

1932.
NEW ZEALAND.

DEPARTMENT OF LANDS AND SURVEY.
SWAMP DRAINAGE.

REPORT FOR THE YEAR ENDED 31st MARCH, 1932, TOGETHER WITH STATEMENT OF ACCOUNTS.

Presented to both Houses of the General Assembly pursuant to Section 13 of the Swamp Drainage Act, 1915.

SIR,—
Department of Lands and Survey, Wellington, 1st August, 1932.
In pursuance of section 13 of the Swamp Drainage Act, 1915, I have the honour to forward the report of the Chief Drainage Engineer covering operations on lands proclaimed under the Swamp Drainage Act and amendments.
I have, &c.,
W. ROBERTSON,
Under-Secretary for Lands.
The Hon. E. A. Ransom, Minister of Lands.

REPORT BY CHIEF DRAINAGE ENGINEER.
SIR,—
I have the honour to submit my annual report on the areas proclaimed under the Swamp Drainage Act, 1915, and its amendments.

KAITAIA DRAINAGE AREA (61,430 ACRES), MANGONUI COUNTY.
The principal work carried out in this area during the year has been maintenance of works previously completed, while some work in connection with the school cut and Whangatane spillway has also been undertaken as detailed below.
Rainfall, &c.—Rainfall and river-gauge readings have been recorded daily at Kaitaia, and schedule giving particulars obtained is given hereunder :—

Month.				Rainfall (Inches).	Wet Days.	Highest Rainfall for Twenty-four Hours.		Kaitaia River Gauge Readings.	
						Inches.	Day.	Highest.	Lowest.
1931.									
April	..	..	..	3·79	14	1·17	19th	60·5	52·0
May	..	..	..	3·58	13	0·93	18th	58·2	52·3
June	..	..	..	5·03	22	1·03	16th	63·5	53·0
July	..	..	..	5·88	24	0·94	29th	61·5	53·8
August	..	..	..	3·08	17	0·83	23rd	60·0	53·5
September	..	..	..	3·37	20	0·65	5th	59·0	53·7
October	..	..	..	2·21	10	0·57	7th	56·5	53·2
November	..	..	..	1·32	8	0·81	22nd	55·0	52·6
December	..	..	..	3·82	8	1·39	15th	65·0	52·5
1932.									
January	..	..	..	2·59	6	0·85	15th	55·5	52·3
February	..	..	..	2·37	6	0·73	19th	55·0	52·3
March	..	..	..	4·39	6	2·13	22nd	59·8	52·1
				41·43	154				

The last two years have seen a period of low rainfall, and the total fall for this year was 41·43 in. Except last year, when the fall totalled 39·27 in., this is the lowest recorded for eleven years. Rain fell on 154 days, the wettest month being July, with a fall of 5·88 in., and the driest, November, with a fall of 1·32 in.

The rainfall was well distributed throughout the year, so there was no overtaking of channels, and the highest level recorded on the river at Kaitaia was 7 ft. below flood-levels recorded frequently in the past. This shows the efficiency of flood-control works recently constructed, but the result must in part be attributed to the long period of low rainfall, the state of the water-shed, and consequent low percentage of run-off from the rainfall recorded.

Whangatane Spillway.—Eight swing gates were erected across this channel to connect section boundaries and road-crossings. 1 mile 15 chains of stop-bank and fillings were raised to correct subsidence, and fascines placed on 70 chains of bank at the toe where erosion was occurring or likely to occur; 80 chains of channel was cleared by cutting raupo and other growth. This channel has carried a fair volume of water on several occasions, but has not yet had occasion to operate at full capacity.

School Cut.—Work carried out in connection with this cut consisted of preparing and sowing in grass 4 acres for a school playground, fencing same, and laying a concrete cricket-pitch. Four pumping plants previously operated from the portion of the river now diverted were rearranged and pipe-lines laid to enable water to be pumped from the new channel. 10 chains of fencing was erected to complete fencing of the area taken for the cut.

Drains.—46 miles 42 chains of drain was cleared of growth, siltage, slips, &c., and contracts let in March for clearing 52 miles of drain of which 3 miles had been completed by the end of the period. 25 chains of drain was enlarged and deepened to standard size.

Stop-banks.—Thirteen miles of stop-bank was kept in repair and 53 flood-gate outlets through the banks were frequently inspected and kept in repair to ensure efficient operation. 3 miles of bank was planted in Kikuyu grass, which is proving valuable as a binding, particularly where the banks are composed of sandy or other light soil.

Surveys.—The only surveys carried out in connection with drainage works were the running of levels to establish contour lines on a number of properties adjacent to the Whangatane spillway.

