

1919.  
NEW ZEALAND.

---

DEPARTMENT OF LANDS AND SURVEY:  
**DRAINAGE OPERATIONS IN HAURAKI PLAINS.**

REPORT FOR THE YEAR ENDED 31st MARCH, 1919, TOGETHER WITH STATEMENT  
OF ACCOUNTS.

*Presented to both Houses of the General Assembly pursuant to Section 10 of the Hauraki Plains  
Act, 1908.*

SIR,— Department of Lands and Survey, Wellington, 14th July, 1919.

I have the honour to submit herewith the report on the drainage operations in the Hauraki Plains for the past year, in accordance with the provisions of the Hauraki Plains Act, 1908.

The total area thrown open for selection to date is 37,451 acres, valued at £227,830. It is hoped to increase these figures at an early date.

The total expenditure under the Act has now been as follows:—

					£	s.	d.
For the year ended 31st March. 1908	...	...	...	...	5,070	0	0
"                    1909	...	...	...	...	11,672	5	6
"                    1910	...	...	...	...	22,235	2	11
"                    1911	...	...	...	...	32,103	14	0
"                    1912	...	...	...	...	40,084	13	1
"                    1913	...	...	...	...	26,608	1	3
"                    1914	...	...	...	...	21,467	18	2
"                    1915	...	...	...	...	20,399	10	4
"                    1916	...	...	...	...	18,331	10	10
"                    1917	...	...	...	...	18,405	17	10
"                    1918	...	...	...	...	26,588	19	7
"                    1919	...	...	...	...	31,575	11	8
Total	...	...	...	...	£274,543	5	2

The detailed report of the Chief Drainage Engineer is attached, together with a statement of accounts and balance-sheet.

I have, &c.,

T. N. BRODRICK, Under-Secretary.

The Hon. D. H. Guthrie, Minister of Lands.

REPORT OF CHIEF DRAINAGE ENGINEER.

SIR,—

I beg to submit my report on the drainage operations on the Hauraki Plains for the year ended 31st March, 1919.

A great advance in the prosperity of the plains has been experienced during the past year. Many sales of land have been recorded at very much advanced prices, as much as £80 per acre being realized. The grazing has increased not only in cattle, but also in sheep. The value of stock sold in the Ngatea, Patetonga, and Waitakaruru yards amounts to £71,440, and the fact that a large amount of the plains stock-dealing is also done at Turua and Hikutaia yards must be taken into consideration. The trade on the plains portion of the Piako River is increasing rapidly, and altogether this trade for the year on this river amounted to 3,740 tons. The total value of cream produced from the area during the year was £79,390.

Generally the year concluded has seen a large amount of work done, especially in new drains. This, however, would have been considerably increased but for the influenza epidemic, which was very severe on the plains, and practically brought work to a standstill for the best part of two months. I am very sorry to record that some of the Department's workmen died from this cause.

The metalling of roads has not shown any increase over last year's figures, which is also due to the epidemic. It is proposed, however, to place tractors and metal-wagons on the roads to supplement the work done by tramway, and also to procure an efficient supply of crushed metal. Negotiations are now being made for tractors and a quarry.

#### AWAITI DISTRICT.

Since the last annual report a large amount of work has been done in the above district. The large new drain on the eastern side of the Awaiti-Netherton Road has been completed and linked up with the main drain on the western side by a concrete culvert. Another new drain was constructed along the Pukahu Road, from the Hauraki Plains boundary to the Waikou River. The formation of the Pukahu Road was completed for a width of 12 ft. to give access from the river to the Awaiti Road, and this width will be increased to 18 ft. next spring. All the drains are now in a very efficient state, having been levelled and regraded, and flooding, although very prevalent at one time, is now a thing of the past. Unfortunately, although every effort has been made, it was found impossible to procure metal for the Awaiti-Netherton Road, but there are prospects of a supply of same being available during the coming year. Many settlers in the district, as on the other parts of the plains, have not yet fenced their sections, and the Department's outlet drains have suffered considerably in consequence.

#### TAHUNA DISTRICT.

The roads in this district have received a lot of attention, and have received a liberal topping of sand spoil and been rounded up. The drains are now in first-class order. Some of the old narrow sill bridges have been taken up and replaced by concrete culverts and filled in.

