

water discharged into the different branches and tributaries of the Wairau might be approximately as follows :—

	Square Miles.	(A) Occasional Floods. Cusecs (Cub. Ft. per Sec.).	(B) Rare Floods. Cusecs (Cub. Ft. per Sec.).
1. Waihopai and tributaries	340	34,000	61,200
2. Omaka and tributaries	60	12,600	18,000
3. Fairhall and Spring Creek	50	11,100	15,500
4. Taylor	20	9,200	12,600
5. Tuamarina	40	9,200	12,600
6. Pukaka	20	5,000	6,600
7. Balance : Wairau and its tributaries north and west	1,100	60,500	104,500
Largest possible total to sea at outlet		141,600	231,000

Taking 1(B), 2(B), 5(B), and (7B) as flowing under the Wairau railway-bridge gives 196,300 cusecs, while 1(A), 2(A), 5(A), and 7(A) gives 126,500 cusecs. Mr. Widdop's calculated flood-discharges under this bridge are : November, 1915, flood, 100,450 cusecs ; July, 1916, flood, 106,800 cusecs ; November, 1916, flood, 116,100 cusecs ; but if allowance is made for the escape of a portion of the Wairau flood-waters down the Opawa and over the stop-banks at other places it is probable that the actual discharge in the Wairau, just below its junction with the Waihopai, of the biggest flood recorded, would be in the neighbourhood of 160,000 cusecs. The biggest flood-discharge in the Opawa under the railway-bridge may be estimated at about 60,000 cusecs, which is made up of flood-water from the Omaka, say, 18,000 cusecs, and the balance, 42,000 cusecs, from the main Wairau River at Renwicktown. Of this Opawa discharge it is estimated that some 41,000 cusecs flow down Rose's Overflow channel, since below that point at the Nelson Street traffic-bridge the maximum flood-discharge appears to be only some 19,000 cusecs.

As regards the Fairhall and Taylor Rivers, flowing through Blenheim Township, it is estimated that the probable flood-discharge from these two rivers at their junction may, in the case of ordinary floods, amount to 20,000 cusecs, and that in the case of exceptional floods this quantity may be increased by at least 30 per cent. These rivers flow into the old Omaka channel which winds through the Township of Blenheim ; and since the average discharging-capacity of this channel does not exceed 16,000 cusecs, it will at once be seen that the projected diversion of the Fairhall River into the Opawa would be a step in the right direction, as it would divert probably some 11,000 to 15,000 cusecs from flowing right through and flooding the township. If this were done, however, since it would add some 11,000 to 15,000 cusecs to the Opawa discharge, and as the Opawa channel down to Rose's Overflow is already taxed to its full capacity, it would be necessary at the same time either to close up the entrance to the Opawa altogether and so prevent any Wairau flood-water from entering it, or else, by some method of control at the entrance, to so regulate the admission of flood-water from the Wairau that the maximum quantity admitted in time of flood would not exceed, say, 10,000 cusecs. This latter method would, in the opinion of your Commissioners, be the most advisable one to adopt, as in that case the navigable depth of water in the lower Opawa channel would be scarcely interfered with, whereas if the Opawa entrance were closed up altogether the average water-level in the reaches of the Opawa below Blenheim might be permanently lowered, to the detriment of navigation.

By this latter method the actual flood-waters passing through or adjacent to Blenheim are reduced from a total of 88,100 cusecs to 56,100 cusecs, and are passed down two channels as follows : the Opawa, carrying 10,000 cusecs from the Wairau, 18,000 from the Omaka, and 15,500 from the Fairhall, discharges 43,500 cusecs, and the Taylor, taking only its own flood-waters, carries 12,600 cusecs. These quantities are within the carrying-capacities of the channels, so that Blenheim, by getting relieved of 32,000 cusecs of flood-waters, becomes immune from flood-overflows.

Doubtless some opposition to such a scheme will come from settlers on the lower banks of the Wairau and Spring Creek district, seeing that a certain portion of the Wairau flood-water at present diverted down the Opawa would be thrown back into the Wairau, and so to some extent augment the floods in the latter. But, as already pointed out, your Commissioners are of the opinion that in order