

The accumulation outside of the breakwater and its proposed extension, back as far as the Mikotahi bank, I calculate at 400,000 cubic yards. For years past a bank has been forming between Mikotahi and the mainland, where formerly the sea at almost low water rushed through, carrying with it enormous quantities of sand on to the breakwater. On this bank, which had mounted to the top of high water, spring-tides, prison-labour has all but completed a wall of rough blocks of stone, which will effectually cut off both sea and sand from coming that way. The beneficial effect of this work is very apparent, as, on the south side of it, the beach in the bay between Mikotahi and the Fishing Rock is now being piled up with sand that would otherwise have been driven through, to the further injury to the harbour. This sandbank, together with that driven up on the beach of the Fishing Rock bay, is estimated at 110,000, and will remain permanently in its present position, to the protection of harbour-works.

I have taken a line of soundings directly between Mikotahi and the Lion Rock, and find this passage to have a sandy bottom throughout, with the exception of a small patch of rocks near the former, and another, with only 4ft. of water upon it at low tide, 500ft. from the latter. The shallow flat north and south of this passage, as well as the Fishing Rock bay, is also sand bottom, with an occasional rock. These localities were not sounded by Mr. Jones in 1877, so no comparison can be made; but I feel confident that no change of any importance has taken place. I mention it, as the nature of the bottom of these shallow flats, over which the heavy seas of the west and south-west gales run, must have an important place in any discussion on the cause and cure of the sand difficulty.

The information now obtained and recorded will be of great service in the future for comparison. The spit should be surveyed occasionally to ascertain the changes, more especially after heavy weather. Once in six months will probably be often enough for the outside, as, through its being spread over so large an area, any marked change will necessarily be slow, and not easily detected at short intervals.

In conclusion, to form a channel through the present spit, straight out from the end of the wharf, of 150ft. in width, and giving 8ft. at low spring-tides, would require the removal by dredging of 8,000 cubic yards of sand.

30th March, 1889.

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Chief Surveyor.

[Approximate Cost of Paper.—Preparation, nil; printing (1,200 copies), £1.]

By Authority: GEORGE DIDSBURY, Government Printer, Wellington.—1889.