

side, and straightening what is now a tortuous and narrow entrance. A sum of £4,000 is provided in the estimates for a groin upon the Waikanae Beach. This might be carried out in the shape of a timber training-wall to protect that beach to low-water mark, which would keep the sand from entering, and at the same time concentrate both flood- and ebb-tide over the bar, thereby improving the river-entrance for small craft, which will always prefer to reach the wharf in close proximity to the town. The extremity of the present work just reaches the shallowest part of the bar, which the Harbourmaster, Mr. J. Bennett, states was much closer in, with a wider entrance, before the breakwater had attained its present length. The channel now runs almost alongside the end of the breakwater, and close to the extremity, so that he fears both bar and spit will follow the works outward; also that upon their completion the depth of water will decrease in consequence of the deposit from the river after flood.

I consider that the work is not yet far enough advanced to prove in any measure what the permanent effect will be. So far, the action has only been what was conjectured would take place. That a flood in the river would scour out the sandbanks near its mouth and deposit the material in the bay is undeniable. This has, probably, always occurred; but, when works contemplated upon both sides of the river are constructed, I do not anticipate that the sand forming the bar will be again driven inside. When sufficient protection is afforded, the bar will be flattened out by the first flood; and, being protected from the action of the sea, it will not be again driven back to shallow the entrance, as is now always the case.

I examined both the Taruheru and Waimata Rivers, which unite to form the Turanganui. The former is tidal for six miles, beyond which it is a mere creek. The latter is the main tributary, draining about a hundred square miles, and is tidal for nearly five miles from its junction. Both these rivers have decided banks, well protected with vegetation, and betraying little action from flood-scour. At low tide the shallows are covered with fine mud or silt. Above the tidal limit the latter river has a decided fall over a rocky and gravelly bed, and, at the time of my visit, could be easily forded on foot. Ordinary freshes occur yearly, during which the water rises a little above spring-tide level. Heavy floods are experienced only at long intervals, that of 1875 having risen 5ft. above high-water mark, and that of 1879 about a foot higher. The features of the banks are reported to show little change, and even during the heavy floods very little timber or sand is said to be brought down; the banks of the Turanganui near the town consisting of pure sand resembling that in the bay, which is evidently carried up on the flood-tides. A certain amount of silt and fine sand in suspension must undoubtedly be brought down; but this would probably be conveyed by the current along the face of the pier well into the bay. The heaviest seas roll in from the south-east, in which direction the bay is quite open, being dangerous to vessels at anchor in the roadstead, or working the bar. These seas break evenly, and more or less parallel to the Waikanae Beach. The mouth of the river, being to a great extent sheltered by outlying reefs, does not experience their full force, though sufficiently to render the bar dangerous, and drive the sand back, reducing the depth of water upon it. The farther the present work is extended, the greater the protection afforded to the entrance of the river.

In the preamble to "The Gisborne Harbour Board Empowering Act, 1884," I find that it was intended to afford accommodation generally to shipping of large tonnage, and to form a "harbour of refuge for the East Coast." A considerable section of the ratepayers hold the view that, whatever scheme is carried out, it should be so designed as to form a harbour that eventually, at all events, would admit the largest class of ocean-going vessels in all states of the weather; and it is with this object that the Stony Point scheme is still advocated. The Board's Engineer, in a report, pointed out that, although that scheme provided 24ft. of water against 21½ft. by the authorised one for the same expenditure of £175,000, yet an extension of the work by an expenditure of £250,000 would only take the former into the same depth, while the latter would reach 26ft. to sand and 30ft. to rock; also that the Stony Point scheme would reach deeper water first, but could not be utilised until nearly completed, owing to the foul and rocky bottom inshore; whereas the authorised scheme could be made use of as the work progressed, and extended at a future date, obtaining 5ft. greater depth for the expenditure of an additional £50,000. The Colonial Marine Engineer must have held the same views when he approved of the plan now being carried out.

A careful examination of the plans and soundings leads me to the conclusion that neither scheme will, for the expenditure of £250,000, constitute a harbour of refuge for the larger vessels trading to New Zealand, such as the "Kaikoura" and "Tainui." These boats draw 25ft. loaded, requiring in rough weather not less than 31ft. to 33ft. of water. There would be insufficient room in which to approach the shelter of the work and manœuvre vessels of that size. It is questionable whether even steamers would run for shelter before a south-east gale into a landlocked bay, but would in preference run round the East Cape. Either of the two schemes, if extended, could reach deeper water; being converging angles, they would meet in a depth of 30ft. Steamers of the size of the "Manapouri" and "Wakatipu," requiring 22ft. in fine and 25ft. in rough weather, are of a class frequenting the port, and would be expected to come alongside. So large an expenditure as £175,000 (which is the available amount) should at least afford accommodation for these boats in rough weather; yet I find that the Stony Point scheme has barely sufficient water at its extremity, while the authorised scheme does not, unless the scour along the face of the work removes the sand to the anticipated depth of 23ft., in which case there would be only a narrow gut alongside.

Comparing the two schemes, I consider that at Stony Point gains deeper water for the expenditure of the present funds, and at the same time, from its more eastward position, provides a larger area of deeper water and allows more room to vessels approaching it; also that, being farther from the river, there is less chance of shoaling from flood-deposits. The disadvantages are that it can be made little or no use of until approaching completion, owing to a foul and rocky bottom inshore. Its position is also farther from the town. I do not place much value on the