

1929.
NEW ZEALAND.

DEPARTMENT OF LANDS AND SURVEY.

DRAINAGE OPERATIONS IN HAURAKI PLAINS.

REPORT FOR THE YEAR ENDED 31ST MARCH, 1929, TOGETHER WITH STATEMENT
OF ACCOUNTS.

Presented to both Houses of the General Assembly pursuant to Section 20 of the Hauraki Plains Act, 1926.

SIR,—

Department of Lands and Survey, Wellington, 1st July, 1929.

I have the honour to present herewith the report of the Chief Drainage Engineer on operations carried out during the past year on the Hauraki Plains in accordance with the provisions of the Hauraki Plains Act, 1926.

I have, &c.,

J. B. THOMPSON,

The Hon. G. W. Forbes, Minister of Lands.

Under-Secretary for Lands.

REPORT OF CHIEF DRAINAGE ENGINEER.

SIR,—

I have the honour to submit herewith the twenty-first annual report on the Hauraki Plains land reclamation and general development works carried out during the financial year ended 31st March, 1929.

Climatic conditions have been exceptionally favourable for good progress with the development works, and a survey of the year's activities shows a satisfactory volume of construction work accomplished.

The settlers on the reclaimed swamp have experienced a profitable year, but, though the production of dairy-produce was satisfactory, and increasing in proportion to the active development of the farms, it has not generally come up to expectations based on the season's high record of production for the Dominion. The copious rainfall in September and October retarded the spring growth on the alluvial grass land, and consequently there was not the usual abundance of feed in the fields prior to the dry months of January and February. Conditions have been more favourable for the peat lands, and generally the returns from the good peat sections have been very satisfactory.

Hereunder are particulars of produce returns from the area for the year, and a perusal of same undoubtedly proves what a great benefit the Hauraki Plains drainage-works has been to the Dominion. For comparative purposes the previous year's returns are shown in parentheses :—

	Tons.	Estimated Value. £
Butter produced	2,405 (2,300)	407,000
Cheese produced	1,331 (1,296)	83,000
Fibre and tow	1,000 (1,200)	24,000
Estimated value of stock sold	..	61,100 (59,170)
Total	..	£575,100

Freights, including metal to and from Piako River and Waitakaruru (tons) 24,225 (11,426)

A new cheese-factory has been erected at Waitakaruru, having been completed about December, whilst the erection of a similar factory at Kerepeehi is under consideration.

The milling of flax is being carried out at Torehape, Kaihere (two), and Tahuna, and it is pleasing to record that a higher grade of hemp has been produced at both Tahuna and Torehape by the millers exercising more care in the treatment of the leaf. The growing of flax on peat areas is a subject which is receiving more attention at the present time. This is particularly important to the Department, as there are large areas of Crown land of this class which can be put to no other commercial use. It is too early yet to forecast whether the growing of flax on this class of country will be generally successful, but there are distinct signs of success on some areas, whilst on others the prospects are not too promising. In order to assist the flax-growing industry it is essential that some measure of protection from and control of fires on adjacent areas should be provided, and in my opinion statutory authority should be furnished for the formation of fire districts on Crown and also privately owned lands on which flax is naturally grown or cultivated. During the past summer no serious loss of flax by fire occurred, but the 2,000-acre block at Patetonga, on which a considerable amount of work has been carried out by the lessees, was threatened by a fire which started on the adjoining occupied land, and only after strenuous efforts by employees of the Department and the Flax Company, as well as settlers, was all danger removed.

In my last report mention was made of the poaching by stock of the heavier country in the northern portion of the plains. This occurs every year unless an unusually dry winter and spring are experienced, and as a result the grasses are practically ruined and displaced by pennyroyal and buttercup. This disability reduces the returns from the area affected, and a remedy for this state of affairs would be of great value to the prosperity of the plains. Various methods have been suggested, but no simple solution of the difficulty has been evolved. Drainage alone is not the solution, and the removal of the stock from the farms during winter has been suggested, but there are difficulties in doing this with dairy cows. Last year mention was made of the proposal to house and hand-feed the stock for some months, but no reliable data are available of this experiment, which has only been carried out on a small scale. Paspalum is becoming quite common in portions of the area, and if this grass becomes well established the poaching should be reduced, as this grass provides a solid mat, which is better able to support the weight of the cattle. Paspalum would be a benefit in crushing out and preventing the growth of tall fescue, which is making its appearance in portions of the plains where it was not previously noticed. The Agricultural Department is interested in this problem, and intended to carry out experiments with the use of the mole-plough, but these have unfortunately been postponed, although the intention is to carry them out during the next year. The solution of this problem would be not only of great value to the plains, but also to all reclaimed marine and kahikatea lands.

An important episode in the history of the plains was the handing-over, during the year, of the control of the drainage-works completed by the Department to two newly formed Drainage Boards.

An area of 13,000 acres extending along the western side of the Piako River and the foreshore of the Hauraki Gulf, from a point about one mile up-stream from Ngatea Township to the outlet of the Waitakaruru Canal, has been formed into a drainage district, known as the Hauraki West Drainage District. A portion of the Netherton Settlement has also been included in the recently constituted Netherton Drainage District.