Proposals for Ensuing Year.—Maintenance of existing drains, &c., is the only work in hand for the ensuing year.

Works Expenditure.—The total expenditure for the year was £6,899 9s. 6d., day-labour accounting for £2,310 12s. 1d.

Rating.—Some 597 rate notices were issued for a total rate struck of £4,160 14s. 11d., and £1,965 19s. 10d. was collected.

HIKURANGI DRAINAGE AREA (50,000 ACRES), WHANGAREI COUNTY.

Rainfall.—The rainfall through the year, though at times very heavy, has not at any time caused serious flooding of the main swamp-area. The yearly total recorded at the Apotu gauge was 54 in., for a total number of 155 days with rain, compared with 41·12 in. for the previous year.

Floods.—The maximum stage recorded at Jordan Bridge was 29·3 ft., in May. The same elevation was again reached in March, but the high stage did not remain very long on either occasion.

Data.—Data has been collected of precipitation at various stations, gauging of run-off, water-stages, &c.

The stage recorders previously at the Rapids, Lewis, and Jordan, will shortly be placed at Purua, Lewis, and the Whakapara-Waiotu junction. Purua Bridge will then become the main gauging-station.

Construction Work.—Construction work with excavators and hand-dug drains, where desirable, was carried on as expeditiously as general working-conditions allowed.

Excavator Work, Wairua River.

Main Diversions.—The only work carried out has been in lowering the grade of the ford-crossing at the mouth of G-H diversion.

Main Diversion Spillways.—No work has been carried out on same.

River-improvement.—No. 14 Bucyrus and No. 3 Priestman have carried out improvements to the river by removing rock and timber bars, easing bends, and widening narrow portions from 4 m. 30 ch. to 2 m. 54 ch., and from 2 m. 28 ch. to 1 m. 50 ch.

No. 13 Bucyrus has improved the river from 9 m. 10 ch. to 9 m. 20 ch.

A contractor has almost completed removal of timber from Jordan Bridge to the inlet of No. 11 diversion.

Up-river Diversions.—No. 1: This has been regraded and widened to give the capacity of the largest section of the river proper.

No. 1B: Work here has been on the same scale as for No. 1.

No. 2: Further work on widening has been done by the Priestman at high-river stages.

No. 3: Further excavation has been carried out on the papa bar at the top end, a deep cut-off drain, back-filled with stone and timber, has been constructed to deal with seepage.

No. 4: No. 3 Priestman has dredged through this and the spoil has been rehandled by No. 14 drag-line. The drag-line has also moved back the greater part of the uphill spoil-bank and constructed a deep cut-off drain to deal with seepage.

No. 5: In spite of the scooping-work done early in the year, the bottom has risen again. Work is now in hand for a deep cut-off drain to deal with seepage.

No. 6: No. 13 drag-line completed the removal of the rock at the lower end, and also constructed a deep cut-off drain behind the first 8 chains of spoil-bank.

No. 7: The only work done has been the construction of a surface catch-water drain.

No. 8: No. 13 Bucyrus completed the excavation of this long diversion. A catch-water drain has been dug behind the spoil-bank on the severance as there is a considerable soakage in this particular locality.

Nos. 9–15: No work has been carried out.

Results.—The net results to-day are low summer levels of 17·2 ft. at Jordan and 16·5 ft. at Lewis, with maximum flood-levels of 29·3 ft. and 26·4 ft. respectively for the year.

Hand-work.

Okarika Valley Drainage.—Cleaning of the narrow lagoon in Section 13A (main arm) has been completed and a new channel to the junction of Sections 6, 13, and 11 has been dug. The branch drain has been extended to reach the road above Section 14, and a short length, parallel to the road, constructed to give an outlet to Section 19.

Maintenance.—A small drain from the Mangawhero diversion through the low country of Section 6 N.W. 2 and S.E. 2 has been cleaned.

Plant and Machinery.

Bucyrus Plant.—Nos. 13 and 14 excavators have been engaged as drag-lines on diversion work and river-improvement. The wear-and-tear on these machines has not been excessive, save perhaps on unavoidable travelling and on buckets in grappling with timber and rock under water.

No. 12 Bucyrus.—This machine is parked at Apotu.

No. 26 Dipper.—This machine is moored in the river above Jordan Bridge.

No. 3 Priestman.—This machine has been wholly on river-improvement work, from 4 m. 30 ch. to the Rapids, and has experienced a hard year in grappling with massive timber and rock.

Drilling and Compressor Plant.—This remains stored at Apotu.

Locomotives, Trucks, &c.—These have not been used throughout the year. One locomotive has been transferred to Hauraki Plains.