#### PATETONGA DISTRICT.

Slav gangs have been employed continuously in this district. The Waikoura outlet has been completed, and a new drain constructed along the south side of the Ngarua Road from Ngarua Canal to the intersection of the Maukoro-Waitakaruru Canal. The central outlet between the Mangawhero and Ngarua Roads has also been extended through Lease No. 3 to the Waikaka Canal.

Most of the work has been in connection with the drainage of the adjacent lands, which will shortly be available for selection. Several teams have been engaged carting spoil for the Ngarua Road formation, and 130 chains have been completed, a thickness of from 2 ft. to 3 ft. of spoil being put down. The carting of spoil and formation on the Mangawhero Road has also been pushed on and is now nearly completed. The new wharf, which has a length of 120 ft. and a 40 ft. by 30 ft. shed, have been completed, and are a great improvement on the old structures. The tram-line was taken over by the Department during the year. A receiving-shed and agent's quarters were built at Patetonga, and the line is now being relaid and put in thorough order. It is proposed to put a petrol engine on this line shortly. The sum of £325 9s. 4d. was received during the year in payment of freights.

#### CENTRAL DISTRICT.

The securing of Jugo-Slav labour has been the means of not only enabling the Department to maintain the existing works, but also to undertake new work, especially in draining and preparing land for soldier settlement. Over 18 miles of large new drains were constructed during the year, and six new reinforced tide-gates were installed, replacing the old wooden ones, while twenty-one concrete culverts were constructed to take the place of the old sill bridges. A large new wharf and shed are under construction at Kerephi and are nearly completed, while the construction of three more new wharves is being prepared for. The manufacture of Monier concrete pipes on the works is proving very successful, and a total length of 1,156 ft. of these pipes, ranging from 1 ft. 6 in. to 3 ft. in diameter, have been laid on the plains. A plant is now being got ready for the manufacture of pipes 3 ft. 6 in. in diameter.

The blacksmith's shop has been kept in constant work, and has been fitted up with a lathe, radial drill, screwing-machine, emery wheel, &c., which will be the means of still further saving on the heavy expenses incurred in foundry-work. The carpenter's shop has turned out a large amount of work for the year, in addition to carrying out repairs to launches, punts, &c.

#### WAITAKARURU DISTRICT.

Several new concrete culverts have been installed in the above district, but the main portion of the work for the year has consisted of the maintenance of existing drains and stop-banks.

#### PRIESTMAN DREDDGES.

The No. 1 dredge has been employed continuing the canal from the Piako River along the Waitoa River, and has completed 55 chains for the year, making a total length of 133 chains. Some trouble has been experienced on this canal owing to the difficult nature of country met with. In some places 4 ft. to 5 ft. of pumice sand was encountered on a bottom of very hard sandstone and clay. The cut behind the dredge will require to be gone over again in order to clear the sand deposited. Amount of spoil dredged was 55,031 cubic yards, at a cost of £1,394 1s. 6d.

The No. 2 dredge is still engaged on the Waitakaruru Canal, and has completed 1 mile  $\frac{1}{2}$  chains for the year, making a total length of canal dredged of 1 mile 61 chains. Fairly good going was encountered, and the dredge should reach its objective by next October. Amount of spoil dredged was 70,165 cubic yards, at a cost of £1,073 2s. 6d.

The No. 6 dredge, which was purchased from the Auckland Harbour Board and altered to suit the Department's requirements, was placed on the Kerepehi-Awaiti Canal. Unfortunately this dredge, owing to considerable breakages, has been out of commission for some time, and it will be necessary to thoroughly overhaul same and renew some parts which are worn or not in good working-order. This work, on account of difficulty experienced in procuring steel, &c., is likely to take some considerable time.

The following table shows the amount of spoil dredged and cost per cubic yard for the past seven years:—

	Cubic Yards.	Cost per Cubic Yard.
1912-13	131,902	3·25d.
1913-14	147,740	3·20d.
1914-15	176,196	2·67d.
1915-16	146,905	3·35d.
1916-17	161,674	3·40d.
1917-18	130,664	2·53d.
1918-19	125,196	4·87d.

The increase in cost is a natural one considering the abnormal conditions prevailing, which have raised price of materials, coal, supplies, freights, wages, and repair works. Every item is charged against the output of dredges.

