

PAPERS

RELATING TO

THE CONSTRUCTION OF HARBOUR WORKS AT NEW PLYMOUTH.

(Return to a Resolution of the House of Representatives, dated 31st August, 1870.)

“That a respectful Address be presented to His Excellency the Governor, to the effect that he may be pleased to cause plans and estimates to be prepared, with the view of constructing such Harbour Works at New Plymouth as shall enable small coasting vessels and steamers of light draught to discharge and take in cargo; and this with desire that such plans and estimates be submitted to the General Assembly in its next Session for adoption.”

(Mr. Carrington.)

PRESENTED TO BOTH HOUSES OF THE GENERAL ASSEMBLY, BY COMMAND OF
HIS EXCELLENCY.

WELLINGTON.

—
1871.

PAPERS RELATING TO THE CONSTRUCTION OF HARBOUR WORKS AT NEW PLYMOUTH.

No. 1.

His Honor F. A. CARRINGTON to the Hon. W. GISBORNE.

SIR,—

Wellington, 19th September, 1871.

In obedience to the resolution of the Honorable the House of Representatives, on the 31st August, 1870, that plans and estimates be prepared, with the view of constructing such harbour works at New Plymouth as shall enable small coasting vessels and steamers of light draught to discharge and take in cargo, &c., I have now the honor to submit for your inspection, and the inspection and consideration of the Honorable the House of Representatives, the plans, specification, and estimated cost of constructing the work in question.

The plans I beg leave to submit are:—

No. 1. General plan, showing proposed harbour and part of the town of New Plymouth.

Nos. 2 and 3. Plans showing proposed construction of work.

No. 4. Specification and cost of work, as now proposed.

No. 5. Tracing showing the harbours proposed by Messrs. Doyne and Balfour, at the Sugar Loaves, and off the town of New Plymouth.

I have, &c.,

FRED. A. CARRINGTON,

Superintendent of Taranaki.

The Hon. the Colonial Secretary, Wellington.

P.S.—I also beg leave to submit a resolution of the Provincial Council of Taranaki on the urgency of the proposed harbour.

F. A. C.

Enclosure in No. 1.

EXTRACTS from Minutes of Council.

Council Chambers, New Plymouth, Thursday, 20th July, 1871.

Resolved, That, in the opinion of this Council, it is desirable that the urgent necessity of a harbour, on the principle submitted by His Honor the Superintendent to the consideration of its Members, be impressed upon the representatives of this Province in the General Assembly, with a view to immediate action being taken, on the meeting of that body, for securing such a sum out of the Loan for Public Works and Immigration Purposes as will suffice for the execution of this most urgent and important work.

True extract.

WM. M. CROMPTON,

Speaker.

No. 2.

GENERAL DESCRIPTION and Estimated Cost of Construction of a Small Craft Harbour at New Plymouth, to accompany Plans to be laid before the House of Representatives.

FROM the settlement of the Province, the want of harbour accommodation at New Plymouth has been severely felt, as during the winter months, when a continuance of bad weather sets in, the landing and shipping of goods and passengers, for comparatively long periods, is attended with much difficulty. Efforts have from time to time been made by the local Government, to endeavour to provide a remedy for this great drawback to an otherwise favoured locality. And finally, Messrs. Balfour and Doyne, Civil Engineers, were employed to make a complete survey of the roadstead, and report on the best site for the construction of a Harbour of Refuge, together with designs and estimates of the construction and cost of such a work. This contemplated harbour was not only intended to provide for local requirements, but had also in view the wants of the Colony, in providing shelter for vessels on the West Coast, during stormy weather.

The Sugar Loaf Islands seemed, at first glance, specially adapted for the construction of such a work in their vicinity, as the abundance of stone on the spot apparently offered great facilities for cheap construction. But, as the survey proceeded, it became gradually apparent that the site first proposed at the Sugar Loaf Islands must give way in favour of the long reef opposite the town of New Plymouth, and which protects the present landing-place from the westerly gales.

The survey and estimates conclusively proved that for economical construction, area of deep water, and ease of access and departure of vessels, that the site opposite to the town was greatly superior to the one at the Sugar Loaf Islands.

The cost of constructing a Harbour of Refuge at the Sugar Loaves was estimated by Messrs. Balfour and Doyne at £750,000, while the same or better accommodation could be obtained on the long reef for about one-half that sum; they consequently recommended the adoption of the latter site for Harbour Works.

When this survey was entered into, it was anticipated that, in consequence of the national character of the work, it was one which properly devolved on the Colonial Government, to provide, in

the first place, a fitting dépôt to utilize the labour of Colonial prisoners for Colonial purposes; and, secondly, to provide on the west coast of the North Island a harbour in which vessels could find shelter from the destructive gales which often visit that coast.

