

CRANES.

Four cranes are provided for in Mr. Holme's estimate. Messrs. Cullen and Keele and Mr. Furkert did not provide for same. However, if they are necessary at the Inner Harbour, it appears to me that they are necessary at the breakwater, so I provide £4,000 for this item.

RECLAMATION.

For Messrs. Cullen and Keele, to provide $3\frac{1}{2}$ acres, £3,985; Mr. Furkert provides acres, £10,000; Mr. J. D. Holmes provides for $22\frac{1}{2}$ acres, £12,000. As I see no purpose in spending capital in reclaiming land at the breakwater until it is required, I adhere to Messrs. Cullen and Keele's area of $3\frac{1}{2}$ acres, which are required for a convenient approach to the wharves. The sea face would consist of a ballast mole, which I estimate will cost £6,000.

DREDGING.

As I have estimated the dredging for the Inner Harbour for the requirements of vessels drawing 26 ft., and in that case allowed for a depth at the berths of 30 ft. and in the basin 26 ft., I am allowing in the case of the breakwater for a depth at the berths and in the swinging-basin at 31 ft. throughout. I estimate the quantity to be removed as 384,000 cubic yards, which at 1s. 3d. equals £24,000.

Auckland Rock, removal to 34 ft.; As there is no sufficient information available to check the quantities, I include the amount provided by Mr. Holmes—£10,900.

Removal other rock to, say, 21 ft., £2,750.

Breakwater Extension, £154,500; west mole, £90,000; wharf and sheds, £134,640; cranes, £4,000; reclamation mole, £6,000; dredging, £24,000; removing part of Auckland Rock, £10,900; removing other rock, £2,750; contingencies at 5 per cent., £21,340: total, £448,130.

A comparison of the estimates for the completion of the Breakwater Harbour are:—

Cullen and Keele (23rd November, 1925)—	£
Including one new wharf	393,082
Including two new wharves	511,009
F. W. Furkert (23rd August, 1927)—	
Including one wharf	400,000
Including one wharf (safe estimate)	450,000
J. D. Holmes—	
Including one wharf	973,000
Including one wharf and additional dredging to 31 ft.	985,800
Including one wharf and raising breakwater 10 ft.	1,208,800
A. C. Mackenzie (29th September, 1927)—	
Including one wharf	448,130

In regard to plant required, the items included in Messrs. Cullen and Keele's 1925 estimate are as follows: Hopper dredge, £65,000; two steam rock-drills, £5,000: total £70,000.

I would point out that the reclamation of the North and South Ponds would not require any pipe-line, power-house, or motors and pumps for boosting, as provided in Messrs. Cullen and Keele's estimates for the Inner Harbour, as the surplus material excavated from the Bluff in obtaining the stone required for the mole, foundations for breakwater, and reclamation moles would be deposited from trucks.

In regard to a dredge, I estimate the material to be removed at 384,000 cubic yards. This quantity would not fully employ a dredge such as the "Kaione" for twelve months' dredging, including pumping on shore, so the Board's obvious policy would be to hire a suitable dredge, for which in my unit cost, I have provided, over and above Mr. J. D. Holme's estimate for operating the dredge; a sum of £8,065 per year, a portion of which will provide for hire. As this work when once completed would not necessitate an expensive dredge forming part of the Board's permanent plant, I do not make any provision in my estimates for maintenance for a sea-going suction or bucket dredge. As it is possible that some maintenance dredging will be required after completion of the Breakwater Harbour, and for the purchase of one rock-drilling plant, I provide a sum of £20,000, which, plus the sale price of the "J.D.O.," should be sufficient to purchase a larger second-hand grab dredge and drilling plant. In estimating the annual overhead charges I have adopted similar rates to those I used in connection with the Inner Harbour. I have provided for the hire of dredges, including interest and depreciation, under the unit cost of dredging. As the Board already have the plant required for the construction of the breakwater, the annual additional charge will be—

Dredging—	£
Maintenance: 24,000 yards at $3\frac{3}{4}$ per cent.	900
Net plant, interest, sinking fund, and general: £20,000 at 7 per cent.	1,400
	2,300
Breakwater, mole, wharf, &c.: £448,130 at $10\frac{1}{4}$ per cent.	45,933
	<u>£48,233</u>