There are now five Drainage Boards operating in the original Hauraki Plains area, all engaged on drainage improvement and maintenance, in which the Government is assisting, financially and by active construction. The Department's policy of co-operation with the drainage authorities whose operations come within the sphere of the major reclamation scheme appears to meet with general approval, and the assistance of the Department's organization is sought in many directions, including frequent requests for advice and supervisory inspections.

The area which is still liable to rates under the rating clauses of the Hauraki Plains Act, 1926, will be still further reduced during 1930, when the Elstow Drainage Board will take over the control and maintenance of works constructed by the Department in the greater part of the Awaiti basin. Generally speaking, the area liable for rates is the lower-valued portion of the plains, and the values of this portion will be reduced considerably when the county is revalued in the immediate future.

The rainfall recorded at Kerepeehi during 1928-29 was 47.30 in. The average rainfall over a period of thirteen years has been 45.75 in., as shown on the following schedule. A record of daily precipitation for the same period is attached:—

Year.	Total Rainfall.	Wettest Month, and Fall.	Driest Month, and Fall.
1916-17	55.57 in.	Nov., 1916—6.65 in.	Jan., 1917—0.65 in.
1917-18	46.41 in.	April, 1917—5.67 in.	Dec., 1917—2.18 in.
1918-19	41.02 in.	Oct., 1918—7.47 in.	Feb., 1919—1.34 in.
1919-20	34.85 in.	Feb., 1920—6.10 in.	Dec., 1919—0.89 in.
1920-21	35.93 in.	Sept., 1920—5.10 in.	Feb., 1921—0.72 in.
1921-22	46.34 in.	Feb., 1922—6.62 in.	Nov., 1921—1.34 in.
1922-23	33.81 in.	Jan., 1923—4.14 in.	Mar., 1923—1.72 in.
1923-24	52.42 in.	April, 1923—9.76 in.	Nov., 1923—1.81 in.
1924-25	52.56 in.	April, 1924—8.55 in.	Mar., 1925—1.36 in.
1925-26	40.29 in.	June, 1925—6.67 in.	April, 1925—0.84 in.
1926-27	60.91 in.	May, 1926—8.86 in.	April, 1926—1.83 in.
1927-28	47.35 in.	July, 1927—6.29 in.	Jan., 1928—0.01 in.
1928-29	47.30 in.	May, 1928—7.52 in.	Feb., 1929—0.74 in.

RECORDS OF DAILY PRECIPITATION, KEREPEEHI, HAURAKI PLAINS.

Year.	Number of Days, with given Daily Precipitation in Inches.												Total Days.	Total Fall.	Wettest Month, and Rainfall.	Driest Month, and Rainfall.
	0.00 to 0.40.	0.50 to 0.74.	0.75 to 0.99.	1.00 to 1.24.	1.25 to 1.49.	1.50 to 1.74.	1.75 to 1.99.	2.00 to 2.49.	2.50 to 2.99.	3.00 to 3.99.	4.00 to 4.99.	5.00 to 5.99.	6.00 to 7.00.			
1916 ..	109	12	9	7	2	3	..	1	..	..	1	..	144	52.19	Nov. 6.65	Feb. 1.05
1917 ..	131	11	4	4	3	..	1	1	1	..	..	..	156	45.61	Feb. 6.26	Jan. 0.65
1918 ..	145	14	6	4	..	1	..	..	1	..	..	..	171	44.06	Oct. 7.47	May 2.24
1919 ..	122	9	1	3	2	..	..	..	..	..	..	..	137	27.36	July 4.52	Dec. 0.89
1920 ..	85	7	10	3	1	1	3	2	..	..	..	..	112	43.16	Feb. 6.10	July 1.73
1921 ..	93	12	5	3	2	..	..	1	..	..	..	..	116	34.41	Oct. 5.89	Feb. 0.72
1922 ..	101	17	9	3	..	1	1	..	1	..	..	..	133	42.81	Feb. 6.62	April 1.73
1923 ..	151	6	5	4	..	1	1	..	..	..	..	1	169	47.04	April 9.76	Mar. 1.72
1924 ..	132	8	10	5	2	5	1	1	..	2	..	..	166	60.37	April 8.55	July 1.87
1925 ..	142	15	4	2	..	..	..	1	..	..	..	..	164	37.64	June 6.67	April 0.84
1926 ..	149	15	6	4	5	2	2	..	..	..	..	..	183	55.53	May 8.86	Feb. 1.79
1927 ..	159	10	6	5	..	4	..	..	..	..	..	..	184	45.33	July 6.29	April 2.01
1928 ..	125	7	9	2	3	2	2	1	..	..	..	..	151	47.30	May 7.52	Jan. 0.01
1929* ..	21	2	2	..	1	..	..	..	..	..	..	..	26	5.98	Mar. 3.83	Feb. 0.74

* First three months of year only.

The following is a general summary of the work carried out by the Department during the year :—

DREDGES.

Included among the major works are the dredging of drainage canals, river-channel enlargement, and stop-bank construction. Eight dredges have been engaged on these works during the year, and the total quantity excavated was 619,911 cubic yards, at an average unit cost of 6.54d. per cubic yard.

