3. *The Hon. Mr. Buddo.*] Do you mean that the western line is longer than the eastern?—Half a mile longer. Then, on an examination of the eastern route my attention was called to a very sharp and long curve at about 86 miles. As it is drawn on this map it goes right into the hill, but that is a slip of the pen probably. It goes into a bit of bad ground, with the intention evidently of escaping a tunnel.

4. Is that eighty-six miles from Helensville?—No, from Newmarket. In making inquiries about this piece of ground I was told that a good few deviations had been tried. That, of course, I do not know about, but an amount of tunnelling was found necessary. At one place, I think, it was stated that about 9 chains was required, and at another something more. I personally had a look at a deviation which was stated to be the route that Mr. Knorpp took many years ago in exploring that line. I considered that a tunnel of about 15 chains would be needed. I went down to about the point where that would come out, and swept the country with an Abney level, and I came to the conclusion that a grade of about 1 in 40 from the end of that tunnel would reach the proper site at Maungaturoto Valley for the Maungaturoto Station. I judged that a mile would be saved in that loop by that means. That, added to the half-mile as shown on the map, gives a mile and a half less length on the eastern route than on the western. That mile and a half added to the six miles of ballast-line extra—six miles, because the ballast-line on the eastern route would be half a mile and that on the western six miles and a half—makes altogether between the main line and the branch line seven miles and a half; but, as the branch construction is naturally less expensive than construction on the main line, I took the extra length of line, as reduced to main-line construction, at five miles, and I put that at a very low cost indeed—£5,000 a mile as due to the extra length of line. Then I came to the conclusion that there was more tunnelling on the western line than on the other, but how much I could not say with certainty. Several of the tunnels I was able to estimate very closely. I made it that there was about 700 yards more tunnelling on the western than on the eastern route. Those tunnels I took at a moderate rate, too—£25 a lineal yard. My experience in fairly good ground is that it should be at least £30. Then came a very startling piece of information in going over the line. On the Bickerstaffe line I found about a mile and a half at least of the very worst slipping ground that I ever saw in my experience. The whole countryside there seemed to be on the move, as far as you could see on each side of the line. Fences and trees were leaning over. One feature is very significant: In a deep gorge between two high ridges there is a creek called Muddy Creek. The settlers there have called it by that name, I was told, for forty years. It was running discoloured then, and the discoloration I found was due to the constant creep of the hillsides on each side of that creek. The whole country there is a deliquescent marl. If that is cut open there, the atmosphere itself—no rain will be needed—will start it running, and the slope it will eventually take no man could say; and I could not and would not attempt to estimate the cost of running a railway through that mile and a half. I stated in my report that the cost I estimated of making the railway would be plus the cost of this mile and a half. As I was certain to be on the low side I put my estimate down at £93,000.

5. How many miles of construction and bridges did you reckon?—Nineteen miles and a quarter altogether.

6. *Mr. Pearce.*] Is this £93,000 in excess of what the other line would cost?—Yes.

7. You have estimated the cost of the other?—Yes. On the eastern line the only place where slipping ground cannot be avoided at all is a length of about 10 or 12 chains near Pukekaroro. The ground there, however, is of very moderate depth, and is very easily dealt with as compared with the other. The slips seem quite local. That is the only place where I saw signs of slipping; of course, there may be more. On the Bickerstaffe side, however, it was so patent that no one could pass over the ground without noticing it.

8. Are there no bridges on the eastern route?—No salt-water bridges. There are the usual culverts. I saw nowhere where it was absolutely necessary to put in viaducts.

9. *The Chairman.*] No big rivers?—No. Just at Kaiwaka I saw a good depth in crossing the Kaiwaka Stream, and I saw on the Public Works plan a 10 ft. culvert arranged for. Then there was a question of compromise regarding these routes. At about 93 miles a distance of about two miles and a half would join the two. [Place pointed out on map.] That would cut away the whole of the slipping ground, and probably would add £15,000 to the cost of the line. I believe that to go across at the place indicated is the solution of the whole thing.

10. *Mr. Buchanan.*] Have any borings been made for these tidal bridges?—I saw them boring as I passed.

11. Were the borings satisfactory?—I could not say. The Public Works Department have all that information.

12. Of what material did you propose the bridges to be?—Cylinder piers filled with concrete in the usual way.

13. And the life of these bridges, roughly?—A very long life indeed.

14. You mentioned the grade of 1 in 40 that would save a mile?—Yes.

15. Is not that grade steep? Would that compare unfavourably with the grade that could be obtained for the rest of that line?—I am not quite certain as to the steepest grade. I think that going up to one of the tunnels the grade is 1 in 40; but on the Wellington–Auckland Main Trunk line there are a number of grades of 1 in 40.

16. The point of my question is the disadvantage of a steep grade—that is, if that is the steepest grade?—I think that even with that loop to escape the tunnel they could not avoid a grade of at least 1 in 40.

17. What was the basis of your estimate for the cost of tunnelling?—Twenty-five pounds a lineal yard.

18. Is there no danger of unexpected rock, or anything of that sort?—That is for ordinary rock. If it were clay I should certainly put the cost at £30, but I believe that £30 is a safe price even in rock.