
area, and this will be put in hand early in the coming period by Monighan No. 17.

WESTERN DISTRICT.

Good progress has been made with the works remaining to be done in this district, and final deepening-work has been done or is in hand on practically all the hand drains in the area. The completion of dredging in the Omeheu outfall has made a decided difference here, and has enabled sufficient fall to be taken up in the Adjunct, Awaiti Road, Tarawera Western, Omeheu, and Grieve's drains and outfalls. The widening of the deviations in the Awaiti-Paku Stream lower down should greatly lessen the danger from flooding in low-lying country hereabouts. The stop-banking of the Tarawera River has proceeded steadily, and many of the points where dangerous flooding occurred last winter have been made secure. The only areas requiring particular attention are that to the north of the Awaiti Stream and served by the Tarawera flood-gate, and the small area to the west of the Tarawera River. There is a Priestman dredge operating in each of these areas. Groynes to confine the waters of the Tarawera River to a straight channel where it enters the sea have been in course of construction during the year, and it is hoped that these will shortly be sufficient to ensure a good outlet. It must be remembered, however, that the watershed of this river is almost entirely covered with volcanic ash and pumice, and consequently its waters are continually charged with these materials. During the dry-weather season, when the outflow of the river is at a minimum, there will naturally be a tendency for the river to deposit its load in the slack water at the mouth, with temporary detrimental results to drainage. However, the groynes being erected are calculated to be sufficient to prevent the mouth wandering along the coast during this period of deposition, thus securing a position most favourable to a speedy return to best conditions as soon as the wet season commences.

DREDGES.

Altogether seven dredges, comprising four Priestman grabs, two Monighan drag-lines, and one Bay City dipper dredge, have been continuously employed on works. A total of 788,059 cubic yards of spoil, covering a distance of 2,162½ chains, was lifted during the period at a cost per cubic yard of 5·56d. This is an exceptionally large output for one year's operations. The digging generally has, however, been in easily excavated country, and it has been possible with the range of machinery now on the works to handle each job with the type of plant most suitable.

No. 3 Priestman dredge, which was working in the Kopeopeo outfall, Kopeopeo deviation, Western drain outfall, and Western drain, completed work late in the period, and is being dismantled preparatory to being transferred to other works. During the period this plant covered a distance of 413½ chains and lifted 100,713 yards of spoil.

No 4 Priestman dredge completed work in the Omeheu Canal and Awaiti-Paku Stream deviations late in the period, and is at present working towards the Tarawera flood-gate on Seccombe's drain. The dredge should reach there early in the coming period, and will then deepen a length of the old Rangitaiki River and work back up Seccombe's drain to Section 110 drain. During the period 137,854 yards of spoil were lifted, covering a distance of 349 chains.

No. 8 Priestman dredge has been doing excellent work in the Tarawera River taking off bends and erecting stop-banks to prevent flooding. During the period a total of 107,466 yards of spoil were lifted and deposited to form stop-banks, and a distance of 323 chains was covered. The worst portions of this bank are now nearing completion, when progress will be more marked.

No. 9 Priestman dredge, which was working in the Awakaponga outlet, completed this late in the period and pulled back to commence in Awakaponga drain. The high banks, necessitating damming, and the difficult nature of the country have made progress in this drain somewhat slow. The plant will be assisted on this work by the Bay City dredge, which will commence at the railway-line and work northwards. During the period this plant covered a distance of 203 chains and lifted 128,121 yards of spoil.

No. 17 Monighan dredge, which commenced work at the mouth of the Orini Stream, has an exceptionally good record of work to her credit, and on the last day of the period completed the stream improvements. A total distance of 207 chains was covered, and 117,420 yards of spoil were lifted. After a few days' overhaul this plant will walk across country to commence work on the Waioho Stream and the White-pine Bush Road drain. The dredge will widen and deepen this latter drain, and will use spoil to erect stop-banks to prevent flooding from the Waioho Stream and Whakatahe River.

No. 18 Monighan dredge commenced work in the Kopeopeo outfall at the beginning of the period, but owing to the treacherous nature of banks the machine got into difficulties, and some time was lost in replacing parts, including main walking-shaft and cams, which became damaged. Eventually a fresh start was made and a new dredgemaster put in charge, and to date exceptionally good work has been done. A total distance of 152 chains was covered during the period, and 61,989 yards of spoil were lifted.

No. 21 Bay City dredge has a splendid record of work to its credit for the period, having covered in all a distance of 515 chains and lifted 130,756 yards of spoil. Most of this work was through difficult country, and much heavy timber was encountered. At the beginning of the period work was commenced on the Awaiti Road drain from the railway-line northwards, and after completing this the plant worked south to the railway-line, cleaning up, and continued on to Section 143, from where the machine walked across country to work down the Tarawera Western drain. At the end of the period the dredge had practically completed this work, and will be shifted across to the Awakaponga drain.