The following table gives the total quantity excavated by the dredges during the past nine years :—

Year.	Cubic Yards.	Cost per Cubic Yard.
1920-21	 158,865	7.42d.
1921-22	 246,022	7.29d.
1922-23	 440,092	8.20d.
1923-24	 508,654	7.27d.
1924-25	 822,286	5.86d.
1925-26	 856,653	6.32d.
1926-27	 647,182	7.42d.
1927-28	 652,413	7.32d.
1928-29	 619,911	6.54d.

The channel-improvement works on the Piako River have reached a stage when a long-reach machine operating from river-bank can be used with economy, and No. 19 dredge is being altered for this purpose. River-channel enlargement is now completed between Ngatea and Kerepehi, and a considerable amount of work has been done on a 2-mile reach below Ngatea, and on the reach, $3\frac{1}{2}$ miles in length, between Kerepehi and Kaihere. The effect of the channel-enlargement is seen in the improved tidal range in the river and the more rapid discharge of flood-water.

Stop-banks have now been raised to final level on both banks of the Puhanga spillway, and on the left bank of the Piako River from the mouth to 8 m. 8 ch., and from 8 m. 60 ch. to 14 m 45 ch. On the right bank of the Piako River the stop-banks have been completed from the mouth to 4 m. 15 ch., and from 8 m. 5 ch. to 11 m. 10 ch.

No. 1 Priestman dredge was engaged on Piako River channel enlargement during April, September, and October, and on the Awaitei and Elstow Canals during June, July, and August, but has been laid up since the 27th November. During the time the plant was working it excavated 24,022 cubic yards, at unit cost of 9.31d. per cubic yard.

No. 2 Priestman dredge made good progress in the Maukoro Canal. The canal-head was advanced 65 chains during the year, and is now 6 miles 65 chains from the main-road bridge at Waitakaruru. A section of the canal commenced last year was also deepened. The highest point on the canal route has now been passed, and four dams have been required to raise the water-level in the canal 30 ft. above mean sea-level. Fuel for the dredge is now delivered by the Torehape Road tramway to a point about 25 chains ahead of the dredge. The year's output was 72,881 cubic yards, and the unit cost 5.53d.

No. 6 Priestman dredge was engaged on Piako River channel enlargement below Ngatea, and also removing willows. Owing to the restricted space at Ngatea Township it was not possible to dispose of all the spoil excavated by the usual method of bank delivery, and barges had to be used to dispose of some of the excavated material. Excessive bank-caving prevented the excavation of the channel to the required section in this locality, and work will be resumed after allowing time to regain stability. This dredge was also engaged excavating trenches in the bed of the Piako and Waihou Rivers to receive electric cables. The quantity of material excavated during the year was 26,502 cubic yards. The unit cost was 12.2d. per cubic yard, which is satisfactory considering the nature of the work on which the plant was engaged.

The cost of extracting willow-stumps along 50 chains of river-bank was £2 10s. per chain.

No. 11 Kingston dredge was in commission during nine months of the year, deepening the Awaitei Canal and raising the stop-banks. Two shifts were worked during three months. Trouble due to bank caving in this canal is now less than formerly, as the water-level was controlled by means of dam and sluice-gates; but to prevent the stop-banks from slipping or sinking into their mud foundations it is necessary to raise them gradually. This dredge handled 39,076 cubic yards of material, at unit cost of 7.45d.

No. 15 Bucyrus drag-line was building stop-bank and road on the left bank of the Piako River near Kaihere during April and May, and was engaged on similar work on the Awaitei Canal during the following three months. After complete overhaul, carried out at the Kerepehi workshop, this machine was used to build the approaches for the Awaitei Canal Bridge and the Kaihere Ferry, and in January commenced the construction of stop-bank along the lower Elstow Canal, which forms the southern boundary of the Kerepehi Block. The foundation on which this embankment is being built has a surface covering of 3 ft. to 4 ft. of peat, and to reduce the seepage under the finished bank a trench is being excavated through the peat by the dredge on the centre-line of the embankment. This trench is then filled with the material used for the embankment, forming a bond with the clay substratum. When working conditions have been suitable for night-work two shifts have been employed. 85,777 cubic yards of material was excavated, at a cost of 8d. per cubic yard.

No. 16 Bucyrus drag-line, operating on the left bank of the Piako River, completed the raising of the stop-banks of the Puhanga Island Block with spoil obtained by widening the river-channel. In August this machine was transported by barge to the 6 m. 40 ch. peg, and carried out similar work on the left bank of the river for a distance of 2 miles 48 chains to Ngatea Bridge. Special methods were adopted for widening and deepening the waterway under the Ngatea Bridge, a steam-winch on a barge being used to haul the Page bucket between the bridge-piers. At the end of February the machine was taken 2 miles 35 chains up the Awaitei Canal, and is now widening the canal and constructing stop-bank and road on left bank of the canal from this point southwards. Working two shifts, 107,937 cubic yards of material was moved during the year, at unit cost of 6.8d. per cubic yard.

