

1883.
NEW ZEALAND.

SURVEY OF WAIKOUAITI BAY

(REPORT ON THE).

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

Mr. W. H. SCOTT, C.E. to Mr. W. N. BLAIR, M.I.C.E., Engineer-in-Charge, Middle Island,
Dunedin.

SIR,—

Oamaru, 9th April, 1883.

I have the honour to forward herewith my survey plan of Waikouaiti Bay, and, in accordance with the Marine Engineer's memorandum, No. 502-34, dated the 28th November, 1882, to report as follows:—

Description of Bay.—The greatest length of the bay, measured between high-water marks, is 2 miles 26 chains; and the greatest breadth, from high-water mark on the beach to a line drawn from the outside of the north head to the outside of the south head, is 1 mile 10 chains. It is bounded on the north-east by a high hill, known as Matanic Head, or Cornish Head; on the north-west by a sandy beach, beyond which are sand-hills, and, at the back of these, at a distance of about a mile from the high-water mark, towards the north end of the beach, is situated the Town of Waikouaiti. On the south-west it is bounded by a rugged peninsula, which is about 200 feet high at the highest point. This peninsula is terminated by a rock about 30 feet high, known as the Shag Rock. The entrance of the bay, opening on the Pacific Ocean, forms its south-east boundary. The Waikouaiti River falls into the bay at its south-west corner. A reef of rocks runs out from each head, as shown on the plan. With the exception of these reefs, and a small reef at the mouth of the river, the whole of the bay has a bottom of firm sand, affording very good anchorage-ground.

Area.—The area of a harbour that could be made by constructing a breakwater from each head would be about 1,175 acres to low-water line, or about 700 acres outside of the five-fathom line. From all I can learn, the bay does not appear to be anywhere silting up.

River.—The river has silted up somewhat of late years, since navigation has ceased. This appears to be due chiefly to sand from the sea-beach and sand-hills being blown into the river.

Tides.—The rise and fall of ordinary spring-tides may be taken at 6 feet 6 inches, neaps at 4 feet 6 inches, and extraordinary springs at 8 feet. The direction of the wind has a great influence on the tides, westerly winds causing high and easterly winds low tides.

Currents.—The ocean-current runs from south to north, and enters and leaves the bay in the directions indicated by arrows on the plan. The velocity of the current within the limits of the survey is very small, varying from almost nothing to about 11 chains per hour. This does not refer to the tidal current in the river, which, at times, is very strong. In order to ascertain the direction and velocity of the current a small cask was loaded with a bar of iron on one side, then filled with water just sufficient to sink it. It was then suspended by a line 3 feet long, secured to a fishing-float, and this allowed to drift. The area exposed to the wind and ripple of the sea bore a very small ratio to the area of the cask under water, so there would be very little error due to the wind. Indeed, the line by which the cask was suspended appeared always to be quite slack and perpendicular, showing that the cask did not require much to support it, and that the float was not dragging it. On the other hand, the boat, which, in order to determine the position of the float, was brought alongside of it every five minutes, was carried to a considerable distance between each observation, although there was but little wind and the sea was comparatively calm.

Prevailing Winds.—Northerly and easterly winds prevail from November to May, and southerly to westerly winds from June to October. During fine north-easterly weather in the summer the breeze is usually from the land (northerly) in the early morning, and, as the day advances, it gradually works round to the north-east, from which direction it blows a strong breeze from about 9.30 a.m. till near sunset.

Line of Swell.—The swell usually comes in from the east or south-east. The heaviest seas are from these directions, but very heavy seas are not of frequent occurrence. The southern end of the