TUESDAY, 16TH SEPTEMBER, 1884.

Mr. JOHN ROCHFORT, Surveyor and Engineer, examined.

249. *The Chairman.*] You have been engaged in the survey of one of the proposed routes for the North Island Trunk Railway?—Yes.

250. Which one was it?—What is known as the central route—Marton to Te Awamutu.

251. How many times have you been over that line?—About four times, nearly the whole of it.

252. Will you describe to the Committee the nature of the surveys you have made over that route?—In the first place I went through and made simply an aneroid survey, and took bearings and so on from trig. stations and prominent mountains. Since that I have been over the whole ground and made a prismatic-compass survey, and levelled the whole line from end to end with a spirit-level, and have taken cross-sections at moderate distances. A traverse survey of the route only has been made, and in some places the line does not exactly follow where it would do when it is graded. The time that was supposed to elapse before Parliament met would not allow the grading to be carried out. But in every case the nature of the ground is shown by the cross-sections, and the possibility of connecting from level to level is thoroughly proved.

253. Have you plotted all this information on paper?—I have plotted the whole of the information on the usual three-chain-to-the-inch scale, and I have brought it with me.

254. Generally speaking, what is the class of work that will be required on that line: are they heavy engineering works, or otherwise?—The bulk of the work is very light indeed. A great portion of the work is very little more than on the Canterbury Plains. Of course there is some grading in it. The heavy works are very few indeed, and so are the bridging, gradient, and tunnels, for the length of the line. The estimated cost of the tunnels amounted to about £48,000.

255. What is the length?—The longest tunnel is 1,214 yards. The rest are all little ones of two or three chains.

256. Do you know the whole length of tunnelling?—Not exactly.

257. Have you made a detailed estimate of the cost of this line?—I have.

258. Have you got it with you?—Yes. [Estimate produced.]

259. What is the ordinary run of gradients on this line: are they light or heavy?—Very light: the ruling gradient would be 1 in 70, but there are some portions of it, as the line runs as at present proposed, where it works out 1 in 50. But I think it could be all reduced to 1 in 70.

260. You have travelled over most of the lines in New Zealand already constructed?—Yes.

261. How will the works on this line compare with others generally throughout the country?—I think the cost would be considerably cheaper than that of average lines, because there is a good deal of flat country, and the bridging is remarkably light for the length.

262. What heavy works are there on this line?—There are four gradients: one at Makohine, another at Mangahuruhuru, another at Manganui-a-te-ao, and another at Mangatote.

263. What other viaducts or bridges are there beyond there?—None; it is all low bridging.

264. What is the total cost of the four you have named?—£25,600.

265. Are there any other particular points to which you would like to direct the attention of the Committee with regard to the engineering difficulties of the line?—There are no engineering difficulties beyond those of the long tunnel of 1,214 yards.

266. What sort of ground is it at that point?—There is no rock cropping out. I believe it is soft sandstone and soft limestone.

267. You have produced an estimate of the cost of this line: has that estimate been checked at all, and carefully gone into?—It has not been checked, except in this way: a separate estimate was made by Mr. Knorpp, who, I suppose, will give his evidence on that point.

268. What is the total amount of the estimate?—Including the road by the side of the line for the whole length of railway, it amounts to £1,293,134.

269. What sort of a road?—A road for the haulage of materials. It is a new country entirely.

270. It is estimated to make a road first, then?—Yes; to carry the material. The cost would be £400 per mile for the whole length of two hundred and twelve miles.

271. Does your estimate include a fair allowance for stations, rolling-stock, and so on?—The usual allowance.

272. Then, it is an estimate for the complete equipment of the railway?—Yes; and the prices are according to the prices in the Public Works Department, as found to be the best to use in compiling estimates. It is rather above what is the ordinary price in all cases.

273. Could you tell us from memory what is the difference between your own estimate and that of Mr. Knorpp?—I think our estimates were within £20 or £30 per mile of each other: something remarkably close. The difference was about £18,000, I think.

WEDNESDAY, 17TH SEPTEMBER, 1884.

Mr. JOHN ROCHFORT, Surveyor and Engineer, further examined.

274. *The Chairman.*] I think, yesterday, we left off on the subject of the estimates. You now produce lithographed copies of the estimates as handed in yesterday?—I do. [Lithographed copies produced.]

275. I should like to ask you whether there is any particular item in these estimates to which you would care to call the attention of the Committee, as being anything out of the ordinary way in connection with railway formation?—No, I think not. The only heavy works are the four viaducts and one long tunnel. There are some few miles of heavy grading, but the bulk of the line is remarkably easy.

276. I believe you said yesterday that, as the line was now laid out, there would be inclines as steep as 1 in 50?—Yes.