No. 23 steam dipper dredge excavated 3 miles of the upper Elstow Canal through exceptionally soft fibrous peat country. Dredging in this type of peat material presents some peculiar features. Various expedients must be adopted to refloat the dredge when stranded by upheaval of the canal-bottom, or release it from the grip of the collapsed canal-banks. A floating mass of fibrous material behind the dredge makes coaling difficult. After a shallow channel has been excavated through this material, time must be allowed for the peat to consolidate before attempting to deepen the channel. In excavating 3 miles of canal the dredge removed 107,731 cubic yards of material, at unit cost of 4.84d. per cubic yard.

No. 24 steam dipper dredge commenced the construction of the Waitoa Drainage Canal in the Tahuna district in May of last year. It has completed this canal, 3 miles in length, and returned to Kerepehi at the end of March after removing some shoals in the river *en route*. As the land through which the canal passes rises considerable above summer water-level of the Waitoa River, into which it discharges, two dams were required to raise the dredge as the canal advanced. The dredge worked two shifts to the 21st November, when the upper end of the canal at the Whakahoro Road had been reached. While returning, the primary cut was enlarged to the required canal section and one shift was employed. The plant excavated 155,988 cubic yards during the year, at cost of 6.08d. per cubic yard.

PIPIROA-WAITAKARURU DISTRICT.

This district now includes part of the Hauraki West Drainage District. The principal activities of the Department were construction work on the Waitakaruru-Maukoro Canal, cleaning 41 miles 34 chains of main drains, and widening and deepening 5 miles 43 chains of drain, requiring 10,855 cubic yards of excavation. A short deviation of the road on the eastern side of the canal has been made preparatory to the dredging of a drainage canal along the southern boundaries of Sections 8 to 12, Block X, Wharekawa Survey District, and southwards on the Pouarua Road Reserve.

The peat land along the Waitakaruru-Maukoro Canal is responding to the improved drainage conditions, and shows good prospects for future development.

CENTRAL DISTRICT.

The usual maintenance work has been carried out in this district. Drains of a total length of 13 miles 47 chains were cleaned, and 10,731 cubic yards of spoil excavated in widening and deepening 3 miles 63 chains of drain. In 3 miles of new drain-construction 7,636 cubic yards of material was excavated. Roadwork includes 2 miles 78 chains of formation on the Ngatea-Kaihere Road and metalling 1 mile 77 chains of this road, formation and metalling 37 chains of the Kerepehi-Kaihere Road, formation of 40 chains of new road on southern boundary of the Kerepehi Block, and 35 chains at Kaihere. Some 620 cubic yards of clay was delivered by tramway to raise embankment near Kaihere.

A bridge across the Awaitei Canal at Kerepehi was completed in November, when a ferry was also installed on the Piako River at Kaihere, providing a connection through the Kerepehi Block. As the 2½ miles of road through this block is metalled it provides an outlet for the Kaihere and Patetonga districts which will be appreciated in the winter.

To provide relief for unemployment special works were undertaken this year, and over a period of six months ninety-two workmen were employed planting flax, felling 278 acres of scrub, sowing 551 acres with grass-seed, and also on road and drainage work. The area planted with flax was 568 acres of low-lying land near Kaihere Wharf which cannot be economically protected from flooding.

Huts and cookhouses were provided at a camp near the Kaihere Ferry to accommodate the fifty men engaged on this work. Flax-plants that would have been destroyed by construction works were transplanted, and additional plants required were obtained by thinning out in swamp areas having thick natural growth of flax. The transplanted flax is now well established, and the potential value of these flax plantations appears to fully justify the planting of additional areas of waste land.

All stores, fuel, and construction material are delivered from the central depot at Kerepeehi, and two launches are engaged on this work. Kerepeehi has been the headquarters for a large number of workmen engaged on works connected with the Piako River improvement scheme and the many minor works carried out, including the raising and extension of the Waikoura Stream stop-bank, construction of 260 chains of fencing, the grubbing and spraying of blackberries, destruction of willows, cutting and hauling 539 white-pine logs for piles, earthwork timbering, dredge-pads, and other purposes.

PATETONGA DISTRICT.

A scheme for metalling 8 miles 20 chains of the Patetonga Main Road and 100 chains of the Patetonga Landing Road was inaugurated this year, and a contract let for the supply and delivery of 13,950 cubic yards of metal from a quarry which has been opened on land owned by the Hauraki Plains County Council. Owing to delays in the delivery of the crushing plant, the contractor supplied only 552 cubic yards of broken metal to the end of the period under review. The formation of access road to quarry, stripping of overburden at face, and installation of crushing plant occupied some time, but now that most of the preliminary work has been done sufficient metal should be supplied to lay first course on unmetalled gap in the Morrinsville-Patetonga Road before the winter. The formation of the road for metalling is being carried out with the Department's road plant, and 2 miles of formation has been completed. 1,262 cubic yards of clay was carted for filling depressions and haunching metal where the road-bed consists of clay ballast laid on peat.

Drain maintenance included cleaning 42 miles 65 chains of drains, and excavation of 2,883 cubic yards in widening and deepening of 3 miles 33 chains. The tramway service for the conveyance of goods from Patetonga Wharf to township was maintained, and permanent-way repaired.

AWAITI DISTRICT.