#### WORKS PERFORMED DURING YEAR.

The following works were carried out under the piecework-contract system or day labour:—

##### Drains:—

	M.	ch.
By piecework contract—		
Cleaning drains	65	33
Widening and deepening drains	14	31
Constructing new drains	7	19
By day labour—		
Cleaning drains	95	17
Widening and deepening drains	35	24
Constructing new drains	12	59
Total distance covered	230	23

##### Roads:—

	M.	ch.
By piecework contract and day labour—		
Carting spoil and forming roads	1	49
Grading and re-forming roads	10	79
Disking roads	6	20
Gravelling roads	1	20
Shelling roads	0	40
Metalling roads	3	20
Repairs to stop-banks	1	48
Fencing	3	20
Total distance covered	28	56

Supply of sleepers, 3,650; fascines, 150 bundles.

*Reinforced-concrete Work.*—The following concrete culverts and tide-gates were all constructed by day labour:—

	Number.
Tide-gates—	
3-ft.-diameter pipes	4
2-ft.-diameter pipes	2
Total	6

Diameter.	Number constructed.	Length. Feet.
4 ft. by 3 ft. 6 in.	1	45
4 ft. by 3 ft.	1	40
3 ft.	3	116
2 ft. 6 in.	2	60
2 ft.	11	494
1 ft. 6 in.	3	90
Totals	21	845

The total number of concrete tide-gates is now eight, while culverts or outlets number twenty-seven, of a total length of 1,156 ft. In addition to the above many culverts of 1 ft. diameter and under were constructed.

*Metalling Roads.*—During the year a total length of 5 miles 2 chains of road has been metalled, shelled, or gravelled. This makes a total distance of 35 miles 66 chains since the year

1913. The metal procured from the Kauaeranga Creek by the Department's steamer and punts amounts to 4,929 cubic yards, while outside supplies totalled 1,557 cubic yards. This shows a reduction over last year's supply of 1,669 cubic yards, which is accounted for by lost time occasioned by the epidemic.

The following is a schedule of roads metalled during the year :—

Metalled—			M.	ch.
Hopai-Hopai Road	...	...	0	55
Ngatea-Pipiroa Road	...	...	0	58
Kopuarahi Road	...	...	1	67
Shelled or gravelled—				
Ngarua, Patetonga, Waitakaruru, &c.	...	...	1	62
Total	...	...	5	2

The coming year's operations will be as follows: Waitakaruru-Pipiroa Road (continuation); Ngatea-Pipiroa Road (continuation); McKerchar's Road; Kerepehi-Kopuarahi Road (continuation); Awaitei Road.

#### ARTESIAN BORING PLANT.

The number of bores sunk during the year was four, making a total to date of 142. The cost of the year's operations was £220 5s. 8d., making a total expenditure to date of £3,647 14s. 6d., practically the whole of which amount is recoverable. A schedule of the bores sunk is attached.

#### FLOATING PLANT.

One new small launch has been added to the floating plant, and one transferred to Waihi Swamp.

A new metal pontoon is being laid down, but construction has been delayed owing to timber-scarcity. The list of plant is at present three Priestman grab dredges, one steamer, six oil-launches, five large pontoons (one not fit for towing), and two small pontoons. All of this plant has been thoroughly overhauled and is in good order.

#### BUILDINGS.

During the year a new wharf and shed were built at Patetonga landing; also goods-shed and agent's cottage at Patetonga. A cottage was built at Pipiroa for the concrete foreman; one double hut and a single hut together with drying-shed at Ngarua; one double hut at Waitakaruru; two double huts and one single at Hopai. The workmen pay a small weekly rental for occupation of huts. The total number of buildings of all descriptions is now fifty-four.

#### FORMED ROADS.

New road-formation during the year comprised 1 mile 49 chains, but a large amount of work was done in grading and re-forming existing roads. In particular the roads in the peat country had to be treated with extra thickness of spoil, varying from 1 ft. to 3 ft. A distance of 10 miles 79 chains was completed during the year. In addition to this 6 miles 20 chains was disked.

#### DRAINS IN OPERATION.

The total length of drains constructed to date is 364 miles 39 chains, although, as mentioned in previous reports, some of these drains are now discarded. The total length of new drains cut during the year was 19 miles 78 chains, showing a large increase over the previous year's total. This was anticipated last year, as it was presumed with the Jugo-Slav labour available much more could be done than in previous years.