Truck and Cars.—One 30 cwt. truck and two cars have been in use for the year.

Workshops.—These have been kept busy throughout the year, where many machine parts have been made and repaired.

Other Works.

Survey Work.—Levels, cross-sections, &c., have been taken as required.

Relief Works.—Through the months of April and May some fourteen relief workers were engaged on the Okarika Valley drainage.

Proposals for Coming Year.—Excavator work on river improvement and diversions is proposed. Hand-work will be done only for the better functioning of the river-improvements, and in cleaning existing canals and drains.

Works Expenditure.—Expenditure for year totalled £9,944 19s. 9d.; day-labour, £4,739 6s. 4d.; piecework contracts, £1,766 4s. 1d.

WAIHI DRAINAGE AREA (20,000 ACRES), TAURANGA COUNTY.

The drainage system of this area has reached a degree of stability where future heavy expenditure will not be necessary. Excellent results have followed the redredging of the main outfalls and the drain-improvement works completed last year. This work, assisted by the excellent seasons experienced, has hastened consolidation and stabilization, but further consolidation of the peat must be expected over the greater portion of the area, and this will make the drainage problem more difficult.

All hand-drains in the area were cleaned during the year, and the repair and maintenance of flood-gates and stop-banks carried out as required. The length of hand-drains cleaned during the year was 44 miles 73 chains.

A new 3 ft. Calco flood-gate was placed at the mouth of the Waerenga Drain to protect an area of low-lying lands from the influence of the tides.

Two idle sections of land, aggregating 100 acres, were surface-sown following a fire, and re-subdivided, for disposal to three adjoining owners. Drainage outlets of a total length of 87 chains and 1,914 cubic yards capacity were constructed for this area.

Flax Leases.—An excellent growth of flax has been maintained over the flax-lease area east of the Wharere Canal, but unfortunately the state of the market has been unfavourable to the recommencement of milling. Flax-culture on the smaller leases west of the Wharere Canal was not proceeded with during the year, due to the depressed state of the market.

Rates.—Rates struck totalled £2,397 6s. 7d., with eighty-nine demands issued; £229 8s. was collected.

POUKAWA DRAINAGE AREA (13,567 ACRES), HAWKE'S BAY COUNTY.

In the early part of the year the levels of the swamp and outlet were re-run in order to determine the extent of the disturbance due to the Napier earthquake. This relevelling showed that the earthquake had caused a general subsidence, but in such a way that the available fall in the valley was slightly increased. The swamp area subsided somewhere between a few inches and 1 ft., whilst at the lower end near Pakipaki the subsidence was some 2 ft. or over. The main channels through the swamp were badly affected by the earthquake as the shakes caused the spoil-banks to subside, and this brought up the bottom of the channels in places as much as 6 ft. At a later date these will require redredging. The downstream outlet channel suffered slight damage only.

A new control-gate was constructed to replace the temporary one that failed in 1930. The new gate is a steel-sheet-pile structure consisting of long double wings and cut-off walls with a centre passage 12 ft., with concrete floor and water cushion. The water-level of the lake and outlet and the quantity of water flowing downstream are controlled by removable weir boards. Some 124 steel-sheet piles were driven and 11 cubic yards reinforced concrete placed.

Two new drains were constructed from the canal at the southern end of the swamp through the Crown land to the new Pukekura Settlement. These drains will greatly benefit the Crown and settlement land, and entailed constructing 1 mile 51 chains new drain and enlarging 75 chains old drain.

Expenditure totalled £3,048 4s. 5d.

I have, &c.,

R. G. MACMORRAN,

The Under-Secretary for Lands, Wellington.

Chief Drainage Engineer.

SWAMP LAND DRAINAGE ACCOUNT.

RATE ACCOUNTS FOR THE YEAR ENDED 31ST MARCH, 1932.

KAITAIA DRAINAGE AREA.

Special Rate Accounts: Capital.

<i>Dr.</i>		Rural			Town			<i>Cr.</i>		Rural			Town						
		Subdivision.			Subdivision.					Subdivision.			Subdivision.						
		£	s.	d.	£	s.	d.			£	s.	d.	£	s.	d.				
To Balance	.. ..	..	3	6	4	..	..	By Balance	.. ..	..	..	..	8	9	0				
Transfer to Sinking Fund		..	315	0	0	43	1	0	Rates levied		..	3,377	16	0	458	13	10		
Interest charge		..	2,085	0	0	407	19	0	Less rebate		..	899	1	11	..	..	..		
Balance		..	270	1	10	44	6	1											
		£2,673			8	2	£495	6	1			£2,673			8	2	£495	6	1

General Rate Accounts : Maintenance.