The following table shows the total amount excavated, with the cost per cubic yard, for the past ten years:—

	Cubic Yards.	Cost per Cubic Yard.		Cubic Yards.	Cost per Cubic Yard.
1914-15 ..	.. 268,760	3·48d.	1919-20..	.. 176,672	6·62d.
1915-16 ..	.. 224,740	4·54d.	1920-21..	.. 215,768	8·82d.
1916-17 ..	.. 261,751	4·36d.	1921-22..	.. 473,994	6·68d.
1917-18 ..	.. 320,614	3·72d.	1922-23..	.. 540,802	8·13d.
1918-19 ..	.. 229,659	5·70d.	1923-24..	.. 788,059	5·56d.

ROADWORK.

The Omeheu Road formation was carried forward from the railway-line southwards to the Tarawera cross-road during the period, and a good through road is now available here. The Awaiti Road was formed from the railway northwards at the Awaiti-Paku Stream, and this will provide access for subdivisions in Section 109. Formation work from spoil removed by dredges was carried for a distance of 90 chains on the Orini cut and 60 chains on the Kopeopeo outfall.

BRIDGES.

One bridge gang has been employed constantly throughout the period, and another gang has been erecting flood-gates and bridges. Nine new pile bridges were erected during the period, seven were dismantled and re-erected to allow of passage of dredges, and eighteen sill bridges of varying widths were placed in position.

STOP-BANKS.

Repair work has been carried out from time to time on the temporary banks on the Tarawera River, but this work is decreasing as the dredge-work progresses. The Te Rahu bank was repaired and raised in places throughout and continued round the Whakatane River to the Kopeopeo Canal.

FLOOD-GATES.

One two-door culvert flood-gate was erected at the Whakatane River end of the Kopeopeo Canal, and is working very well. Four smaller gates were placed on the Te Rahu Canal in connection with stop-banking.

DRAINS IN OPERATION.

The total length of drains in operation to date is as follows: Dredge cuts, 56 miles 29 chains; main outlet drains, 101 miles 56 chains; road-drains, 29 miles 20 chains.

ROADS OPENED.

The total length of roads opened is 113½ miles, of which 85 miles have been constructed by the Department.

BUILDINGS.

These consist of Engineer's house and fourteen cottages and huts for workmen, office buildings, machine-shop, blacksmith's shop, store-sheds, &c. These are kept in good order and condition. All men occupying quarters are required to pay rent for same.

WORKSHOPS.

Nearly all the repair work for the seven dredges and general machinery has been done in the workshop and smithy at Thornton, and the very small proportion of idle time of plants this period is a testimony to the efficiency of these shops.

ROLLING-STOCK.

The Thornycroft lorry has got through a very creditable amount of work during the period, having done the bulk of cartage of timber, coal, and general supplies. It has also done all the carting of boulders necessary for the Tarawera groyne. The lorry has saved the Department a considerable amount in freight charges.

PLANT AND MACHINERY.

No additions have been made under this heading, and plant still consists of four Priestman grab dredges, one Bay City walking dipper, two Monighan walking drag-line excavators, four coal-punts, three oil-launches, one towing-barge, and seven small boats and punts.

SUMMARY OF WORK DONE.

	M.	ch.	Cub. yd.
New drains	1	50	5,600
Widening and deepening	34	25	136,000
Cleaning drains	72	0	
Road-formation	5	40	
Fencing	8	20	
Spoil dredged	27	2½	788,059
Levels taken	42	0	
Survey traverses	27	25	

Pile bridges, 9; sill bridges, 18; flood-gates, 5.

PROPOSED WORKS.

Completion of Seccombe's drain, Rangitaiki River, and Section 110 drain, by No. 4 dredge; completion of Kopeopeo outfall by No. 18 dredge; Waioho Stream and White-pine Bush Road and stop-banks by No. 17 dredge; completion by Bay City and No. 8 Priestman dredges of Awakaponga drain; cleaning Awakaponga outlet by No. 8 dredge; completion of Tarawera River stop-banking where necessary, together with minor construction and maintenance work.

WORKS EXPENDITURE.

The total amount expended during the year as shown in the books in the Auckland Office was £41,649. Day labour, including wages of dredge crews, amounted to £22,159, piecework contracts £4,479, and hire of teams £1,508.

GENERAL.

The local office is situated at Thornton, and books containing details of costs, &c., are kept there. As much as possible of the work in connection with payments is done in this office. After receipt or verification all vouchers are forwarded to the controlling office in Auckland, where the books recording total expenditure are kept.

The total amount of revenue received by the branch for the year was—Rates, £3,440; other receipts, £878.

