

1950
NEW ZEALAND

DEPARTMENT OF LANDS AND SURVEY

Drainage Operations in Hauraki Plains

REPORT FOR THE YEAR ENDED 31st MARCH, 1950

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, 22nd August, 1950.

In accordance with the provisions of the Hauraki Plains Act, 1926, I have the honour to present the forty-second annual report on drainage and land-development operations carried out on the Hauraki Plains during the year ended 31st March, 1950.

I have, &c.,

D. M. GREIG,

Director-General of Lands.

The Hon. the Minister of Lands.

REPORT

SINCE the last report was published the Department's Chief Drainage Engineer has retired, and by arrangement the field and engineering works carried out by him in the past are now discharged by the Ministry of Works, which has supplied the information on which this report is based.

A mild winter with adequate yet low rainfall and practically no inundation of productive lands this year has seen a most favourable season for the dairying industry on the plains, and production figures supplied show £1,772,968 for this year, compared with £1,504,635 for the 1948-49 season.

Rainfall for the year ended 31st March, 1950, at Kerepeehi was 35.80 in., the lowest since 1932, when 32.05 in. was noted, and considerably below the average of 43.53 in. for the last thirty-seven years. Greatest rainfall, 5.51 in. was recorded for the month of June, while rain fell on 142 days, and a fall exceeding 1 in. in twenty-four hours was noted on five occasions only, the heaviest fall, 2.38 in. being recorded on 8th May. The driest month was January, when 0.06 in. was recorded, while the rainfall for the four months of December, January, February, and March was only 4.5 in.

Throughout the year only a limited amount of new construction work has been undertaken, general maintenance on river channels, canals, and main drains absorbing all of the Department's available labour. Additional labour has been utilized in the letting of outlet-drain-cleaning contracts to settlers in certain areas.

Large canals and river channels have been cleaned and reformed by machine, and canal extensions, representing construction work, has continued.

Stop-bank and floodgate construction and repair for local Drainage Boards has been carried out with departmental and private machines under Works Department supervision as under :—

HAURAKI UNITED DRAINAGE BOARD

One hundred and thirty chains of stop-banking on the right bank of the Piako River below Ngatea was constructed by the Department's machine No. 16 (Bucyrus). This work was subsidized by the Soil Conservation and Rivers Control on a 3 : 1 basis.

HAURAKI PLAINS WEST DRAINAGE BOARD

Seventy chains of stop-banking on the left bank of the Waitakaruru River between the State highway bridge and Indian's Culvert was carried out by contract under Works Department supervision. Major repairs and alterations to Indian's flood-gate were also undertaken by the Department.

Construction by contract of 32 ft. of reinforced-concrete 4-ft.-diameter culvert with floodgate on the Kairito Canal preparatory to stop-bank construction was carried out. These two works carried a 3 : 1 subsidy from the Soil Conservation and Rivers Control Council and were satisfactorily completed.

EXCAVATORS

Seven drag-line excavators have been in operation by the Department in the area throughout the year on stop-bank and canal construction and on river channel improvement and arterial drain cleaning and reformation. For these machines a high standard of maintenance has been provided by the Kerepeehi Works Depot during the year, but with depletion of stocks of essential spare parts difficulty is now being experienced in keeping these machines constantly in repair.

Details of work, including chainage and yardage, is as follows :—

No. 15 Bucyrus ($\frac{3}{4}$ Yard) Excavator.—This excavator has been employed during the year clearing *Poa aquatica* from the Piako River and Puhunga Canal. One hundred and twelve chains of river were completed and a total of 19,650 cubic yards removed, at a cost of 1s. 5-4d. per cubic yard. This work is wholly financed by the Soil Conservation and Rivers Control Council.

Endeavours are being made to obtain an improved type of bucket for this work ; also trials will shortly be carried out with tractor and V grader operated on prepared berms in an endeavour to reduce maintenance costs.