<i>Dr.</i>			Rural Subdivision.		Town Subdivision.		<i>Cr.</i>			Rural Subdivision.		Town Subdivision.					
			£	s. d.	£	s. d.				£	s. d.	£	s. d.				
To Balance	..	..	15	16	9	..	..	By Balance	..	..	9	17	8				
Cost of maintenance (less subsidy)	..	..	645	16	8	64	11	6	Rates levied (less subsidy)	..	1,111	0	1				
Rates written off	..	..	0	5	7	0	0	3	Penalty, 10 per cent.	..	70	8	4				
Balance	..	..	519	9	5	63	17	4									
			£1,181	8	5	£128	9	3				£1,181	8	5	£128	9	3

NOTE.—Gross maintenance costs (£1,459 18s. 10d.) were subsidized from Consolidated Fund by £749 10s. 6d.

WATER DRAINAGE AREA.

Special Rate Accounts: Capital.

				Pukehina Ward.	Kaikokopu Ward.					Pukehina Ward.	Kaikokopu Ward.					
<i>Dr.</i>				£	s.	d.	£	s.	d.	<i>Cr.</i>				£	s.	d.
To Transfer to Sinking Fund	..			27	11	3	41	6	11	By Balance	..	..	235	1	7	
Interest	..	..		247	8	9	371	3	1	Rates levied	..	..	374	2	0	
Rates written off	..	..		..			31	2	6	Balance	..	..	..			
Balance	..	..	..	334	3	7	..						..			
				£609	3	7	£443	12	6					£609	3	7

General Rate Accounts: Maintenance.

	Pukehina Ward.	Kaikokopu Ward.	Central Ward.		Pukehina Ward.	Kaikokopu Ward.	Central Ward.
<i>Dr.</i>	£ s. d.	£ s. d.	£ s. d.	<i>Cr.</i>	£ s. d.	£ s. d.	£ s. d.
To Balance ..	.. ..	.. ..	408 9 2	By Balance ..	.. 86 5 4	344 12 8	.. ..
Cost of maintenance ..	160 19 0	398 13 4	384 13 4	Rates levied ..	.. 370 16 5	469 16 7	709 4 7
Rates written off ..	.. ..	73 12 8	.. ..	Balance ..	.. ..	.. ..	83 17 11
Balance ..	296 2 9	342 3 3	.. ..				
	<u>£457 1 9</u>	<u>£814 9 3</u>	<u>£793 2 6</u>		<u>£457 1 9</u>	<u>£814 9 3</u>	<u>£793 2 6</u>

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1932.

<i>Receipts.</i>				<i>Payments.</i>						
To Balance—Cash in Public Account, 1st April, 1931	£	s.	d.	By Kaitaia Drainage Area—	£	s.	d.	£	s.	d.
Debentures issued under Swamp Land Drainage Act, 1915, and Appropriation Act, 1918, section 46	6,337	18	1	Drainage-works, &c. ..	5,917	2	11			
Rents and royalties from national-endowment lands in Waihi Drainage Area	12,750	0	0	Management and engineering expenses	804	18	0	6,722	0	11
Special rate for interest and sinking fund—				Waihi Drainage Area—						
Waihi Drainage Area	£	s.	d.	Drainage-works, &c. ..	1,300	7	8			
Kaitaia Drainage Area	1,095	3	5	Management and engineering expenses	17	0	6	1,317	8	2
General rate for administration and maintenance—				Poukawa Drainage Area—						
Waihi Drainage Area	196	16	3	Drainage-works, &c. ..	2,046	0	2			
Kaitaia Drainage Area	887	4	2	Management and engineering expenses	221	19	10	2,268	0	0
Subsidy from Consolidated Fund—Maintenance,				Hikurangi Drainage Area—						
Kaitaia Drainage Area	749	10	6	Drainage-works, &c. ..	6,742	11	11			
Rents	115	17	2	Management and engineering expenses	1,264	8	11	8,007	0	10
Interest on investments	436	18	8	Fuel and stores				2,957	5	11
Miscellaneous	7,339	7	2	Expenses, raising loans				32	7	1
				Balance—Cash in Public Account				9,008	19	1
	£30,313	2	0					£30,313	2	0

BALANCE-SHEET AS AT 31ST MARCH, 1932.