Steady progress has been made with the main drainage scheme for the Elstow-Awaiti district. The peat on the line of the Upper Elstow Canal had been sufficiently consolidated by hand-dug drains to allow a shallow channel to be dredged for the entire length of the canal. This preliminary canal will be deepened after allowing time for further consolidation of the peat, and in the meantime the drain connecting with the Elstow Drainage Board's main outlet at Tirohia-Otway Road is being widened, and road-bridge constructed, to provide a new drainage outlet early this winter for the lower portion of the central area of the Elstow Drainage District.

The portion of the drainage system of the Netherton Settlement discharging into the Waihou River was taken over by the new Netherton Drainage Board in September. During the year 13 miles 25 chains of drains were cleaned, 5 miles 71 chains of drain-improvement carried out, requiring 5,624 cubic yards of excavation, and 7,103 cubic yards excavated in the construction of 2 miles of new drain; 60 chains of road was formed on left bank of the Awaiti Canal, and 2 miles of road disked.

TAHUNA DISTRICT.

This district is now the Tahuna Drainage District, under the control of a local Board, but the Department has carried out a considerable amount of work this year in connection with the Waitoa Drainage Canal. The canal is 3 miles long, and provides a direct outlet to the Waitoa River for the western area of the Waitoa Drainage District. Four 35 ft to 30 ft span rolled-steel joist bridges on pile abutments have been constructed on the canal, and about 240 chains of fencing. The completion of these works within one year is satisfactory, as the settlers have been anxious to secure the drainage improvement before the coming winter.

STRUCTURAL WORK.

Particulars of the bridges built during the year are: Awaiti Canal Bridge—total length 117 ft., five spans, all hardwood; Paeroa-Tahuna Road Bridge—one 35 ft. span, rolled-steel joists and hardwood abutments and deck; two access bridges of 30 ft. span, rolled-steel joists with hardwood deck and abutments.

A 4-ft.-diameter one-barrel flood-gate, and 3-ft.-diameter pipe culvert, 100 ft. long, were completed at Hopai during the year, and a similar flood-gate is under construction at Rawerawe. A large 4-ft.-diameter two-barrel flood-gate and 4-ft.-diameter road-culvert at Pipiroa are nearing completion. A temporary flood-gate was constructed at Ngatea, where slide of river-bank after dredging damaged a permanent structure.

A combined kitchen and dining-room, 54 ft. by 16 ft., was constructed at Kaihere for accommodation of workmen, and a large hut and several small huts were re-erected or moved to this camp. A small cottage of three rooms was built for ferryman, one settler's house was moved for deviation of road, and two cow-sheds removed and re-erected with concrete floors and yards.

Excavation to enlarge the waterway under the Ngatea Bridge necessitated the placing of additional sway-bracing on several piers. A small wharf was constructed on the Piako River, repairs to buildings and bridges carried out, and two houses painted.

PLANT, MACHINERY, AND STORES.

No important additions were made to the plant during the year, which is the same strength as last year, and comprises ten dredges and excavators, seven launches, steam-tug, two metal barges, four general-service barges, six tractors, extensive road and general construction plant, and machine-shop equipment.

The workshops and stores at the Kerepeehi depot have been busy with general construction work, repairs and alterations to dredges and other plant. Stores are all received at Kerepeehi and distributed to the various works.

SURVEYS AND OFFICE-WORK.

Engineering and land surveys carried out during the year required $14\frac{1}{2}$ miles of theodolite survey (chiefly in connection with flax-planting areas), $3\frac{1}{4}$ miles of compass survey, 80 miles of levels, and $16\frac{1}{2}$ miles of cutting. Over 300 cross-sections of river and canals were taken, and 130 borings, varying in depth from 4 ft. to 20 ft., were made for subsoil investigation. River stage records and discharge measurements were obtained as required for flood-control investigations.

SUMMARY.

The total length of the subsidiary drains constructed in connection with the Hauraki Plains drainage-works is now 613 miles.

The principal works carried out this year are summarized in the following schedule:—

					Length. Miles ch.	Excavation. Cub. yd.
Drains cleaned by manual labour	..	..	..	..	134 14	..
Drains widened and deepened by manual labour	..	..	..	..	18 49	27,174
Drains—new construction by manual labour	..	..	..	..	5 7	15,441
Stop-bank repairs by manual labour	..	..	..	..	0 10	408
Total spoil excavated from drains by manual labour						43,023
New canals constructed by machines	..	..	..	..	7 0	308,073
New stop-banks constructed by machines	..	..	..	..	0 65	35,928
River and canal improvements, machine construction	..	..	..	..	5 71	275,910
Total spoil excavated by floating and land excavators						619,911
Stop-banks raised and strengthened	..	..	..	..	4 21	..
New roads formed	..	..	..	..	1 55	..
Roads regraded and improved	..	..	..	..	5 35	..
Roads disked and graded	..	..	..	..	3 20	..
Roads metalled	..	..	..	..	3 0	6,063
Clay ballast carted for peat roads	..	..	..	..	..	1,262
Fences erected	..	..	..	..	6 63	..
Levels taken	..	..	..	..	80 0	..
Traverses	..	..	..	..	18 0	..
Bridges constructed (pile foundation)	..	..	..	..	..	Number. 5
Buildings erected or moved	..	..	..	..	..	5
Small wharf constructed	..	..	..	..	..	1
Flood-gate, 4 ft. diameter barrel	..	..	..	..	..	1
Road-culvert, 3 ft. diameter barrel	..	..	..	..	..	1
Area planted in flax	..	..	..	..	..	Acres. 568
Area cleared of scrub	..	..	..	..	..	278
Area sown with grass-seed	..	..	..	..	..	551

FLAX LEASES.

