

*Estimate.*

	£	s.	d.
353,000 cubic yards Excavating to Embankment and to spoil, at 1s. ... ..	17,650	0	0
80,440 „ Ballast, at 2s. 6d. ... ..	10,055	0	0
72,380 lineal yards Laying Single Line of Railway, at 2s. ... ..	7,238	0	0
4,000 lineal feet Viaducts, at £7 ... ..	28,000	0	0
12 feet Timber Flood Openings ... ..	1,000	0	0
41½ miles Fencing, at £80 ... ..	6,580	0	0
41½ „ Single Line of Railway, with bolts, &c., at £621 ... ..	25,538	12	6
12½ „ Forming over level ground, at £100 ... ..	1,212	10	0
82,250 Sleepers, at 5s. ... ..	20,562	10	0
Occupation Works and Culverts ... ..	3,000	0	0
Stations ... ..	2,000	0	0
Contingencies, 10 per cent. ... ..	12,283	13	3
Engineering Expenses, 5 per cent. ... ..	6,141	16	7
<b>Total</b> ... ..	<b>£141,262</b>	<b>2</b>	<b>4</b>

## IV.—RANGIORA TO WAIPARA.

## No. 4.

Mr. W. B. BRAY to Mr. J. BLACKETT.

SIR,—

Christchurch, 30th August, 1871.

I have the honor to forward you a Report on the Continuation of the Northern Railway to the Waipara, together with estimates of the various portions and alternative lines.

The section of the alternative line to the Waipara has not been levelled across the freehold land, and the section of the North Road is given from my own level book. One objectionable hill on that road is up a side deviation, to avoid a then undrained swamp, but I believe it is now drained, and the 2 chain road carried nearly level past it.

The depth of the Waipara channel, or bed, requires a 70 feet gut cutting at the upper, and 35 feet at the lower crossing, if the bridge is 15 feet above the water. With slopes of 1 to 1, 70 feet gut, costs £15,000. With slopes of 1 to 1, 35 feet gut, costs £2,347. Gut cutting would probably have to be avoided on the upper line, but on the lower might cost less than side cutting, and 1 mile of way and curves.

If it is thought desirable to have about four miles of this diversion levelled, I should suggest stopping the present extension on the South Bank of the North Kowai, and communicating by a cheap cart bridge with the North Road, until further extension is needed.

John Blackett, Esq.

I have, &c.,  
W. B. BRAY.

## Enclosure in No. 4.

Mr. W. B. BRAY to Mr. J. BLACKETT.

Christchurch, 28th August, 1871.

THE extension of the Northern Railway beyond Rangiora involves at its very outset many considerations, not only as to engineering works and cost of line, but also of the way in which many local interests will be affected by the direction in which the line is taken.

The line of the Northern Railway, now in course of construction, was diverted from the line proposed by Mr. Doyne and sanctioned by the General Assembly, in order to avoid the Maori Reserve, and to bring the line as near as possible to Rangiora. In consequence of this deviation from Mr. Doyne's line, it has become a question of considerable interest to the inhabitants of Rangiora and to the landowners and farmers on the Ashley Downs and Township, whether the line might not be still further altered, so as to cross the river at Ashley Township and skirt the foot of the downs, to the former Railway Reserve.

This line having been objected to, on account of the cost of bridging the river, the whole question of "which was the best place for crossing the Ashley," was referred to the consideration of J. Blackett, Esq., Acting Engineer-in-Chief. He, after careful examination of the river, recommended a site about three miles below the Ashley Township and one mile above the present bridge, where the river runs in one stream between high banks, and is 25 chains wide. The line to this crossing leaves the present terminus at Rangiora by the Parliamentary line, and, after crossing the Ashley, passes through Sefton, joining the Railway Reserve, near the Sefton Road.

This line is estimated to cost, exclusive of land, but including fencing, gates, and stations, £31,850. The upper line, advocated by the inhabitants, is estimated to cost, with fencing, gates, and stations, £46,975.

In considering this line as a portion of the general system of railways in Canterbury, we must bear in mind that about 1½ mile of this upper line from Southbrook to Rangiora, estimated at £3,800, would be required as part of the Oxford Tramway if the direct and less costly line to Oxford is adopted. As a light tramway, this is estimated at £3,000. Therefore, as the making the upper line would save this outlay, the real excess of expenditure would be only £12,000, though it seems to be £15,000.

If for other than engineering reasons this upper line were taken, since the bridge will require wide and costly spans, to allow free passage to the drift timber, it would be necessary, for the security of the bridge, to enact that no bridge should be erected across the Ashley (so as to arrest the drift timber) within one mile above or one-quarter mile below the Railway Bridge.