No. 16 Bucyrus ($\frac{3}{4}$ Yard) Excavator.—This machine was engaged on raising 90½ chains of stop-banks on the east side of the Piako River for the Hauraki United Drainage Board, for whom the work was done on a 3 : 1 subsidy. Work was completed in October, 1949, but on request to the Hon. the Minister that a further 40 chains of stop-bank be raised on 3 : 1 subsidy basis, it was granted by the Soil Conservation and Rivers Control Council. Total length of stop-bank raised, 130½ chains, with 23,110 cubic yards of spoil, at a cost of 1s. 1d. per cubic yard.

No. 29 Bay City ($\frac{3}{8}$ Yard) Excavator.—This machine carried out 344 chains of drain-improvement work and 27 chains of the southern extension of the Pouarua Canal. Total excavation, 19,027 cubic yards, at a cost of 1s. 11-8d. per cubic yard.

No. 31 R.B. 17 ($\frac{1}{2}$ Yard) Excavator.—Following the annual overhaul to this machine in April, 1949, it commenced improving 107 chains of Torehape Road Drain. Nine hundred and forty-eight cubic yards of shingle excavated from 20 chains of this drain was loaded on to trucks and used for metalling Torehape Road.

In August the excavator was moved to the Maukoro Canal, west side, near Torehape, and work was commenced on improving 46 chains of canal.

In January, 1950, following repairs, the machine completed 40 chains of excavation on the Maukoro Canal Extension. The object of this channel is eventually to divert the Waikoura Stream into the Maukoro Canal, thus relieving the overtaxed Ngarua Canal and providing a much more direct discharge to the sea. Output of this machine during the year was 24,188 cubic yards, at a cost of 10-3d. per cubic yard.

No. 34 R.B. 10 ($\frac{3}{8}$ Yard) Excavator.—In May this excavator commenced widening and deepening Kaihere Road Drain, south side, for a distance of 20½ chains. In June the machine was moved to Outlet Drain, Sections 35/36, Kerepeehi Block, when 65½ chains of drain was completed. In September and October, 24 chains of drain, Sections 34/35, Kerepeehi Block, was completed, also 43 chains of Central Outlet Drain improved.

In November the excavator was moved to the Waikoura Outlet, where it cleaned 58 chains. In February it cleaned the Central Road Drain for a distance of 64 chains. Total excavation for year was 18,589 cubic yards, at a cost of 1s. 8d. per cubic yard.

No. 35 P. and H. ($\frac{3}{8}$ Yard) (American) Excavator.—This machine continued with the cleaning and deepening of the Central Drain. A distance of 164 chains was completed on 12th August, 1949. It then commenced improving the west boundary drain, Section 7, Block IX, Waihou Survey District, for a distance of 21 chains. Since September the excavator has been employed widening and deepening Mangawhero Road Drain, and at the end of March had completed 154 chains. The total output for the year was 27,915 cubic yards, at a cost of 1s. 2-4d. per cubic yard.

No. 40 Jacques ($\frac{3}{8}$ Yard) Excavator.—During the year this excavator has been engaged removing *poa aquatica* and silt from the Pouarua Canal for a distance of 228 chains, widening and deepening 86 chains of the Orchard West Road Drain, and improving Hopai Road Drain for a distance of 58 chains. This machine excavated 19,412 cubic yards of spoil, at a cost of 1s. 10-3d. per cubic yard.

Machine work by contract was 12,530 cubic yards, forming 70 chains of stop-bank, in addition to the 130 chains of banking comprising 23,110 cubic yards as shown for machine No. 16 above. Machine work totals for banking, cleaning, and construction during the year are as follows:—

By Excavator.	Chains.	Cubic Yards.
Stop-banking	200	35,640
Cleaning and reformation	1,795	115,281
Canal extension	67	13,500

A comparison of excavator costs for the last six years is given below:—

Year.	Cubic Yards.	Cost Per Cubic Yard.
		d.
1944-45	171,603	9·13
1945-46	121,505	8·79
1946-47	79,186	11·79
1947-48	144,126	10·50
1948-49	155,455	12·42
1949-50	151,891	17·60

The costs schedule shows practically the same output in yardage for 1949-50 as in preceding years but, as the higher costs indicate, considerably more machine-hours.

