

Domain Line

Is 32 chains longer than the Tunnel line, has steeper gradients and bad curves; the total rise and fall is 54 feet greater than the Tunnel line. Its cost, when provision is made for slips in cutting, is as high as for the Tunnel line, and the land for it would have to be acquired. The difficulties in construction would be as great as on the Tunnel line.

Its length is two miles 32 chains; total rise and fall, 222 feet; steepest gradient, 1 in 40; sharpest curve, 5 chains.

Tunnel Line.

It is the shortest and by far the easiest to work; is not more expensive than the Domain line to build. The land is already bought, so no delay need take place in beginning the work. Engineering difficulties are no greater than on the other lines.

Its length is two miles; total rise and fall, 168 feet; steepest gradient, 1 in 47; sharpest curve, $13\frac{1}{2}$ chains radius.

Beyond Newmarket, as far as Onehunga station, there is very little earthwork and bridging to be done, the greater part of it having been already done by the Provincial Government. There will be some little trouble in getting down from the station to the wharf. Surveys are now being made, and until they are done, I am of course unable to speak with any certainty on the subject.

In conclusion, I have the honor to recommend that the work from Fort Britomart to Newmarket be begun at once, under the contract entered into with Messrs Brogden on the 18th December last.

I have, &c.,

JOHN CARRUTHERS,
Engineer-in-Chief.

The Hon. the Minister for Public Works.

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

SIR,—

Public Works Office, Wellington, 24th June, 1872.

This railway begins at the breakwater at Auckland and runs, *via* Drury, to the Waikato River at Mercer, a branch line running to Onehunga. The district through which it runs, or which is tributary to the railway, contains one-fifth of the entire population of New Zealand.

For the most part the land on each side of the railway is of good quality, and will eventually maintain a large agricultural population, who will have a ready market for their produce in Auckland and the Thames. It is difficult to place a limit to the future traffic which may be expected when the Waikato Valley becomes fully settled, and the coal mines which it contains shall be opened up and advantageously worked. At present, settlement is almost prohibited by the want of easy communication with Auckland, which this railway will supply, and a large increase to the population of the valley may be confidently looked for as soon as the works are undertaken.

The political advantages which will be gained by bringing Auckland into quick communication with the Waikato are incalculable.

The following traffic may, I think, be expected within two or three years of the completion of the line, with the prospect of a large increase in a few more years:—

Passengers to and from Onehunga, 32,000, at 1s.	...	...	£1,600
Goods to and from Onehunga, 60,000, at 1s. 6d.	...	...	4,500
Passengers, main line, 40,000, at 3s. 4d.	...	...	6,666
Goods, main line, 6,000, at 5s.	...	...	1,500
Coals, 30,000 tons, at 6s. 8d.	...	...	10,000
Firewood, 1,500 cords, at 3s. 4d.	...	...	2,500
Parcels and miscellaneous	...	...	234
			<u>£27,000</u>

I estimate the working expenses, including renewals, at ... £19,000

Expected profit (about 3 per cent) ... 8,000

A great deal of the country through which the railway runs is very rough and broken, with some heavy basalt cuttings, and a great many bridges and culverts.

Wherever good foundations are expected, the piers and abutments of bridges are designed for stone.

This increases the first cost of the works of course, but it is, I think, good economy, as the expense of renewals will be lessened. The gradients are steep, 1 in 40 being the steepest; the curves are, however, comparatively easy.

I have &c.,

JOHN CARRUTHERS,
Engineer-in-Chief.

The Hon. the Minister for Public Works.

No. 5.

REPORT ON KAWA KAWA RAILWAY.

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

SIR,—

Auckland, 15th January, 1872.

I have the honor to submit the following report on the proposed extension of the railway from the Kawa Kawa Coal Mines to deep water.