The officer in charge is Mr. R. L. Innis, Acting Engineer, to whom credit is due for the able and efficient manner in which the year's works have been performed.

I have, &c.,

O. N. CAMPBELL,

The Under-Secretary for Lands, Wellington.

Chief Drainage Engineer.

RANGITAIKI LAND DRAINAGE ACCOUNT.

RECEIPTS AND PAYMENTS ACCOUNT FOR YEAR ENDING 31ST MARCH, 1924.

<i>Receipts.</i>			£	s.	d.	<i>Payments.</i>			£	s.	d.
Cash in Public Account, 1st April, 1923..			4,891	10	7	Drainage - works, stop-banks, clearing channels, and other expenditure incidental to drainage operations	..	30,689	13	10	
Debentures issued under—	£	s. d.				Management expenses	..	1,440	11	8	
Rangitaiki Land Drainage Amendment Act, 1913, and Finance Act, 1921-22, section 23..	29,100	0 0				Travelling-expenses	..	139	17	3	
Rangitaiki Land Drainage Amendment Act, 1913, and Finance Act, 1923, section 5	22,900	0 0				Legal expenses	..	314	7	1	
			52,000	0	0	Plant and machinery	..	260	17	11	
Rents	..	..	97	16	4	Loose tools	..	81	18	3
“Thirds”	..	..	6	10	0	Live-stock	..	12	0	0
Rates—						Material and stores	..	4,401	13	0	
1917-18	..	..	26	14	11	Fuel	..	3,935	1	11
1918-19	..	..	16	10	3	Purchase-money for land taken	..	200	2	0
1919-20	..	..	114	2	4	Refund of rates	..	2	2	0
1920-21	..	..	325	9	2	Interest on debentures	..	18,577	3	2
1921-22	..	..	815	9	10	Cash in Public Account, 31st March, 1924	..	1,148	7	2
1922-23	..	..	1,982	15	2					
1923-24	..	..	159	4	1					
In advance	..	..	0	0	6					
Sundries	..	..	3,440	6	3					
			767	11	3						
			£61,203	15	3						

REVENUE ACCOUNT AS AT 31ST MARCH, 1924.

<i>Dr.</i>	£	s.	d.	<i>Cr.</i>	£	s.	d.
Interest on debentures	19,121	4	10	Accrued interest, being portion of rates levied for payment of interest and sinking fund	18,813	19	11
Head Office administration expenses	50	0	0	Rents	114	4	4
Rates written off	1,838	3	6	“Thirds”	6	10	10
				Balance transferred to Drainage Works Account	2,074	13	3
					2,074	13	3
	£21,009	8	4		£21,009	8	4

BALANCE-SHEET AS AT 31ST MARCH, 1924.

<i>Liabilities.</i>			£	s.	d.	<i>Assets.</i>			£	s.	d.
Loan Account	..	..	472,900	0	0	Drainage - works—Expenditure in connection therewith, including wages, supplies, administration and engineering expenses, and depreciation of plant	..	413,364	4	1
Loan Redemption Account	..	..	22,461	12	3	Plant and machinery	..	30,300	12	3
Unpaid purchase-money, sundry Natives	..	..	210	1	1	Loose tools	..	629	3	0
Suspense Account	..	..	69	3	9	Live-stock	..	118	5	0
Sundry creditors	..	..	3,343	9	5	Buildings	..	1,678	14	6
Rates paid in advance	..	..	0	0	6	Material and stores	..	654	9	8
Interest on debentures unpaid	..	..	4,625	6	6	Fuel	..	176	13	9
						Investments—Public Trust Office Sinking Fund	..	904	5	4	
						Land for Settlements Account	..	20	0	8	
						Sundry debtors, for rates	..	54,585	19	6	
						Sundry debtors, for rents	..	8	2	0	
						Sundry debtors, miscellaneous	..	20	17	3	
						Cash in Public Account, as at 31st March, 1924	..	1,148	7	2	
			£503,609	13	6			£503,609	13	6	

