

SESS. II.—1884.
NEW ZEALAND.

R E P O R T

OF THE

SELECT COMMITTEE APPOINTED TO CONSIDER AND REPORT ON THE BEST ROUTE

FOR THE

NORTH ISLAND TRUNK RAILWAY:

TOGETHER WITH

MINUTES OF PROCEEDINGS AND EVIDENCE AND APPENDIX.

Report brought up 9th October, 1884, and ordered to be printed.

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NORTH ISLAND MAIN TRUNK RAILWAY COMMITTEE

(REPORT OF, TOGETHER WITH MINUTES OF PROCEEDINGS, EVIDENCE, AND APPENDIX.)

ORDERS OF REFERENCE.

Extracts from the Journals of the House of Representatives.

FRIDAY, THE 12TH DAY OF SEPTEMBER, 1884.

Ordered, "That a Select Committee be appointed, to consist of seven members, to consider and report on the best route for the North Island Trunk Railway; that the Committee consist of members from the Middle Island only; that it have power to call for persons and papers; that three members constitute a quorum; that it report to the House within fourteen days from the time of its appointment; and that the Government be requested to submit to the House without delay the names of said Committee."—(*Mr. Lake.*)

Ordered, "That the Select Committee on the North Island Trunk Railway consist of the following members: Mr. Fergus, Mr. Fulton, Mr. Gore, Mr. Larnach, Mr. Montgomery, Mr. W. White, and the mover."—(*Hon. Mr. Richardson.*)

FRIDAY, THE 19TH DAY OF SEPTEMBER, 1884.

Ordered, "That the petition of John Elliott and others be referred to the North Island Main Trunk Railway Committee."—(*Mr. Turnbull.*)

FRIDAY, THE 26TH DAY OF SEPTEMBER, 1884.

Ordered, "That the North Island Main Trunk Railway Committee have leave to postpone making their report for one week."—(*Hon. Mr. Richardson.*)

FRIDAY, THE 3RD DAY OF OCTOBER, 1884.

Ordered, "That the North Island Main Trunk Railway Committee have leave to postpone making their report for one week."—(*Hon. Mr. Richardson.*)

REPORT.

Your Committee met, in accordance with the order of reference made by the House, on the 13th day of September, and held daily sittings until it had taken all evidence available. Your Committee held nineteen meetings, and examined thirty-four witnesses; and the following resolution was arrived at:—

To recommend the central route from Marton to Te Awamutu as the best for the North Island Trunk Railway.

Your Committee attach hereto a full report of their proceedings, and all the evidence, both oral and documentary, that they have taken.

9th October, 1884.

E. RICHARDSON,
Chairman.

MINUTES OF PROCEEDINGS.

SATURDAY, 13TH SEPTEMBER, 1884.

Present: Hon. Mr. Richardson, Mr. Fergus, Mr. Fulton, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The Clerk read the order of reference.

Resolved, on the motion of Mr. Larnach, That the Hon. Mr. Richardson be appointed Chairman.

Resolved, on the motion of Mr. Larnach, That the following witnesses be summoned to give evidence: Mr. McKerrow, Mr. Blackett, Mr. Gill, Mr. Marchant, Mr. Mair, Mr. Rochfort.

Resolved, on the motion of Mr. Larnach, That all witnesses residing outside Wellington be summoned by telegram, and that all persons not connected with the service be allowed expenses.

Resolved, on the motion of Mr. Fergus, That the following witnesses be summoned: Messrs. Percy Smith, Skeet, Marchant, Cussen, Rochfort, Holmes, Ross, Knorpp, Blackett, McKerrow, Gill, Dr. Hector, Mr. C. W. Hursthouse, Captain Northcroft, Sir George Grey, Major Atkinson, Messrs. Mitchelson, Bryce, Mair, Carkeek, and Wahanui.

Resolved, on the motion of Mr. Larnach, That Messrs. Blackett, McKerrow, Gill, Marchant, Gilbert Mair, and Rochfort be summoned to attend on Monday.

Resolved, on the motion of Mr. Larnach, That the Government be requested to furnish a map, of the largest size, showing the various proposed routes.

Resolved, on the motion of Mr. Larnach, That a shorthand writer be instructed to attend at every meeting of the Committee.

The Committee then adjourned to 10.30 a.m. on Monday, the 15th September.

MONDAY, 15TH SEPTEMBER, 1884.

The Committee met pursuant to notice.

Present: Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Fulton, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Resolved, on the motion of Mr. Larnach, That the following be summoned to attend as witnesses for the purpose of giving evidence: Mr. A. J. Rawson, Surveyor, New Plymouth; Mr. Rochfort, Civil Engineer; Mr. J. Sheehan, now in Wellington.

Resolved, on the motion of Mr. Larnach, That not more than one witness be allowed in the room at the same time.

Mr. McKerrow, Surveyor-General, attended and gave evidence, was thanked, and withdrew.

