

1888.

NEW ZEALAND.

NEW PLYMOUTH HARBOUR WORKS

(REPORT ON), BY THE ENGINEER-IN-CHIEF.

Presented to both Houses of the General Assembly by Command of His Excellency.

MEMORANDUM for the Hon. the MINISTER having Charge of the MARINE DEPARTMENT.

SIR,—

Marine Department, Wellington, 10th April, 1888.

I have the honour to forward herewith a report on the harbour works at New Plymouth, in accordance with directions contained in a letter from the Assistant Secretary, Marine Department, dated the 27th March. These directions were, “to proceed to New Plymouth for the purpose of examining and reporting upon the alleged accumulation of sand near the breakwater there, and of stating whether, in my opinion, the sand is likely to increase, and whether it is probable that it will be a permanent injury to the harbour; and, if so, the best means of removing it and preventing it again accumulating: furnishing at the same time an estimate of the cost of doing this.”

I will first shortly describe the general features and extent of the harbour works which have been executed to date. These consist of a concrete breakwater of a total length of 1,950ft., the top of which is about 8ft. above the level of high-water spring-tides. This structure for about 1,200ft. projects into the sea in a north-easterly direction, then for the remainder of its length its direction is altered by a very easy curve to east-north-east, thus partially enclosing a sheltered area of harbour lying between it and the shore to the east of it. Within this sheltered area has been erected a landing-wharf extending to about 1,300ft. from the shore-line, not alongside of the breakwater, but at a distance from it of about 150ft. The wharf itself is about 350ft. long, and is joined to the root of the breakwater by a curved gangway carrying a railway for the passage of locomotive engines and trains of wagons. It is also fitted with cattle-yards and race, &c., for the loading of cattle and sheep. At times when it would be impossible for vessels to lie alongside of the breakwater owing to the sea breaking over it in large volumes, vessels can lie in smooth water alongside the wharf on either side of it, thus permitting the safe and easy discharge or loading of goods, &c., at all times. The depths of water at this wharf are—at the outer end 15ft., at the middle 12ft., and at the inner end 10½ft., at low water, the rise and fall of tide being about 12ft.

In a north-north-west direction from the root of the breakwater, and at a distance from it of about 450ft., lies the rocky island of Mikotahi, itself being also about 450ft. long in the same direction. Before the harbour works were begun Mikotahi was at the time of high water an island joined to the mainland by a rocky reef, swept clean by the passage of the tidal waters, and offering at time of low water an easy means of access to the island. After the erection of a portion of the breakwater, sand began to accumulate on this reef, and as the works progressed the accumulation increased in width and height up to the present time, when it presents the appearance of a broad bar or bank of sand, extending from the root of the breakwater to the island, the top of the bank being considerably above high-water level, and the sides of it, respectively, forming flat, sloping beaches to the east and west. That to the west extends along the boundary or sea-wall of the block-yard, against and over which the sand is heaped up by the action of the wind. That to the east extends along the outer line of the breakwater, where it has gradually shallowed the water to such an extent that the sand forming it has found for itself a passage round the end of the breakwater, whence it has formed a narrow spit across the entrance to the harbour, extending for a distance of about 450ft. in a direction nearly at right angles to that of the breakwater, and thus barring to a certain extent the direct approach of vessels proceeding to the wharf.

This sandspit is pear-shaped in plan, with the narrow end next the breakwater; and the broad end, which is about 50ft. wide, was lately visible at low water of spring-tides, where before there was a depth of about 14ft. of water. The height of this spit has, however, of late been observed to be variable, there being at present about 18in. more water on it than was observed a fortnight ago.

A further deposit of sand, which has apparently come over the breakwater during heavy storms, has taken place along the inner face of the breakwater, covering a length of about 900ft., and a width varying from about 100ft. at the outer end to about 70ft. or 80ft. at the inner end, or nearly