As that anticipation has not hitherto been acted on by the Colonial Government, and the large proposals of Messrs. Balfour and Doyne are utterly beyond the means of the Province, however desirable they may be for the proper development of its resources, the subject was for some time abandoned. Still, the necessity of better harbour accommodation being keenly felt, efforts were renewed to call public attention to the subject, with the view of ascertaining whether a small harbour could not be constructed, suitable to our local wants, and not quite beyond the means of the Provincial revenue, with such assistance as the General Government could give by way of loan. With this object in view, the question was brought before the House of Representatives last Session, when a resolution was passed authorizing the expenditure of a sum of money to make a survey, and procure plans and estimates of the cost of construction of a small craft harbour, which plans and estimates were to be laid before the House during the next Session.

The survey was proceeded with during the recess, and when completed, it appeared that there were two reefs of boulders, which ran seaward, either of which was suitable for the purpose of forming the site of a sea wall or pier. The reef at the end of Queen Street was finally selected, as deep water could be reached at a less cost than by choosing the one nearer the long reef. The long reef extends seawards for upwards of a mile, curving to the North, and has the effect of breaking the force of the ocean wave, which sets in from the westward very heavy during gales from that quarter; and during stormy weather its course is marked by a line of broken water, and, except during very stormy weather, materially shelters the landing-place, and greatly lessening the surf.

The mode of construction proposed to be adopted in order to afford facilities for the landing and shipping of cargo, is to form a sea-wall or pier of packed boulders, having a slope of three horizontal to one vertical on the seaward side, and on the inner face an average slope of one horizontal to one vertical, rising in steps faced with framed timbers to prevent the slipping of the footing of packed boulders.

From high water to half-tide, a distance of 70 yards, the pier is formed of an inner and outer wall of boulders, the outer faces of which slope at an angle of one and a half horizontal to one vertical, the interior filled with loose rubble.

From thence to low water the outer wall would gradually widen its base until it formed an angle of three horizontal to one vertical; the inner wall being formed in steps at an average angle of one to one, supported by framed timber secured to the wood piling, which extends from half-tide to low water, a distance of 80 yards. The piles, 12" × 12", to be driven in rows of three, 10 feet apart, and not less than 4 feet in the solid ground, finished with 12" × 14" caps, properly secured by bolts and straps to pile heads.

The piles to be cross-tied by pairs of 9" × 4" ties, and stiffened by 7" × 8" struts, as shown in cross section; longitudinal walls are also to be secured to piles and ties, as shown. The wood facing, to secure the boulder rubble work, consists of 8" × 6" scantling laid on edge, with 6" intervals. The ends of the scantling overlapping each other at each pile, to which they are secured, if of wood by a spile and by a strap of iron, as shown.

From low water extending seawards 400 feet, the work is constructed in a similar manner. The piles being wrought-iron 10 feet apart, and of a sectional area of not less than 8 inches, or of creosoted timber 12" × 12". Thence seaward 500 feet the iron piles are not to be less in sectional area than 12 inches, and the rows 9 feet apart, or of creosoted timber 12" × 16".

From this portion to the end of the pier, 430 feet, the iron piles are to be not less than 20 inches in sectional area and 8 feet apart, or if of creosoted timber 16" × 16".

The head of the pier may be constructed of a wood framing, floated to the spot, and sunk, and filled with boulders, as shown in plans, or the section of the stonework may be carried round the end of the pier at the same angle, so as to balance the horizontal thrust. In the latter case, a staging would require to be carried out to allow of vessels coming alongside at the end of pier at low water.

In order to prevent damage by storms, the outer layer of boulders on the sea face of the pier should consist of blocks of not less size than 40 cubic feet, and round the end of the pier of 60 cubic feet.

The inner slope of the pier should be faced with blocks of not less than 20 cubic feet.

The middle of the pier to low watermark may be filled with small rubble; below low watermark no stones of less size than 3 cubic feet should be used in filling up, except in limited quantities under the control of the Engineer of the Works.

The roadway on pier to half-tide to be formed of broken stone, 2½ gauge 9" thick; from that to the end of the pier, a flooring of 9" + 3" plank, securely spiked to joists, as shown in section of pier.

Estimate of Cost of Construction.

The pier is to be constructed in a curve, as shown on plan, 1,600 feet long, the estimated cost of which is as follows:—

Iron piles and washers, 260 tons, at 20s.	£5, 200
Bolts, spikes, and straps, 16 tons, at 30s.	480
Timber, heart of red pine, 550,000 feet, at 14s. per hundred	3, 850
Stone filling, 120,000 yards, at 4s. per hundred	24, 000
Construction, including plant, contractors' profit, labour, risk, and contingencies, engineer, and superintendence	10, 000
Total estimated cost	£43, 530