

PLANS.

The following plans are enclosed to illustrate the report:—

- A. General plan of the watershed of the Wairau River and its tributaries. (Scale, four miles to the inch.)
- B. General plan of the Wairau and the surrounding country. (Scale, one mile to the inch.)
- C. Plan of part of the Wairau Valley, showing boundaries of the local bodies as at present constituted.
- D. Plan showing the mouth of the Wairau Harbour, and the bar as in May, 1917.
- E. General plan of Cloudy Bay Survey District of 1880, for comparison with B.

PHYSICAL CHARACTERISTICS.

The Wairau River rises in the Spencer and St. Arnaud Mountains, which attain to an altitude of over 7,000 ft. It has an approximate length of 108 miles, entering the sea in Cloudy Bay. It has a remarkably even fall for the last eighty miles of its course, and an exceptionally straight course until about fifteen miles from the sea. This facilitates the discharge on to the delta-plain of large quantities of shingle, which are brought into the main river by the very numerous tributaries, which have a very steep fall.

On reaching a point about twelve miles from the sea the river forms a delta, geological evidence showing that the position of the mouths of the river has varied from near the Vernon Bluff to White's Bay. At the present time the main body of the river flows down the northern side of the delta, and then takes a course to the south-west under the influence of the accumulation of shingle due to the littoral drift.

That very little water had flowed down the southern side of the delta for many years is shown by the fact that when settlement began, and up to 1860, the ground at present occupied by what is known as the Opawa River was covered with a heavy growth of manuka, scrub, and other vegetation. When the Wairau River was exceptionally high a certain amount of water found its way through this vegetation into what was then the Opawa Creek. This creek was quite small, not wider than a chain, with banks 7 ft. to 8 ft. above water-level. The water was easily crossable on foot at normal times.

The land adjoining the junction of the Tuamarina River with the Wairau, the Lower Valley of Pukaka, certain portions of Fox's Island, and the land to the west of Blenheim were swamps. These swamps acted as regulators in the time of flood, becoming filled with the overflow, and thus lessening the chances of the slightly higher and first-settled lands being inundated.

HISTORY AND CONDITION OF PRESENT WORKS.

As settlement advanced the scrub was cleared, the first effect of which was to allow more water to escape from the Wairau River, particularly at what is known as the "Opawa breach." Further, the swamps were drained and occupied, and in their efforts to save their properties from flood the settlers began to erect stop-banks, frequently around their individual holdings, and without regard to any system or consideration of allowing the necessary waterway. In addition to the clearing of the scrub, a misguided individual cut a ditch from the Wairau River into the head of the Opawa Creek, and successive floods rushing through this opening quickly enlarged it, forming a channel 20 to 30 chains in width, carrying away many hundreds of acres of good land, and causing disastrous floods.

Realizing the gravity of the situation, the Provincial Government made costly and ineffectual efforts to close the breach, spending over £11,000 on the work. On the failure of these efforts the settlers began to build banks on both sides of the new channel of the Opawa to protect their lands. The continuous increase in the water coming down the Opawa led to destruction of parts of these banks, and the Opawa threatened to leave its channel at various points and flow into Blenheim.

The Lower Wairau River Board (constituted in 1874) decided in 1879 to close the Opawa breach. They constructed works for this purpose, but before their com-