

I do not put forward this rectification of the channel below the bridge as a work necessary for immediate execution, seeing that the scouring action of the currents, when aided by the effect to be derived from the training and stop banks, may be fairly expected to bring about a very decided improvement both in the line and depth of the channel course; it could only be determined after the lapse of a reasonable time—say twelve or eighteen months—how far the newly-trained currents would assist, without dredging, in the creation of such a channel as is shown upon the drawing.

The training and deepening above-bridge, shown by red colour on plan and section, Drawing No. 2, would still further improve the tidal development and add to the scouring effect, but, like the channel deepening below the bridge, I do not put them forward for immediate execution.

I desire, in conclusion, to express my thanks to Mr Halse (the Chairman) and to Colonel Trimble and Mr Webster, members of the Waitara Harbour Board, who accompanied me at the time of my visit to the locality, and rendered me every possible facility in the course of my inspection; nor must I omit to mention that Mr F. A. Carrington, of New Plymouth, accompanied me on my visit to the Waitara, and was good enough to furnish me with a copy of a plan made from a survey of the tidal compartment and entrance of the river, admirably executed by him, in the years 1841–42–43, and showing its condition at that time.

The Secretary, Marine Department, New Zealand.

I have, &c.,
JNO. COODE.

WESTPORT, BULLER RIVER.

SIR,—

5, Westminster Chambers, London, S.W., December, 1880.

I have the honor to submit my report on the works which I have to recommend for the improvement of the entrance of the Buller River, at Westport, in order to remove the bar which now obstructs it, and for the deepening and training of the channel up to and beyond the existing coal-staiths and wharves along the frontage of the town.

With this report I beg to forward three drawings, which, with the description and explanation hereinafter given, will fully elucidate my views and recommendations. Drawing No. 1 contains a plan and section of the Buller River, based on a survey by Mr O'Connor, C.E., which was made in accordance with a memorandum framed by me when in the colony; this plan and section show the course of the river, and the levels of the bed, together with the several water-lines between the Nine-mile Ferry and the sea, on a scale of 1,000 feet to the inch. Drawing No. 2 has been prepared in order to show in detail the works referred to; these works are in each case indicated by red colour. Drawing No. 3 gives sections and other particulars indicative of the mode of construction I should recommend for adoption.

Physical Features.

Watershed and Rainfall.—The Buller River (Kawatiri) takes its rise for the most part in the district lying on the western flanks of the two lofty ranges known as the Spencer and St. Arnaud Mountains (Mount Franklin, situated in the former, being 10,000 feet above the sea), and on the eastern and western flanks of the Victoria Range; there are also a few minor tributaries of the Buller which flow down from the southern slopes of the Merino Mountains. The river enters the sea in a due northerly direction at the Town of Westport, where the coast runs due East and West, and about eight miles to the eastward of Cape Foulwind. Only one of its tributaries is trapped by a lake (Rotoiti), and, therefore, as remarked by Dr. Hector, it is subject to exceptionally heavy floods. The total area of the watershed of the Buller is 2,340 square miles, and the average annual rainfall 95 inches. The floods in this river are occasionally very severe, more especially when, as often happens between October and January, heavy rainfall may occur, simultaneously with such a temperature as to cause the snow to melt in the higher regions. In proof of the extent to which the Buller is affected by floods, I may mention that at the head of the tidal compartment—viz., opposite Waimea Creek, which is about five miles from the sea—ordinary floods will raise the water-surface to the extent of 18 feet above the level of high water of average spring tides; whilst the flood of November, 1877, raised the water in this part of the river no less than 28 feet above high-water springs.

Depth on the Bar under existing conditions.—It will be readily understood that floods of such magnitude cause a considerable scour on the bar, but the Harbourmaster, Captain Leech, states in his register that “heavy floods have a tendency to widen and flatten the bar rather than to increase the depth.” This remark, although correct under certain conditions of wind and sea, will not hold good on all occasions of heavy river flooding, as very much must depend upon the character of the sea on the coast and bar at the time when the floods may occur. According to exact records kept since October, 1875, it appears that the average depth on the bar at high-water springs, from that date to March of last year, was 14 feet. When at Westport, Captain Leech stated to me that from January, 1873, to July, 1876, the depth at high-water springs averaged about 16 feet, but that about the latter date shoaling commenced, and continued until