Some nine flax leases are in operation, covering a total area of 3,095 acres, on which the annual rental totals £1,587 3s. The actual revenue received for the year amounted to £590 17s. 3d.

GRAZING-AREAS.

The area leased for grazing purposes under temporary tenancies is 9,931 acres, held by fifty-two settlers.

The annual rental totals £567 7s., and £516 6s. 1d. was collected during the period.

FUTURE PROPOSALS.

The principal works to be carried out during the next financial year are—

- (1) Piako River dredging and improvement of stop-banks.
- (2) Continuation of Waitakaruru-Maukoro Canal.
- (3) Continuation of Elstow-Awaiti flood protection, drainage and road work.
- (4) Construction of stop-bank on southern boundary of Kerepeehi Block.
- (5) Construction of drainage canal on Pouarua Road Reserve.
- (6) Completion of Ngatea-Kaihere Road metalling, and continuation of Patetonga Main Road metalling

The sum of £17,240 18s. 2d. was collected during the year, of which £7,075 14s. 4d. was in respect of rates.

I wish to thank the staff for their loyal support, and to express my appreciation of the work carried out by employees in all branches.

Chief Drainage Engineer

The Under-Secretary for Lands, Wellington.

HAURAKI PLAINS SETTLEMENT ACCOUNT.

RECEIPTS AND PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1929.

[illegible]

REVENUE ACCOUNT FOR THE YEAR ENDED 31ST MARCH, 1929.

Dr.	£	s.	d.	Cr.	£	s.	d.
To Interest on debentures issued under Hauraki Plains Settlement Act, 1926	31,446	14	11	By Accrued rents	11,036	14	1
Interest on expenditure from Public Works Fund	202	16	0	Rates	7,759	6	1
Interest on temporary transfers from other accounts	1	1	11	Interest on investments	704	6	11
Administration expenses	423	15	4	Interest on sales of land, &c.	267	19	6
Maintenance of completed works	3,804	11	10	Interest allowed on sinking-fund contributions	325	5	10
Rates written off consequent upon area being taken over by Drainage Boards	1,993	13	10	Miscellaneous	727	18	4
Rebate of rent	626	17	3	Net loss carried down	20,597	15	5
Rebate of rates	52	1	2				
Remissions of rent	836	11	4				
Refund of rates	344	18	3				
Irrecoverable rents, &c.	1,132	15	10				
Irrecoverable rates	553	8	6				
	<u>£41,419</u>	<u>6</u>	<u>2</u>		<u>£41,419</u>	<u>6</u>	<u>2</u>
	£	s.	d.		£	s.	d.
To Net loss brought down	20,597	15	5	By Adjustment on account of previous year	2	2	0
Balance from previous year	64,107	11	1	Sinking Fund reserve	4,837	13	8
				Balance	79,865	10	10
	<u>£84,705</u>	<u>6</u>	<u>6</u>		<u>£84,705</u>	<u>6</u>	<u>6</u>

HAURAKI PLAINS SETTLEMENT ACCOUNT—*continued.*

BALANCE-SHEET AS AT 31ST MARCH, 1929.

[illegible]

