

the Newton and the Lyell there is very little flat of value. There is a considerable amount of flat at a very high level which runs along a part of the gorge between Jacquelin's and the Lyell, but it is almost worthless for agriculture, and at almost too high a level (over 400 feet) to take advantage of for a railway to save the bad part of the gorge. Still, if this line were ever determined on, it should have a special trial.

Between the Lyell at Christie's (Inangahua Junction) there is a little good land in strips along the river. From Christie's up to Reefton there is a large flat block of land (estimated at 60,000 acres), the good lying in patches, and the best in the lower 10 miles. The best timber is about 8 miles up from the Buller (3 miles below Larry's). On my visit, some sawyers were located here, sawing timber for Reefton (about 12 miles off), which points to the fact that the timber is not much good above. The large open flats in the Mawhera-iti are very poor, excepting perhaps the lower 4 miles. From the Mawhera-iti to Brunnerton there are some wide strips of average land, and there is both good land and timber in the Arnould as far as Lake Brunner. The land up the Ahaura is very poor.

The Engineer-in-Chief, Wellington.

I have, &c.,  
JOHN ROCHFORD.

APPROXIMATE ESTIMATE of FOXHILL and BRUNNER RAILWAY.—Length : 142 miles 63 chains, and 3½ miles of sidings.

Grading	...	...	...	...	...	...	£503,124
Bridging	...	...	...	...	...	...	114,055
Fencing	...	...	...	...	...	...	17,360
Permanent Way	...	...	...	...	...	...	306,492
Rolling Stock	...	...	...	...	...	...	92,787
Stations	...	...	...	...	...	...	28,550
Land, Engineering, and Contingencies	...	...	...	...	...	...	191,784
							<u>£1,254,152</u>

### Enclosure No. 3.

#### REPORT ON SLUDGE CHANNEL, GABRIEL'S GULLY, BY THE ENGINEER-IN-CHIEF.

The ENGINEER-IN-CHIEF to the Hon. the MINISTER for PUBLIC WORKS.

SIR,—

Public Works Office, Wellington, 18th June, 1875.

The object proposed to be obtained by constructing a sludge channel at Gabriel's Gully is to remove the vast mass of tailings which now fill the gully, to a depth of 60 feet in some places.

To attain this, it is proposed to sink a channel down to the bed-rock, and to continue it down stream by means of fluming, giving the least fall which would allow the tailings to be carried away. As soon as the fluming had got clear of the town of Lawrence, and had attained sufficient height above the bed of the river to commence operations, the old tailings as well as the original soil overlying the bed-rock would be washed and passed down the channel into the Tuapeka River. The channel would be extended along the top of the new tailings until the whole of the gully had been washed out to the bed-rock.

The lower part of the Blue Spur, which cannot now be worked on account of the tailings, would then be workable, and would also be washed down the channel.

It is proposed to form a company to carry out this work, who would expect to get their remuneration from the gold contained in the tailings. Those best competent to judge think the latter are rich enough to pay for washing out.

There are at present 2,000 inches of water brought to the Blue Spur, which after being used there, is allowed to run into Gabriel's to waste. It is expected that the company would be able to use this water, after it had done its work above, free of cost, and that the quantity might be increased to 3,000 inches, running for eight hours a day.

With this quantity of water, the inclination which it would be requisite to give the channel would be about 35 feet per mile. If only 2,000 inches were available, a fall of 40 feet per mile would be required.

This latter is greater than the average fall of the Tuapeka Creek, and if the flume were constructed so as to be 20 feet above the ground surface at the junction of the Tuapeka Creek with the Tuapeka River, with a rise of 40 feet per mile, it would not intersect the bed-rock until it had been carried close up to the Blue Spur. If the less inclination of 35 feet per mile were adopted, the bed-rock would be intersected about a mile and a quarter above the junction of Gabriel's with Wetherstone's Creek.

To carry out the latter scheme, there would be required a flume about 20 feet high and two miles long, and a cutting through tailings three-quarters of a mile long, and averaging about 15 feet deep. This would cost not less than about £17,000.

The effect of carrying so much *débris* into the Tuapeka River, and thence into the Clutha, would be, I think, injurious to land-owners on the banks of these rivers. The Tuapeka is a considerable stream during floods, and would carry the whole of the tailings into the Clutha, where shingle-banks would be formed, and the course of the river interfered with. The banks would be cut away in places, and the navigation probably much impeded.