J. B. THOMPSON, Under-Secretary.

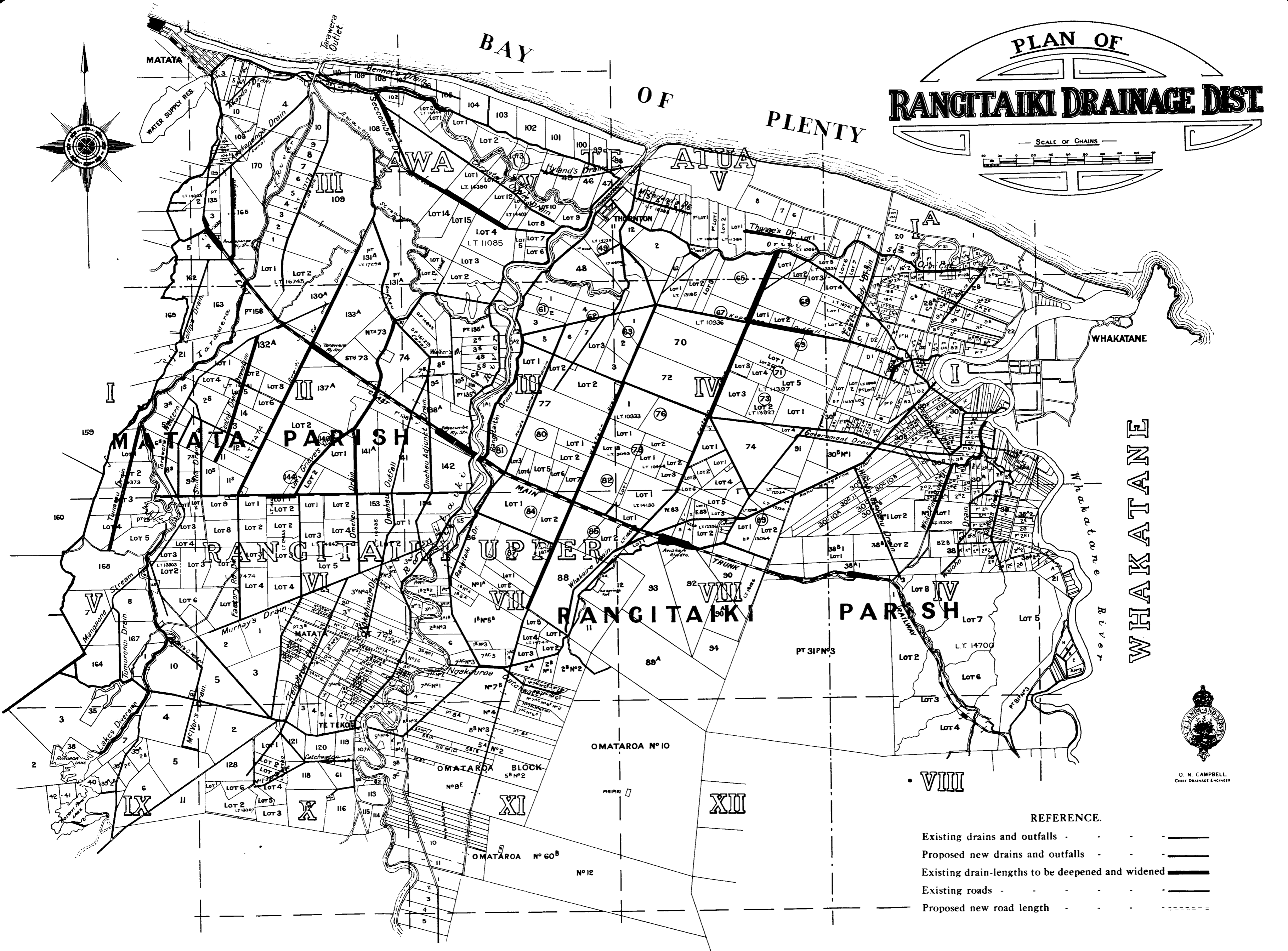
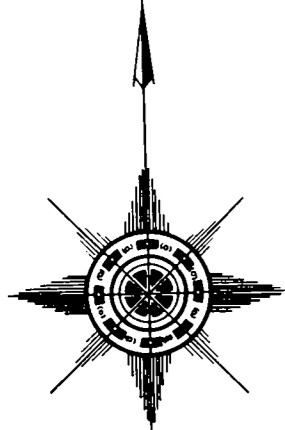
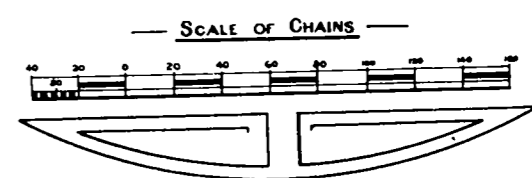
J. H. O'DONNELL, Chief Accountant.

I hereby certify that the Revenue Account and balance-sheet have been duly examined and compared with the relative books and documents submitted for audit, and correctly state the position as disclosed thereby, except that the amount shown as Loan Redemption Account should be specifically invested. Certain Audit requirements as regards future balance-sheets have been communicated to the Lands Department.—G. F. C. CAMPBELL, Controller and Auditor-General.

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PLAN OF RANGITAIKI DRAINAGE DIST



- REFERENCE.
- Existing drains and outfalls - - - - -
 - Proposed new drains and outfalls - - - - -
 - Existing drain-lengths to be deepened and widened - - - - -
 - Existing roads - - - - -
 - Proposed new road length - - - - -



O. N. CAMPBELL, CHIEF DRAINAGE ENGINEER

For bylaws see Rangitaiiki Land Drainage Act 1910.