#### VALUATIONS.

These remain the same as last year, the total area to date thrown open for selection being 37,451 acres, valued at £227,830. The Crown land which will be opened in the near future will show an increase on these figures.

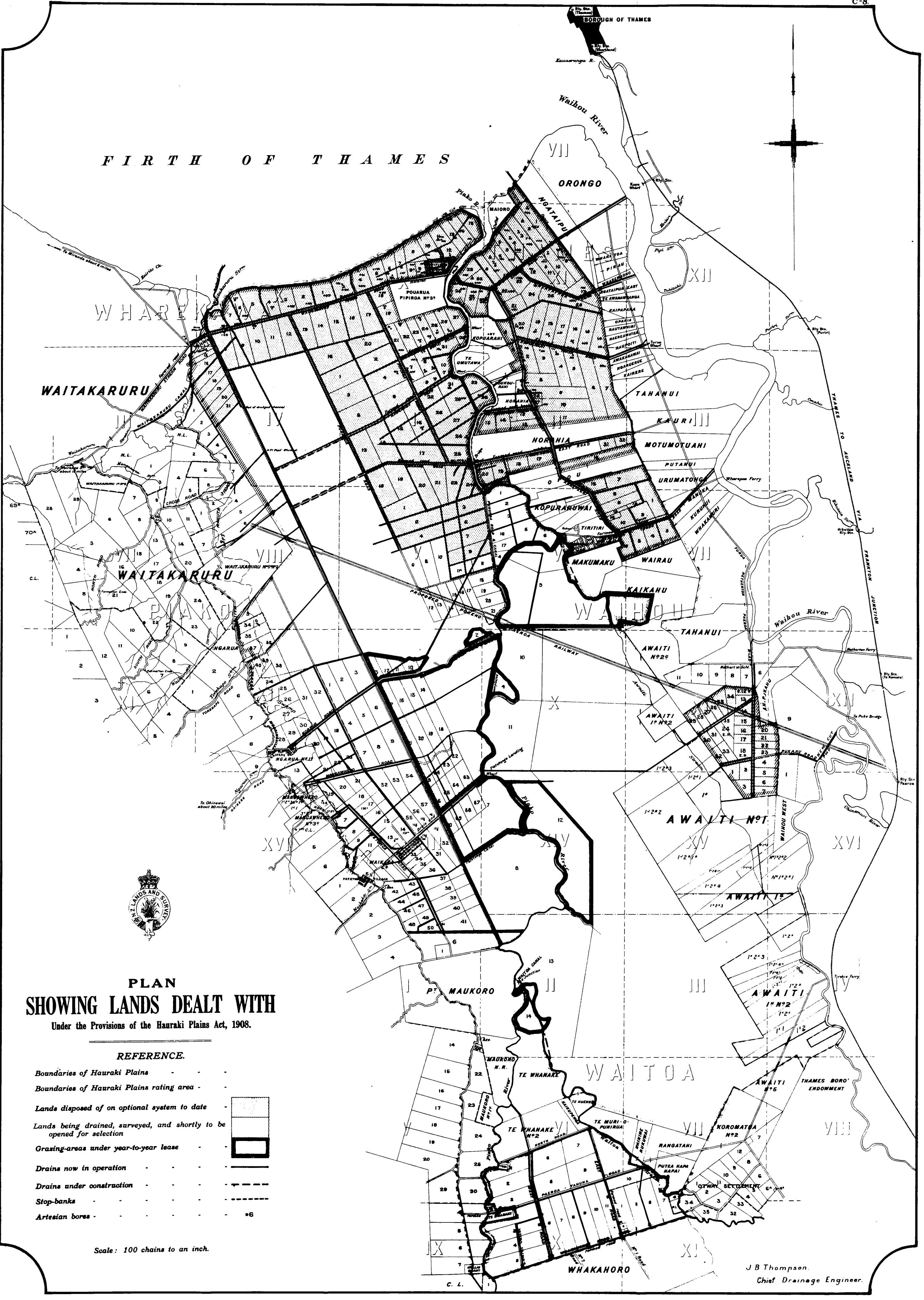
#### FLAX LEASES.

The total revenue received during the year was £225 19s. 3d. It has been found impossible so far to open up any areas for flax leases, but now that more normal conditions are at hand it is hoped to be able to shortly get the necessary survey put in hand.

