

1885.

NEW ZEALAND.

# PROTECTIVE WORKS BY WAIRAU RIVER BOARD

(REPORT ON), BY MR. GEORGE BLACKETT,

*Return to an Order of the House of Representatives, dated 11th August, 1885.*

*Ordered, "That there be laid before this House a return showing the effect of certain protective works made under the direction of the Wairau River Board of Conservators, and a report from Mr. George Blackett upon the same."—(Mr. Dodson.)*

Mr. J. G. BLACKETT to the ENGINEER-IN-CHIEF, Wellington.

SIR,—

Public Works Office, Nelson, 27th July, 1885.

In accordance with instructions received I have the honour to inform you that I have made a complete examination of all the works erected on what might be termed the "pile-and-wire principle" by both the Lower Wairau Board of Conservators and the Spring Creek Board of Conservators, and beg to submit the following report:—

I will first briefly describe the construction of these works. They may be described generally as wing dams, consisting of round birch piles, varying in diameter according to circumstances up to 12in., and varying in length up to 25ft. These piles are shod with ordinary iron shoe up to 25lb., and are driven into the ground as far as 16ft. in some cases, in others less; they are generally spaced at about 18ft. apart, but sometimes much closer; the piles are driven in such a line and of such a length as it is considered will deflect the current of the river from the bank below, which it is desired to protect.

After the piles are satisfactorily driven, eight cables, of three strands of No. 6 ordinary black fencing-wire, are fixed to the upstream side of piles, with strong staples at regular intervals, generally about 8in. apart, and the dam is then ready to do its work. At the same time, where on dry land, willows are planted on upstream side of wires, and fastened to them, and, where in water, are thrown in front and anchored to piles and wires.

The Spring Creek Board of Conservators tried the plan of close wattling the wires with manuka, but with, I think, indifferent success.

The piles and wire alone collect *débris* and rubbish in the course of one or two floods in sufficient quantities to make an efficient dam, and the piles and wire themselves sufficiently check the current of the river to cause at once large deposits of silt and shingle behind them. This bank of deposit after a while grows to upstream side of dams, and in some cases I saw dry land where there was 6ft. or 8ft. of water when the dam was in course of construction. It then only remains to plant the ground so reclaimed with willows, to make it permanent before the piles in the dam have become rotten.

I examined five different works erected by the Lower Wairau Board of Conservators and three erected by the Spring Creek Board. In the first instance I found all the dams in fair condition, and all doing good work, whilst in the second case I found good results being obtained, but the works had suffered much more, possibly owing to the fact that they were close wattled, and also to error of judgment in choice of position. On the whole, however, it must be admitted that the results obtained are unquestionably good, and that they would have the further merit of being comparatively cheap and easily erected, even in deep water.

I am not aware of any other system which would, for the same money, have effected so much as this has, and would have no hesitation in recommending their adoption in any shingle-bearing river.

With regard to cost, I find that the works erected by the Lower Wairau Board of Conservators cost on an average about £23 10s., whilst those of the Spring Creek Board cost £24 per chain.

I enclose a tracing showing generally the mode of construction.

In conclusion, I have to thank the Chairman of the two River Boards for their courtesy in showing me the various works, and giving me all information required as to mode and cost of construction.

I have, &amp;c.,

J. GEO. BLACKETT.

Resident Engineer.

The Engineer-in-Chief, Wellington.

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