

No. 4.

REPORT ON TOKATEA TRAMWAY, COROMANDEL, by ALEXANDER AITKEN, District Engineer.

THE total length of the Tokatea Tramway is 135 chains; 52 chains of the line is on the eastern side of the main range, and the remainder of the line is on the western side.

In a length of 44 chains the line falls 900 feet, in six self-acting gradients. The total fall is 1,130 feet.

The self-acting portion of the line cost £34 per chain, or £2,720 per mile.

The average cost of the portion of the line worked by horses was £15 per chain, or £1,200 per mile.

The country through which the line runs is very broken, and was covered with dense bush. Most of the line is constructed on heavy side and block cuttings and trestle work.

The only accident of a serious nature that has occurred was the result of riding on the trucks, which was strictly forbidden by notices posted on the line.

The receipts for the past twelve months have nearly met all working expenses and repairs necessary for keeping the line in good working order and condition, besides paying for erection of goods shed, tool house, and office, small extensions and improvements, together with two new brakes and trucks, and truck wheels more than sufficient to replace all breakages.

The improvements made on the line during the year I value at £400. These improvements have been made by the men employed on the line, while the line is not working. The men have to be kept on full time whether the line is working or not, otherwise the employment of fresh hands would be necessary from time to time, which would be attended with great danger to all employed, as the work can be performed with safety only by men who have had some experience in the working of the same.

The line has hitherto been worked by hired horses, and the price paid has been for single horse and man, 15s. per diem; for two horses and one man, 25s. per diem. In this item a saving would be effected by the purchase of horses for the line. This might be worth consideration should the Government continue to work the line.

The line has not yet been employed more than half time, nor is there at present any probability of its being fully worked.

The prices charged for the carriage of quartz, &c., have been low, but could be considerably reduced if there was full work for the line.

Experience on this line has proved that on wood rails no gradient to be worked by horses should be steeper than 1 in 14, as this is the steepest gradient on which it is safe to use any ordinary brake on loaded trucks being brought down the line by gravitation.

On the self-acting portion of the line there is no difficulty on gradients of 1 in 1.75, which is the steepest on the line; and a self-acting gradient is now being tried on the Kennedy's Bay side of the range having a descent of 1 in 1.50. No self-acting gradient should be flatter than 1 in 4, in lines where there is a necessity for the carriage of goods or material upwards, as flatter lines have little or no power for that purpose. On lines where the whole traffic is downwards, self-acting gradients would work as flat as 1 in 8. All self-acting gradients, to work well, should be a little flatter at the bottom than the top, and when finished should show a uniform curve with a view to attain that object.

Attached is a statement showing the monthly receipts and expenditure for twelve months, ending May 31, 1872; also a table of the rates charged for the conveyance of quartz from any part of Kennedy's Bay side of the range to the various batteries.

ALEX. AITKEN,
District Engineer.