APPENDIX D.

REPORTS ON VARIOUS WORKS BY THE ENGINEER-IN-CHIEF.

No. 1.

REPORT ON SURVEY BETWEEN HOKITIKA AND MALVERN.

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

SIR,— Public Works Office, Wellington, 20th April, 1874.

I have the honor to enclose Mr. Browning's report on the line of which he has made a reconnaisance survey for a railway from Hokitika to Malvern *via* Browning's Pass, at the head waters of the Arahura and Rakaia Rivers. From this report, and from information received *vivâ voce* from Mr. Browning, I am enabled to lay before you the following statement :—

The line leaving Hokitika would get into the valley of the Arahura either near the Kaukaka or by the Kokatahi to the south of Lake Kanieri, either line being tolerably favourable. This first section is 20 miles long. Then follows a length along the Arahura, 9 miles long, of rough country, to the junction with the Arahura of Keig's Creek, at the 29th mile. The height of the junction of Keig's Creek is 1,765 feet above sea level, and from this point to the summit Mr. Browning has taken barometric levels. The next length of 4 miles comes to Griffith's Creek at the 33rd mile, the height of which is 2,123 feet above sea level, showing an average gradient for this section of 1 in 56. The country is not unfavourable. From Griffith's Creek to the entrance to the tunnel at 36th mile, a distance of 3 miles, the country rises at a slope of about 1 in 15, and it would be necessary to make the railway follow the slope of the country, as the hill sides are too rough to allow a uniform gradient to be adopted. A centre rail would therefore be required for the three miles. Following in this way the slope of the country, it will not be expensive to make a railway over this section, but snow sheds will be required in parts. Then comes the tunnel, 3,400 yards long (or 1 mile 70 chains),—for the greater part through clay-slate. The mouth of the tunnel is 3,300, and the pass 4,767 feet above sea level. From the end of the tunnel to the Sebastopol Bluff at the 45th mile, a distance of 7 miles, the railway would have to follow the general slope of the valley, which is about 1 in 20 for the first mile, and 1 in 46 for the rest of the way. The height of the Wilberforce is 2,335 feet above sea level. A further distance of 36 miles—making in all 81 miles from Hokitika— brings us to the end of the Malvern Coal Railway.

The following figures will give an approximate idea of the cost of the line. It is of course little more than a guess, founded on Mr. Browning's description of the country, and is only intended to enable you to decide whether it is desirable to have further surveys made or not.

		£
From Hokitika to Twenty-Mile	... ...	100,000
„ Twenty-Mile to Griffith's Creek	... ...	92,000
„ Griffith's Creek to Sebastopol Bluff	... ...	246,000
„ Sebastopol Bluff to White Cliff	... ...	282,000
		£720,000
Contingencies 12½ per cent.	... ...	90,000
		£810,000

I have, &c.,

JOHN CARRUTHERS,

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

P.S.—A map is attached, showing the direction of line.

Enclosure.

REPORT ON TUNNEL LINE, BROWNING'S PASS.

SIR,— Hokitika, 31st March, 1874.

In pursuance of your instructions (P.W. 73–4106, No. 1917), " to ascertain if it be practicable to make a railway between Hokitika, Westland; and Malvern, Canterbury; at a moderate cost," I left Hokitika on December 8th, 1873, with a party of three men, and proceeded up the River Styx.

On examination of this valley I found the formation of the country, consisting of drift terraces, was in every part of such a loose nature as to render constructive works impracticable, unless at an almost fabulous cost, and in consequence proceeded to the valley of the Arahura River, leading directly up to the Pass.

As the country is not at present used for traffic, I found, in order to keep open communication, and for more economically obtaining supplies, it was necessary to clear out and make good the pack track which had been constructed seven years since up the Styx Valley, but which was quite grown up ;