

It will be observed that I have adopted the price of 6s. 8d. per cubic yard for the stone, which ought, in my view, to be found sufficient, having regard to the large quantity required, and to the fact that the general yield of the quarries for size may be taken without selection, so long as the stone is hard and durable.

With regard to the proposal made by Mr. Jordan, the Engineer to the Harbour Board, in his report to the Chairman of that body—namely, to endeavour to increase the depth in the channel, pending the receipt of this report, by dragging heavy harrows across the shoal by one of the small steamers plying in the port—I desire to point out that if such a course has been adopted, and has proved efficacious in obtaining limited and partial relief (and this, I gather, was all that was expected therefrom), such benefits must of necessity, having regard to the agencies in operation, be of a temporary character only, and require frequent application. The true and permanent remedy is to remove from the fairway of the main navigable channel the conflicting agencies now in operation which tend to the formation and growth of the shoal, and this, I have no doubt, will be accomplished by the training bank I have recommended.

I desire to express my obligation to Mr. Edgecumbe, Chairman of County Council, to Mr. McKellar, Collector of Customs, and to Mr. Turner, in charge of the Survey Department. These gentlemen kindly attended during the time of my inspection and facilitated my local inquiries; nor must I omit to mention that the Harbourmaster, Captain Marks, furnished me with all the information I desired to obtain within the scope of his department.

I have, &c.,

The Secretary, Marine Department, Wellington.

JOHN COODE.

THAMES RIVER (WAIHO).

SIR,—

5, Westminster Chambers, London, S.W., June, 1879.

I have now the honor to submit my report on the improvement of the entrance to the River Thames.

I should premise that, at the time of my inspection, the Harbour Board brought under my notice certain proposals in the way of new works, which they regarded as matters requiring immediate attention, and desired that my views thereon should be communicated to the Government before I left the colony.

These proposals were: (1.) A new timber-jetty near Te Kopu, 395 feet long, and extending out to 5 feet or 5½ feet of water at low water, on the east bank of the river. (2.) An extension of the present wharf at Shortland, 200 feet in length, and in the same line as the existing wharf. (3.) An extension of the present goods wharf at Grahamstown, 105 feet in length, and in continuation of the present line. (4.) The reinstatement of the Tararu Jetty, raising the level of the deck 4 feet higher than in the original structure, and utilizing the materials thereof as far as practicable. (5.) A reclamation of the foreshore between the Grahamstown Passenger Wharf and the Powder Magazine, by the construction of a timber facing to trap the mining waste as it comes down. (6.) Repairs and renewals at the Grahamstown Goods Wharf. So far as practicable these works are shown by brown colour on the drawings sent herewith, which I have had prepared from data supplied by the Harbour Board.

As will doubtless be remembered, I reported before leaving Auckland that neither of the above proposals would interfere with the works which I should have to suggest when dealing with the general question of harbour and river improvements.

So far as regards the extension of the Shortland Wharf, the reinstatement and lengthening of the Goods Wharf at Grahamstown, and the reclamation of the foreshore between the Grahamstown Passenger Wharf and the Powder Magazine, it is unnecessary here to offer any further remarks.

Tararu Jetty.

The first of the further works to which I have to direct attention is the extension of the Tararu Jetty. Assuming that this jetty will have been reinstated, as proposed, and that the level of the deck has been raised to the extent of 4 feet, I would recommend that it be extended in a west-north-west direction for a length of 600 feet from its outer termination, in the manner shown by red colour on Drawing No. 1, and on Figs. 4, 5, and 6, Drawing No. 2. I have fixed upon this direction for the extension in order that vessels lying alongside may be “end-on” to the sea. It will be observed from the detailed views that it is proposed to adapt the jetty for berthing vessels along either face. The deck would be 40 feet in width over-all, and at an uniform level of 10 feet above high water of ordinary spring tides. The structure would consist of bays of round piles placed at intervals of 10 feet, measured along the jetty, four piles to each bay, firmly braced and tied with horizontal and diagonal timbers, and supporting a deck formed of whole and half barks, carrying planks of 3 inches in thickness. Provision would be made for laying a double line of railway hereafter, if deemed desirable, when the re-entering angle between the existing structure and the north-east face of the new extension would be filled by a triangular addition, as shown by a dotted line on Figure 4. The railways on the extension could thus be placed in direct communication with the land system by curves, around which it would be practicable to run vehicles without necessitating the use of a turntable.

I would recommend that the whole of the timber required for this extension, except that for the deck, should be of totara, and that the deck should be of matai. The timbers for those portions of the work which would be in the water, and exposed to the attacks of sea worms, should be as free as possible from sap. Both the *teredo navalis* and the *limnoria terebrans* have a strong partiality for sapwood in all varieties of timber; but if especial attention is paid to the selection of the wood for the submerged portions of the structure, there is every reason to believe that totara will be found an admirable material for this jetty. It has, moreover, a further advantage of being a timber of colonial growth.

The proposed extension would afford berthage of 1,150 feet in length along its inner and outer