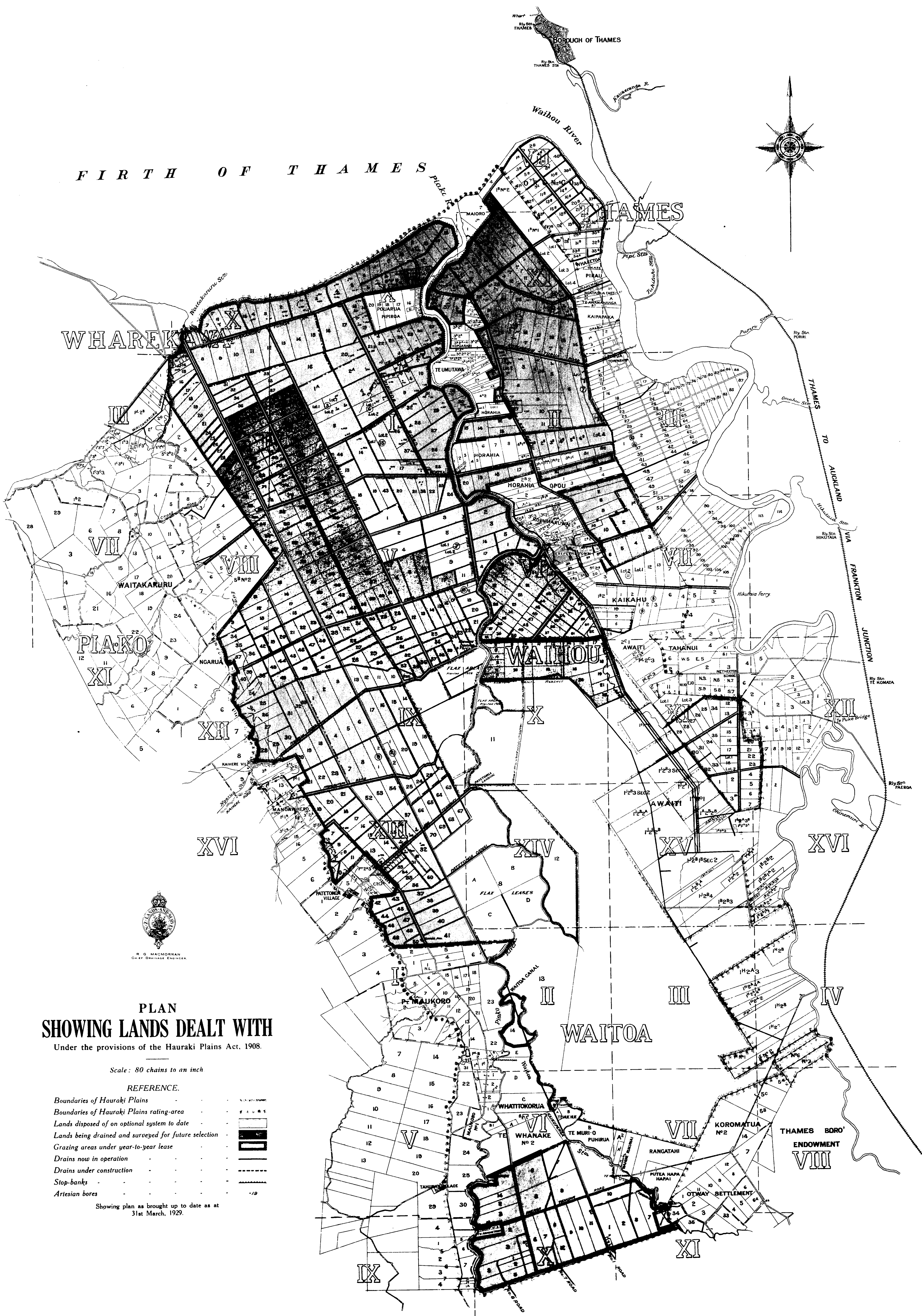
J. B. THOMPSON, Under-Secretary for Lands.
J. H. O'Donnell, Controller of Accounts.

I hereby certify that the Receipts and Payments and Revenue Accounts 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. The following comments are appended: (1) In the opinion of the Audit Office interest charged on works in progress should be capitalized. (2) A Bad Debts Reserve should be created. (3) Suggestions in reference to the treatment of expenditure on lands already handed over for settlement were made to the Department, but no action has yet been taken.—G. F. C. CAMPBELL, Controller and Auditor-General.

Approximate Cost of Paper.—Preparation, not given; printing (700 copies, including map), £42 10s.

By Authority: W. A. G. SKINNER, Government Printer, Wellington.—1929.

Price 1s. 6d.]