#### WORKS EXPENDITURE FOR THE YEAR.

The total amount expended during the year, including wages, supplies, repairs, &c., amounted to £26,561. The sum of £33,010 18s. 6d. was paid out of local Imprest Account in payment of Hauraki Plains expenditure and the special votes for maintenance and metalling. Day labour totalled £13,888 10s. 7d., and piecework contracts £2,274 9s.



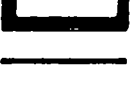
# FIRTH OF THAMES



## PLAN SHOWING LANDS DEALT WITH

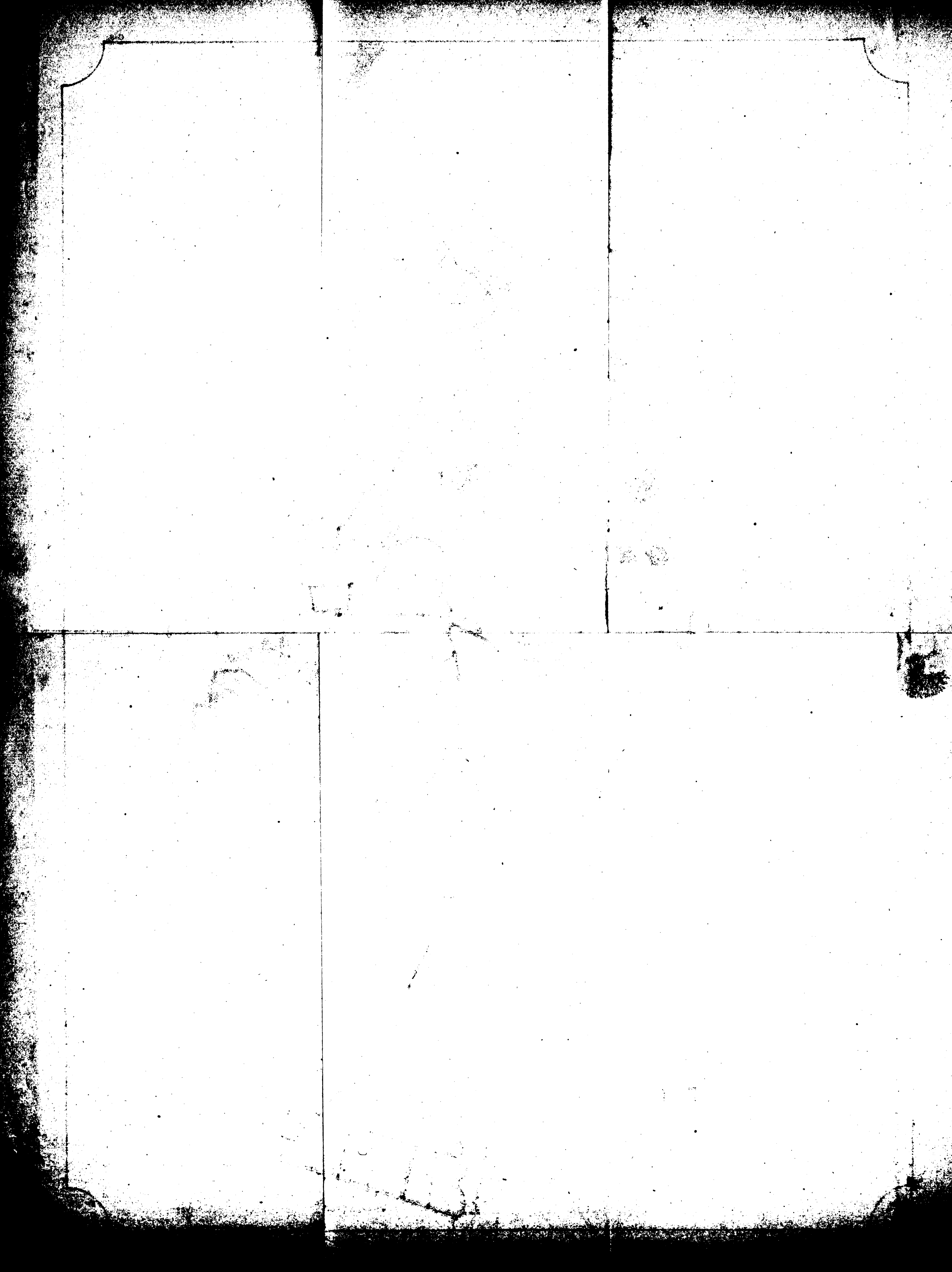
Under the Provisions of the Hauraki Plains Act, 1908.

