

conveying without overflowing the banks. This can only be effected by the interception of the drainage from the basins of the Sutton, Deep, and Lee Streams, the principal tributaries of the lower portions of the Taieri. We have considered the possibility of doing this, but have ascertained that these river basins afford no suitable sites for reservoirs, their slope being very great, and valleys extremely narrow.

The probable damage that would be incurred by land exposed outside the proposed flood banks is more imaginary than real, as the construction of the two reservoirs will have a marked effect upon the height to which the floods will rise, considerably reducing also the time that the land would remain under water; while, if laid down in grass and used for pasture, an occasional flooding of short duration would be of great service in recruiting the soil. There would also be no risk of losing stock, which has hitherto been the case, owing to the proximity of the flood bank.

It may, in conclusion, be remarked that after careful survey and levels have been made of the Silverstream area, it is possible that a considerable portion may be embanked without too much encroaching upon the space necessary for the passage of the floods, but which will nevertheless resolve itself into the question whether the cost of the works required will not be out of proportion to the good effected. From the information at our disposal we find ourselves unable to reply to this, so that we prefer recommending that at this point, where the river channel is so defective, ample water-way be allowed by leaving the whole area open as at present. The cost of embankments in this locality would be very heavy, because of their height, the necessity that exists for carrying them up both sides of the Silverstream as far as the railway, the provision that would be necessary for carrying off the drainage from the surrounding hills, and in consequence of the works which would be required for the passage of the water flowing down the Owhiro Creek, which would have to be discharged through large sluice-gates inserted in the flood bank.

The area of land exposed to floods, deducting the Waipori and Waihola Lakes, and low land in their vicinity, is about forty square miles, of which twenty-eight square miles will be protected by the proposed works, and twelve square miles left exposed, which will include all the land on the Silverstream area, as well as what lies between the proposed flood stop-banks and the hills from Greytown to the East Taieri Road Bridge.

Taking the estimated cost as before shown to be £95,800, it will amount to about £7 5s. per acre that will be protected. In addition, however, to the land that will be benefited by these works, it must be borne in mind that about eight miles of the Dunedin-Invercargill Railway will be saved the cost of repairs necessary after each successive flood. The railway bridge over the Taieri River on the Outram Branch line will also be protected, and possibly saved from complete destruction. The road bridge over the river at Greytown may also be saved from further damage, though it would be a decided advantage to the free flow of the current were it swept away, as the original portion of the work is little better than a dam tending to obstruct the flood water, thereby increasing the evil effects felt there owing to the contracted nature of the river channel.

It will be noticed that the effect of the proposed works leaves a portion of the plain still unprotected and liable to be flooded. The calculations are, however, based upon data afforded by an extremely high flood, which is of exceptional occurrence. The flood of 1879 was not a remarkably high one, nevertheless the discharge of its water at Outram Railway Bridge was estimated at 3,750,000 cubic feet per minute. The effect of the works now proposed is calculated to reduce an extremely high flood to the moderate dimensions of a discharge at Outram of 2,869,400 cubic feet per minute, a result which we think is satisfactory when all the circumstances of the case are carefully considered.

We have, &c.,

The Hon. the Minister for Public Works,
Wellington.

C. NAPIER BELL, M. Inst. C.E.
H. P. HIGGINSON, M. Inst. C.E.
W. N. BLAIR, M. Inst. C.E.

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