BALANCE-SHEET AS AT 31st MARCH, 1932.					Assets.				
Liabilities.									
Debtentures issued under Swamp Land Drainage Act, 1915—					Kaitaia Drainage District—				
Debtentures at 4 per cent.	£	s. d.	£	s. d.	Allocated cost of works on which rates are levied—				
Debtentures at 4½ per cent.	559,000	0 0				£	s. d.	£	s. d.
Debtentures at 5½ per cent.	12,750	0 0			Rural subdivision	60,000	0 0		
Debtentures at 5½ per cent.	12,000	0 0			Town subdivision	8,200	0 0		
			681,750	0 0				68,200	0 0
Consolidated Fund—					Excess cost of works, not recoverable				
Loans redeemed under Public Debt Repayment Act, 1925 ..	5,000	0 0			Interest Account—Proportion chargeable to district ..	152,280	15 5		
Interest on debtentures paid but not recouped	126,938	9 8				94,359	19 6		
Interest on temporary transfers from other accounts ..	2,783	19 7						246,640	14 11
Accumulated interest on amount expended on Public Works Fund	3,359	12 8			Waihi Drainage District—				
			138,082	1 11	Allocated cost of works on which rates are levied—				
Public Works Fund—Land Improvement vote ..			4,563	19 7	Pukehina subdivision	5,000	0 0		
Reserve Fund—Repayment, capital costs—					Central subdivision	50,000	0 0		
Kaitaia Drainage District—	£	s. d.	£	s. d.	Kaikokopu subdivision	7,500	0 0		
Rural subdivision	615	0 0						62,500	0 0
Town subdivision	84	1 0			Excess cost of works, not recoverable				
			699	1 0	Interest Account—Proportion chargeable to district ..	23,800	1 9		
Waihi Drainage District—						33,064	16 5		
Pukehina subdivision ..	78	16 3						56,864	18 2
Kaikokopu subdivision ..	118	4 5			Poukawa Drainage District—				
			197	0 8	Drainage-works				
			896	1 8	Interest Account—Proportion chargeable to district ..	15,566	11 11		
Rate Accounts—						3,861	9 4		
Special Rate Accounts—Capital—								19,428	1 3
Kaitaia Drainage District—					Hikurangi Drainage District—				
Town subdivision	44	6 1			Drainage-works	228,125	10 1		
Rural subdivision ..	270	1 10			Interest Account—Proportion chargeable to district ..	73,128	5 2		
			314	7 11				301,253	15 3
Waihi Drainage District—					Mangawai Drainage District—				
Pukehina subdivision ..	334	3 7			Drainage-works	1,877	15 9		
			648	11 6	Interest Account—Proportion chargeable to district ..	894	10 3		
General Rate Accounts—Maintenance—								2,772	6 0
Kaitaia Drainage District—	£	s. d.			Harihari Drainage District—				
Town subdivision	63	17 4			Drainage-works	4,354	15 1		
Rural subdivision ..	519	9 5			Interest Account—Proportion chargeable to district ..	1,754	3 3		
			583	6 9				6,108	18 4
Waihi Drainage District—					Buildings			2,255	13 8
Pukehina subdivision ..	296	2 9			Wharves			72	19 2
Kaikokopu subdivision ..	342	3 3			Plant and machinery ..			38,324	16 1
			638	6 0	Loose tools			561	18 7
			1,221	12 9	Live-stock			18	1 4
Sundry creditors—					Fuel			146	3 2
Miscellaneous			665	19 11	Stores on hand			5,338	2 5
Departmental			8	2 5	Sundry debtors for rates—				
			674	2 4	Kaitaia Drainage District—	£	s. d.		
Interest on debtentures accrued but not due ..			9,638	11 4	Capital	4,232	2 8		
Rents charged in advance			383	19 1	Maintenance	1,828	9 6		
Suspense Account			0	6 0				6,060	12 2
Writings off in Suspense			329	1 4	Waihi Drainage District—				
Payments in advance—	£	s. d.			Capital	2,259	2 9		
Rates	7	7 10			Maintenance	4,641	19 9		
Rent	0	3 0						6,901	2 6
			7	10 10	Sundry debtors—				
					Rent under section 4 (2), Swamp Land Drainage Amendment Act, 1926	3,263	6 1		
					House-rent	19	8 4		
					Law-costs	16	13 0		
					Miscellaneous	16	14 0		
					Departmental	5	18 11		
								3,322	0 4
					Rate Account—				
					Waihi Drainage District—				
					Special Rate Account—Capital,				
					Kaikokopu subdivision				
						54	19 7		
					General Rate Account—Main-				
					tenance, Central subdivision				
						83	17 11		
								138	17 6
					Revenue Account—Waihi Drainage				
					District—Central ward				
								1,887	6 6
					Losses in Suspense				
								329	1 4
					Cash—				
						£	s. d.		
					In Public Account	9,008	19 1		
					In transit from Post-office ..	61	10 7		
								9,070	9 8