### REFERENCE.

- Boundaries of Hauraki Plains - - - - -
- Boundaries of Hauraki Plains rating area - - - - -
- Lands disposed of on optional system to date 
- Lands being drained, surveyed, and shortly to be opened for selection 
- Grazing-areas under year-to-year lease 
- Drains now in operation - - - - -
- Drains under construction - - - - -
- Stop-banks - - - - -
- Artesian bores - - - - - \*6

Scale: 100 chains to an inch.

J B Thompson.  
Chief Drainage Engineer.



## PRINCIPAL WORKS PROPOSED.

The principal works (apart from road-metalling) to be carried out in the future are as follows:—

- (1.) Continuation of Waitoa River dredging.
- (2.) Completion of Mangatarata Stream dredging.
- (3.) Continuation of Waitakaruru—Maukoro Canal.
- (4.) Continuation of Awaiti Canal.
- (5.) Replacements of wooden flood-gates and sill bridges by concrete.
- (6.) General development-work and preparation of new areas for settlement.

## LANDS PROPOSED TO BE OPENED.

Owing to many difficulties my anticipation of opening up the 3,000 acres of land were not realized. However, late in the year the services of two surveyors became available and work was at once put in hand. By the end of the year the field-work of about 4,000 acres had been completed, and plans were expected early in April, 1919. These lands will be available very shortly. Field-work of another 3,700 acres was well in hand at the end of March, and it is expected this will be ready in about six months' time. It is practically certain that about 5,000 acres of drained and subdivided land will be available for selection before the spring of 1919. Much of it is of good quality and will be eagerly sought for.

Beyond this area we are preparing for the development of further swamp lands, and now that conditions are becoming more normal good progress will be possible.

At least three more dredges are required to assist more rapid development, and I would advocate the acquisition of suitable dredges of "Dipper" type being obtained from America.

## GENERAL.

The books in connection with the works are kept in Auckland, where vouchers for wages, contracts, supplies, and general purposes are prepared.

The officer in charge is Mr. R. S. Logan, Land Drainage Engineer, who has very zealously and capably carried out the supervision of operations and development-work.

I have, &c.,

J. B. THOMPSON,

Chief Drainage Engineer.

The Under-Secretary for Lands, Wellington.

## SCHEDULE OF ARTESIAN BORES SUNK DURING THE YEAR 1918-19.

Artesian Bore No.	Section.	Block.	Survey District.	Total depth in Feet.	Running Flow, Gallons per Day.
139		Part Mangawhero	3C2B	342	No flow.
140		"	"	374	"
141		Waitakaruru	2A1A	213	4,800
142	8	X	Wharekawa	237	4,800

## HAURAKI PLAINS SETTLEMENT ACCOUNT.

## Statement of Transactions during Year ended 31st March, 1919.

<i>Receipts.</i>			<i>Payments.</i>		
	£	s. d.		£	s. d.
Balance brought forward at 1st April, 1918	1,365	2 0	Drainage-works, stop-banks, clearing channels, and other expenditure incidental to conducting drainage operations, material, supplies, &c.	21,738	12 10
Debentures issued—Hauraki Plains Amendment Acts, 1913 and 1914	25,000	0 0	Erection of wharf, cottages, huts, and sheds	1,914	0 0
Cash sales	5,382	10 0	Machinery, plant, loose tools	1,798	14 2
Rents	9,219	17 11	Artesian wells	220	5 8
Miscellaneous receipts—			Compensation for land acquired in connection with drainage-works	158	19 6
Hut-rents	12	4 -3	Management and engineering expenses, &c.	706	10 7
Flax-sales	576	5 9	Travelling-expenses	183	12 9
Grazing-rents	61	1 2	Interest on debentures	4,854	16 2
Timber	10	0 0	Balance at 31st March, 1919	10,589	4 4
Tram freights	325	9 4			
Artesian wells	196	5 7			
Old plant	16	0 0			
	<u>1,197</u>	<u>6 1</u>			
	<u>£42,164</u>	<u>16 0</u>		<u>£42,164</u>	<u>16 0</u>

