

that have been completed. Owing to erosion taking place at some points it will be necessary to construct small protective works, as the line of the stop-banks will otherwise be eventually threatened. The construction of the necessary concrete flood-gates was also undertaken, and so far seven of these have been completed.

Supplies.—Last winter puriri had to be used in place of coal as fuel on the Priestman dredge. This was due to the difficulty in the previous summer in obtaining coal; and when coal was obtainable the Awanui-Kaitaia Road was unfit for carting. However, this winter there will be no difficulty about fuel, as six months' supply for all dredges has been obtained and carted on to the most convenient points. The position with regard to the supply of timber has eased considerably, and it is not anticipated that there will be the same difficulty in obtaining the supplies required for carrying out the work.

Surveys.—During the year six and a half miles of road was surveyed, also one mile of river-diversions. The subdivision of 4,100 acres of Crown land was completed, and the boundary between two other sections was adjusted to conform with the drainage scheme. The field-work for eleven miles of stop-bank along the Pairatahi, Awanui, and Waipapakauri Rivers was completed.

Proposed Works for Year 1922-23.—The following is the list of major works proposed to be carried out during the next year: (1) Dredging Kaitaia River; (2) dredging Waihoe channel; (3) dredging Whangatane spillway; (4) deepening drains, Pukepoto district; (5) linking up stop-banks and construction of flood-gates.

Works Expenditure.—The total expenditure for the year was £32,158 7s., which sum includes the price of the new dredges. The principal items were—Day labour, £7,562; piecework, £7,316; and hire of teams, £1,259.

During the year the Engineer, Mr. R. J. Cornwell, resigned his position with the Department, and the works are now carried out under the supervision of Mr. R. G. Macmorran, Land-drainage Engineer.

WAIHI DRAINAGE AREA (22,720 ACRES), TAURANGA COUNTY.

The development of this scheme was advanced a further stage during the year, as Priestman dredge No. 5 reached the Main East Coast Road whilst engaged in excavating the Wharere canal. The dredging of 108 chains of this canal cost £1,995 11s. 1d., whilst the total spoil removed was 77,535 cubic yards, averaging 6.17d. a cubic yard. This dredge is now engaged in deepening this canal as it proceeds down towards the Waihi estuary. The construction of this canal has enabled some of the subsidiary drains on the western side to be undertaken, but the full effect of this canal will not be felt until the dams in the canal are removed. These dams were constructed behind the dredge so as to keep the water-level at an even height for the flotation of the dredge.

The following table shows the amount of spoil dredged and costs per cubic yard for the last five years:—

						Cubic Yards.	Cost per Cubic Yard.
1917-18	..	..	..	..	..	55,538	4.57d.
1918-19	..	..	..	..	..	20,780	7.67d.
1919-20	..	..	..	..	..	44,250	9.29d.
1920-21	..	..	..	..	..	63,495	7.77d.
1921-22	..	..	..	..	..	77,535	6.17d.

The new drains constructed between the Wharere and the Kaikokopu total 240 chains. These drains form part of the scheme for draining the area which was surveyed into sections last summer. Some 75 chains of the Mangatoetoe Stream, from its junction with the Kaikokopu Stream, were improved, so that now the final depths have been obtained. This work will have to be continued during the coming year. The clearing of 120 chains of drain was also carried out.

At the beginning of 1922 two American steel dipper dredges, with steel pontoons, were transhipped to this area. One was delivered at the upper end of the Pongakawa River, near the railway, whilst the second was delivered in the Waihi estuary.

The erection of the former was commenced towards the end of January. The steel pontoon was launched, and the erection of the machinery is now well under way, and this plant should be working in May. This dredge will commence on the straightening of the Pongakawa River, working from the upper end. This work will necessitate the construction of practically a new channel, as the old channel is very narrow and tortuous. The dredge will use kerosene instead of coal as fuel, and consequently this will reduce to a minimum the cost of transportation.

As soon as the first dredge is completed the erection gang will shift down to the estuary and commence the erection of the second dredge, which will carry out work at the lower end of the Pongakawa River.

The development of the roading and draining of the area of Crown land that has been subdivided will be carried on during the coming year, whilst the draining of the freehold lands south of the railway will also be attended to.

With regard to land for selection, certain sections along the Main East Coast Road are now available, and by next summer still more sections should be available.

The total cost of the works during the year (including the new dredges) was £22,324 19s. Day labour amounted to £2,342 15s. 9d. The Engineer in charge is Mr. R. G. Macmorran, Land-drainage Engineer.

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

Owing to the dispute with the Native owners of portion of the area affected by this scheme being still unsettled, it has been impracticable to start operations on this area.

The pontoon and buildings are in good order, and are in charge of a caretaker, who takes readings of the rainfall and the lake-level. The rainfall for the year was 29.31 in., which is practically an average rainfall, as our records show an average fall of 29.56 in. during the past five years. The expenditure for the year was £165 12s. 8d.