This apparent reduced output per hour is considered to be due to the changing class of work now being performed by the excavators.

Records show that 1949-50 has been a period when little new work involving heavy earthworks has been undertaken and when drain canal and river cleaning has absorbed a far greater number of machine-hours than in any previous year.

Maintenance and drain-cleaning work, although increasing in chainage, does not result in such high yardage quantities as that produced when excavators were engaged in the comparatively heavier capital works of new drain, canal, and stop-bank construction carried out in past years.

In future it is intended that drain and canal cleaning, including such work as *Poa aquatica* clearing, will be shown for purposes of costing on a chainage basis.

MANUAL DRAIN-CLEANING

Additional to the above machine drain-cleaning, considerable labour was employed in cleaning section outlet drains as follows:—

		M. ch.
Drains cleaned by departmental labour (manual)	44 45
Drains cleaned by contract labour (manual)	46 14

PIAKO RIVER AND PUHUNGA CANAL (WILLOW-CLEARING)

During the year approximately 300 chains of bank on the Piako River and Puhunga Canal have been cleared of willow. The method used has been satisfactory, and consists of felling all willows in early spring, and when new growth appears on the stumps, one spraying of Weedone, a hormone-type spray, is applied. Except where adverse weather conditions affected the work, a 90-per-cent. "kill" has been obtained. The work is financed by the Soil Conservation and Rivers Control Council.

KAIHERE FERRY SERVICE

This ferry service has been adequately maintained during the year and has functioned uninterruptedly since reconditioning last year. Expenditure, including wages, &c., amounted to £623 19s. 11d., while receipts were £259 2s. 3d.

PUMPING-STATION, KEREPEEHI

Due to the low rainfall during the year and the even spread of the winter rains, the flood-pump at Kerepehi operated only for brief periods to keep the stop-banked area of 4,000 acres free of water. Running-time totalling 123 $\frac{3}{4}$ hours was recorded, while 119 $\frac{1}{2}$ hours was the total for 1948-49.

WORKSHOPS AND DEPOT

The fitting-shop and blacksmith's shop have been constantly occupied in repairs and maintenance on excavators, motor-vehicles, launches, and plant throughout the year, while the carpenters have been fully employed in floodgate construction and repairs, building construction and maintenance, and bridge maintenance.

DETAILS OF ANNUAL PRODUCTION

The following figures show the annual production for the Hauraki Plains for the year ended 31st March, 1950, with the 1948-49 figures in parenthesis:—

				Value.	
				£	£
Butter (tons)	..	2,986 (3,021)	718,664	(691,820)	
Cheese (tons)	..	5,664 (5,077)	745,433	(643,093)	
Pigs	..	8,000 (8,023)	48,000	(48,036)	
Bobby calves	..	19,190 (18,870)	23,550	(22,879)	
Cattle, sheep, &c.	..	18,835 (22,579)	70,819	(98,807)	
Totals	£1,606,466	£1,504,635	

FUTURE OPERATIONS

Investigations will be commenced, when survey staff are available, into possible improvements to the discharge capacity of the Lower Piako River, and to the continuation of the Maukoro Canal southwards.

Experiments into peat fertilizing and controlled water-levels have been carried out by the Soil Fertility Research Station, and further experiments are planned with assistance from the Soil Conservation and Rivers Control Council.

An extensive engineering survey of the Hauraki Plains is at present being carried out by the Hauraki Catchment Board.

EXPENDITURE AND RATES

Expenditure on maintenance for the year amounted to £4,883.

Rates struck : £3,367.

Rates collected, including arrears : £3,423.

Net expenditure on construction works, £19,972.

The amount shown as expenditure on maintenance and construction works may be subject to slight variation on completion of accounts.

STATEMENT OF ACCOUNTS

A statement of accounts is published in parliamentary paper B-1 [Pt. IV].

STAFF

I wish to thank the officers of the Ministry of Works for their co-operation during the year and also make special reference to Mr. E. Taylor, who has retired from the position of Chief Drainage Engineer. He was associated with drainage projects during the greater part of his career in the Public Service, during which time he came to be held in very high regard by members of the staff and settlers alike.

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