Mr. R. J. Gill, Under-Secretary, Native Land Purchase Department, attended and gave evidence, was thanked, and withdrew.

Mr. Blackett, Engineer-in-Chief, attended, and was examined and gave evidence. He produced the under-mentioned plans, and promised to send the books of lithographs soon:—1. Sketch map of North Island, showing route in green. 2. Mr. Rochfort's survey; general plan, showing eastern, western, and central routes (P.W.D. 12069). 3. Mr. Williams's survey, general plan (P.W.D. 11468). 4. Messrs. Holmes and Carkeek's survey (P.W.D. 11483).

Mr. Marchant, Chief Surveyor, Wellington, attended and gave evidence, was thanked, and withdrew.

The Committee then adjourned to 10.30 a.m. to-morrow.

TUESDAY, 16TH SEPTEMBER, 1884.

The Committee met pursuant to notice.

Present: Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Fulton, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. Sheehan was called and gave evidence, was thanked, and withdrew.

Mr. Donald Fraser, farmer, Rangitikei, gave evidence, was thanked, and withdrew.

Mr. J. Rochfort, surveyor, was called and gave evidence, was requested to appear before the Committee to-morrow to continue his evidence, was thanked, and withdrew.

Resolved, on the motion of Mr. Fergus, That Mr. Mathew Barry and Major Parris be summoned to attend the Committee.

The Committee then adjourned to 10.30 a.m. to-morrow.

WEDNESDAY, 17TH SEPTEMBER, 1884.

The Committee met pursuant to notice.

Present: Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Fulton, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Resolved, on the motion of the Chairman, That Mr. Cussen's report (see Appendix, page 103) be distributed to each member.

Wahanui attended and gave evidence, was thanked, and withdrew.

Mr. M. Barry, gold-miner, gave evidence, was thanked, and withdrew.

Mr. Rochfort, surveyor, attended and gave evidence, was requested to attend to-morrow to continue his evidence, was thanked, and withdrew.

The Committee then adjourned to 10.30 a.m. to-morrow.

THURSDAY, 18TH SEPTEMBER, 1884.

The Committee met pursuant to notice.

Present : Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Fulton, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. Rochfort, Government Surveyor, attended and gave evidence, was thanked, and withdrew.

Mr. Skeet, Government Surveyor, attended and gave evidence, was thanked, and withdrew.

Mr. Morgan Carkeek, Surveyor, attended and gave evidence, was thanked, and withdrew.

Mr. Knorpp, Inspecting Engineer, attended and gave evidence, was requested to attend to-morrow, was thanked, and withdrew.

The Committee then adjourned to 10.30 a.m. to-morrow.

FRIDAY, 19TH SEPTEMBER, 1884.

Present : Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Fulton, Mr. Gore, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. Knorpp, Inspecting Engineer, attended and gave evidence, was thanked, and withdrew.

Mr. Mitchelson, M.H.R., attended and gave evidence, was thanked and withdrew.

Mr. R. W. Holmes, engineer, attended and gave evidence, was thanked, and withdrew.

The Committee adjourned to 10.30 a.m. to-morrow.

SATURDAY, 20TH SEPTEMBER, 1884.

Present : Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Fulton, Mr. Larnach, Mr. Montgomery, Mr. White.

The minutes of the previous meeting were read and confirmed.

Mr. D. Ross, Surveyor, attended and gave evidence, was thanked, and withdrew.

Mr. Percy Smith, Surveyor, attended, gave evidence, was thanked, and withdrew.

Major Parris attended and gave evidence, was thanked, and withdrew.

Resolved, on the motion of Mr. Larnach, That Mr. T. S. Wilkinson, C.E., should be summoned to attend before the Committee and give evidence.

The Committee then adjourned to 10.30 on Monday, the 22nd September.

MONDAY, 22ND SEPTEMBER, 1884.

Present : Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Fulton, Mr. Gore, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Captain H. W. Northcroft attended and gave evidence, was thanked, and withdrew.

Mr. L. Cussen, Surveyor attended and gave evidence, was thanked, and withdrew.

Mr. A. Rawson, Surveyor, attended and gave evidence, was thanked, and withdrew.

The Committee then adjourned to 10.30 a.m. to-morrow.

TUESDAY, 23RD SEPTEMBER, 1884.

Present : Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Gore, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. Sicely, Surveyor, attended and gave evidence, was thanked, and withdrew.

Dr. Hector attended and gave evidence, was thanked, and withdrew.

The Committee then adjourned to 10.30 a.m. to-morrow.

WEDNESDAY, 24TH SEPTEMBER, 1884.

Present : Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. Gilbert Mair attended and gave evidence, was thanked, and withdrew.

Major Atkinson, M.H.R., attended and gave evidence, was thanked, and withdrew.

Mr. Field attended and gave evidence, was thanked, and withdrew.

Mr. Rawson appeared to explain that he wished to make certain alterations in his previous evidence.

The Committee then adjourned to 10.30 a.m. to-morrow.

THURSDAY, 25TH SEPTEMBER, 1884.