PLAN SHOWING LANDS DEALT WITH

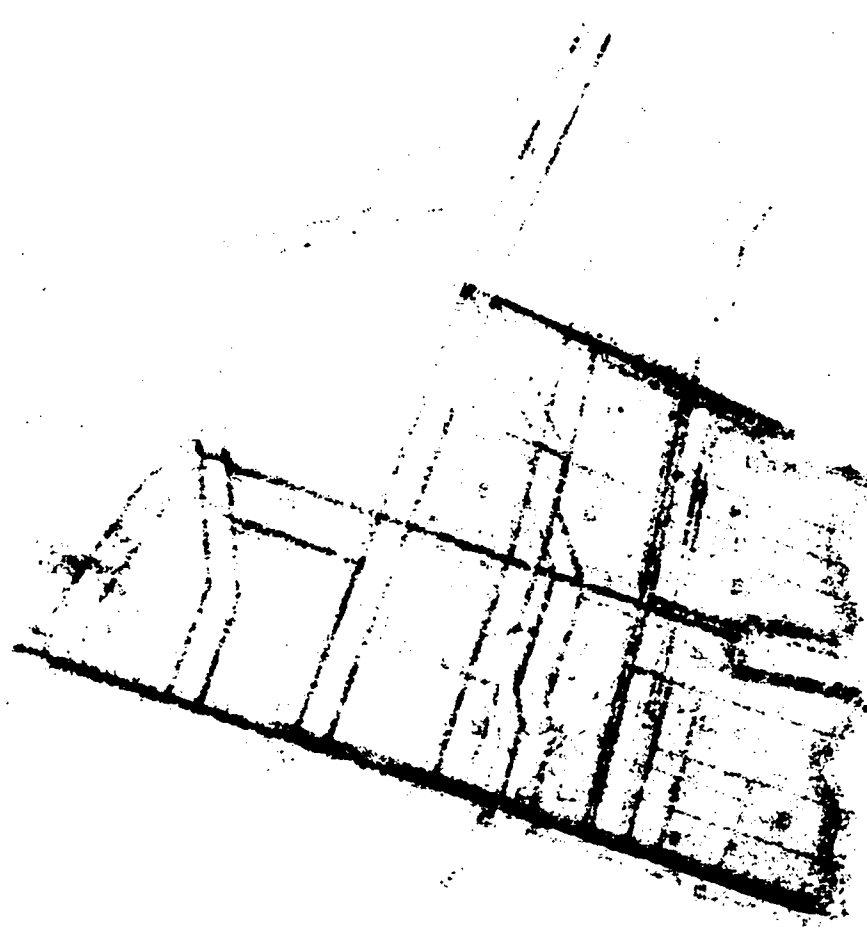
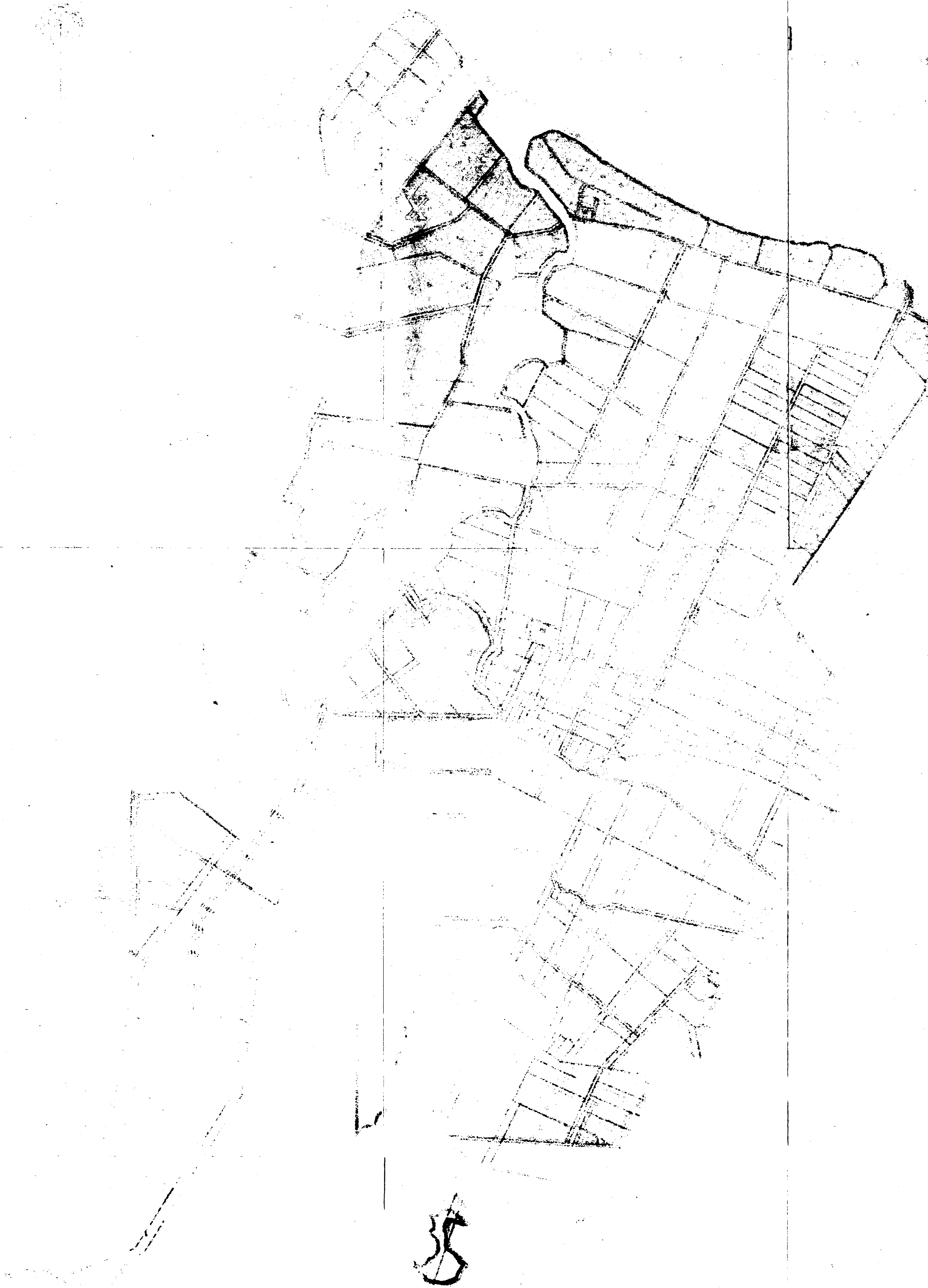
Under the provisions of the Hauraki Plains Act, 1908.

Scale: 80 chains to an inch.

REFERENCE.

<i>Boundaries of Hauraki Plains</i>	-	-
<i>Boundaries of Hauraki Plains rating-area</i>	-	
<i>Lands disposed of on optional system to date</i>	-	
<i>Lands being drained and surveyed for future selection</i>		
<i>Grazing areas under year-to-year lease</i>		
<i>Drains now in operation</i>	-	-
<i>Drains under construction</i>	-	-
<i>Stop-banks</i>	-	-
<i>Artesian bores</i>	-	-

Showing plan as brought up to date as at
31st March, 1929.



11