

APPENDIX E.

REPORT ON RAILWAY SURVEYS IN THE MIDDLE ISLAND BY THE ENGINEER IN CHARGE.

The ENGINEER in CHARGE to the Hon. the MINISTER for PUBLIC WORKS.

SIR,—

Public Works Office, Dunedin, 1st July, 1878.

I have the honor to submit the following report on the railway surveys now in progress in the Middle Island, together with considerations as to the directions in which they should be extended:—

GENERAL.

The proper completion of the railway system of the Middle Island is of such importance that no decisive step should be taken in any particular direction till the question is fully considered as a whole, and, in doing so, other considerations besides engineering must have due weight: the resources of the country traversed, the industries likely to spring up in particular localities, and the extension of settlement generally, all bear directly on the subject.

The routes of the main lines and many of the branches already constructed were obvious, and could not well be improved, but some of the branches do not admit of being extended or worked in with a general system. The ultimate destination of every new line that is undertaken should be determined on before the first instalment is begun. Indeed, I would recommend that reconnaissance surveys be made of the whole Island, and a skeleton map prepared of a railway system, up to which we should, if possible, work. In the meantime the particulars given herein will, at least, indicate the routes likely to be followed by what will some day be considered "main lines."

EAST AND WEST COAST AND NORTHERN RAILWAYS.

The survey of these railways has been continued during the past year, and a great amount of valuable information collected. As I have not had time to consider the matter fully for myself, Mr. Carruthers has kindly given me the following *précis* of the results arrived at so far:—

"At your request I give a short report on the surveys which have been made of the several lines between Christchurch and the West Coast, Picton and Nelson. I was instructed to bear in mind the necessity of connecting all these places with the railway system of the South Island, so that the surveys have been treated as a whole, and an endeavour made to find the cheapest way of connecting them all.

"*Browning's Pass*.—A survey was made through this pass by Mr. Browning, but it is far inferior to all the other passes, and need not be taken into further consideration.

"*Taipo Pass*.—Mr. Campbell made a reconnaissance survey of the passes at the head of the Taipo and Waimakariri, showing a not very unfavourable line. If the branch to the West Coast were alone to be considered, I am inclined to think this line should be further explored.

"*Picton and Nelson Lines*.—The best direction for the line to the West Coast will depend on the line to Picton, from which it would be a branch. Several lines have been tried for this, but they are all very unfavourable. Mr. Foy's best line is shown in blue on the map attached. It is tolerably favourable except for about 20 miles between the Waiau and Kaikoura, which would be very costly and difficult to work. Mr. Dobson's line, shown in red, by Cheviot, is also very costly for about ten miles, but I am inclined to think it superior to Mr. Foy's on account of its lower summit-level. If either of these lines be adopted, I think the West Coast would be best reached by the Taipo Pass already mentioned, or by the Hope Pass as surveyed by Mr. Foy, and Lake Sumner and the Hurunui.

"A separate line would be required for Nelson. One line from Nelson to the Grey, at Cobden, was surveyed very fully by Mr. Rochfort, and another examined by the Happy Valley to Blenheim. The latter would best bring Nelson into railway communication with the rest of the Island, but would be very costly and difficult to work. A third way of reaching Picton and Nelson is now being examined by Mr. Foy. It is to follow the Waiau to the pass at Cannibal Gorge. From the summit, lines can be run as shown on the plan to Nelson, Picton, and Greymouth. I am satisfied this will be found by far the cheapest way of connecting these three places with the South Island railway system, and it will open up whatever good land there is, which is, however, very limited in quality. The gradients will be more favourable than by any other route. The objection to this plan is that all traffic between Picton and Christchurch will have to be taken over the summit at Cannibal Gorge, a height of nearly 3,000 feet, and the distance between Greymouth and Christchurch would be fully sixty miles further than by the Taipo Pass. In view of the small probable traffic, I am disposed to think this Cannibal Gorge scheme is the best, as it meets the requirements at a cost far below that of any other. If, however, even a moderate traffic is looked for, I think the three distinct lines would be better—*i.e.*, by Taipo to the West Coast, by Cheviot to Picton, and by Happy Valley to Nelson."

Mr. Foy, who has been on the survey of the East and West Coast and Northern Railways for upwards of two years, is now engaged in collating the information already obtained. This will enable us to determine on further operations during next summer, should the Government decide on proceeding with the work, a course I would strongly recommend. As the explorations for both lines in the direction of the Hope and Amuri saddles are tolerably complete, I think attention should be directed to the Waimakariri and Taipo route for the West Coast line. Geographically this is one of the best yet proposed for simply connecting the two coasts: it comes nearest the centre of the Island of all the routes suggested north of Mount Cook. With reference to the extension to Picton, Mr.