I affix an estimate of probable traffic and working expenses, by which it appears that the line may be expected to pay working expenses, and a renewal fund of £2,350 a year for replacing bridges, &c., and still have a sum of £3,238 a year left as profit; this is equal to $3\frac{2}{3}$ per cent. on the cost. I have been, of course, much guided by persons living on the spot in the revenue return, both as to quantities and prices, but I consider the estimate fair. There is some difference of opinion as to whether the railway will divert the trade from Port Underwood to Picton. I think myself it will do so, but have kept this item separate in the revenue return. Even without it, there will be a profit of £1,176 on the other traffic, after paying working expenses and renewal fund.

I have kept the estimate of working expenses high enough to insure its not being exceeded.

I have, &c.,

JOHN CARRUTHERS,

The Hon. the Minister for Public Works. Engineer-in-Chief.

No. 7.

REPORT ON NAPIER AND PAKI PAKI RAILWAY.

Mr. CARRUTHERS to the Hon. J. D. ORMOND.

Public Works Office, Wellington, 6th May, 1872.

THIS railway begins at the Port of Napier, and extends to the end of the Napier Plains, a distance of 18 miles 30 chains. It forms the first section of the Napier and Ruataniwha Railway, and is intended to be built eventually to Masterton, where it will join the Wellington and Masterton Railway, thus connecting Napier with Wellington, and, by means of the Manawatu and Wanganui Tramway, with the West Coast.

The country through which it passes is rich and fertile, but is principally pastoral, and as the whole of the population of the Province of Hawke's Bay is only 6,000, the traffic to be expected will be small. Short railways seldom pay, unless they join large towns. In an agricultural district, where the distance is less than twenty miles, it is generally cheaper for farmers to use their own cattle to cart their produce, than to pay railway fares; and I do not, therefore, think there will be much local traffic on the line. The through traffic will also be small until the line is extended to Ruataniwha, as the wool-growers will be obliged to use drays to bring their wool as far as Paki Paki, and will generally prefer going eighteeen miles further to Napier, to transferring into railway wagons. The closest economy in management will be required to pay working expenses, and no avoidable expense in construction should be incurred.

From Napier to Pakowhai, a distance of about twelve miles, there is great difference of opinion as to the position in which the line is to be placed. Three lines have been proposed, viz.:—

1st. Coast line. 2nd. Meanee line. 3rd. Purimu Creek line.

Coast Line.

In an engineering point of view, there cannot be a doubt that the Coast line is the best. It begins at the wharf at the port, crosses to Gough Island on a trestle, then on an embankment to Battery Point, thus closing the Iron Pot Harbour, except at one narrow entrance. Had this been done some years ago, the Iron Pot would still, in all probability, have been a harbour instead of a mud bank, and even now the entrance will be deepened and improved by forcing the tide through a narrow channel, and keeping out the muddy stream which now flows in at the entrance where the embankment will be.

From Battery Point the line skirts Scinde Island to the town of Napier, then along the shingle beach to the Waitangi Creek, which is crossed on a trestle. Keeping close to the road and parallel to the Ngarararoro River for three miles, it crosses the latter river twice, once above and once below Pakowhai.

A great change in the train of the Ngarararoro has lately taken place. The river has abandoned its bed for several miles, taking a new course from one point to another, the new channel following the course of the Ohiwa and Tutaekuri Waimate Rivers, and joining the old bed at Pakowhai. The first of the above-mentioned crossings is over the full stream, the second over the abandoned bed. Instead of them, a single crossing of the new channel at Pakowhai might be adopted, but it would be more expensive and not so safe as the double crossing. The old bed at the Ngarararoro is again crossed at 16 miles 10 chains.

Except the bridge over the Iron Pot, Waitangi Creek, and the three crossings of the Ngarararoro, the only expensive work will be the first mile, skirting Scinde Island: the rest of the line is remarkably easy of construction, and there is only one point, a chain or two in length, at the ninth mile, where danger from floods exists.

Meanee Line.

This line follows the Coast line for four and a half miles, and then, leaving the shingle beach, it crosses a lagoon which in floods has four or five feet of water in it, and then follows the road parallel to the Meanee River for three miles, on land subject to floods; then for two miles on land seldom or never flooded, to the Tutaekura Waimate and Ohiwa Rivers, which now form the main stream of the Ngarararoro; after crossing which it joins the Coast line again.

The advantages of this line are, that it brings the railway a mile and a half nearer the Meanee, Taradale, and Redcliff Townships, at the same time, however, taking it three and a half miles farther from West Clive. The advantages and disadvantages seem to me to about balance each other. The people of Clive will sometimes use the railway, as they are six and a half miles from town, but the people of Meanee, who are only four and a half, will, in all probability, be better served by the omnibus, as at present, and will use the railway very little, while the Redcliff and Taradale people may be put out of the question altogether, as they would not change their conveyance after coming two or