Present : Hon. Mr. Richardson (Chairman), Mr. Larnach, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Sir George Grey, K.C.B., M.H.R., attended and gave evidence, was thanked, and withdrew.

Mr. Bryce, M.H.R., attended and gave evidence, was thanked, and withdrew.

Mr. Donkin, attended and gave evidence, was thanked, and withdrew.

Mr. Gill attended and gave information regarding a certain map he had supplied the Committee, was thanked, and withdrew.

The Committee then adjourned to 10.30 a.m. to-morrow.

FRIDAY, 26TH SEPTEMBER, 1884.

Present: Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Gore, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. Humphries, Chief Surveyor, Taranaki, attended and gave evidence, was thanked, and withdrew.

Resolved, on the motion of Mr. Montgomery, That the Chairman ask leave for extension of time of one week to bring up the report.

The Committee adjourned to 10.30 a.m. on Tuesday, the 30th September.

TUESDAY, 30TH SEPTEMBER, 1884.

Present: Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. Hursthouse, Surveyor, attended and gave evidence, was thanked, and withdrew.

Mr. Hicks, butcher, attended and gave evidence, was thanked, and withdrew.

Mr. Scott, Surveyor, attended and gave evidence, was thanked, and withdrew.

Mr. Donkin attended, and requested that he might give some further information.

Mr. Humphries attended again, and desired to make some alteration in his previous evidence.

Mr. Sicely attended, and wished to put in additional written evidence, which was returned.

The Committee then adjourned to 10.30 a.m. to-morrow.

WEDNESDAY, 1ST OCTOBER, 1884.

Present: Hon. Mr. Richardson (Chairman), Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. A. Koch, Public Works Department, attended and gave evidence, was thanked, and withdrew.

Mr. Knorpp, Public Works Department, attended and gave further evidence, was thanked, and withdrew; and was requested to return to-morrow to give evidence regarding certain estimates.

The Committee then adjourned to 10.30 a.m. to-morrow.

THURSDAY, 2ND OCTOBER, 1884.

Present: Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Gore, Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. Holmes attended and gave further information regarding certain estimates, was thanked, and withdrew.

Mr. Rochfort attended and gave further evidence in connection with certain estimates, was thanked, and withdrew.

The Committee then adjourned to 10.30 a.m. to-morrow.

FRIDAY, 3RD OCTOBER, 1884.

Present: Hon. Mr. Richardson (Chairman), Mr. Larnach, Mr. Montgomery, Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Mr. Gill appeared and gave further evidence, was thanked, and withdrew.

Mr. Wilkinson attended and gave evidence, was thanked, and withdrew.

Resolved, on the motion of the Chairman, That one week more be asked for to report.

The Committee then adjourned to 10.30 a.m. on Tuesday, the 7th October.

WEDNESDAY, 8TH OCTOBER, 1884.

Present: Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Fulton, Mr. Gore, Mr. Larnach, Mr. Montgomery, and Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Petition No. 202, Session II., of Moore Hunter and others was considered.

Petition No. 150, Sess. II., of John Elliot and others was considered.

The Committee then adjourned to 11 a.m. to-morrow.

THURSDAY, 9TH OCTOBER, 1884.

Present: Hon. Mr. Richardson (Chairman), Mr. Fergus, Mr. Fulton, Mr. Gore, Mr. Larnach, Mr. Montgomery, and Mr. W. White.

The minutes of the previous meeting were read and confirmed.

Moved by Mr. Fulton, That, in the opinion of this Committee, the best route for the North Island Trunk Railway is that from Marton *via* Murimotu to Te Awamutu.

Mr. Montgomery moved, as an amendment, That the Stratford route is the best.

The Committee divided, with the following result:—

For the amendment: Mr. Montgomery.

For the motion: Mr. Fergus, Mr. Fulton, Mr. Gore, Mr. Larnach, Hon. Mr. Richardson, and Mr. W. White.

The Chairman was directed to report the above to the House.

MINUTES OF EVIDENCE.

Hon. E. RICHARDSON, Chairman.

TUESDAY, 15TH SEPTEMBER, 1884.

Mr. J. McKERROW, Surveyor-General, examined.

1. *The Chairman.*] You are aware, I suppose, Mr. McKerrow, of the nature of the inquiry that you are now summoned upon?—Yes.
2. The Committee have summoned you as a witness with a view of obtaining from you, in the first place, all, or any, maps that you can produce to facilitate their inquiry into this matter?—Yes. I produce a map showing the land tenure of the North Island. [Map produced.]
3. Have you any large-sized map which can be hung up on the wall, showing the different proposed routes of the North Island Trunk Railway?—I can prepare one in a day or two. I may inform you, however, that, in anticipation of this inquiry, the department has been preparing a map for some time. This will be ready for certain this day week, showing all the routes, blocks of land, and land tenure, to a scale of eight miles to the inch. The map produced is on a scale of twenty-five miles to the inch; it is very small, but it is very good as an index map. We could give you one in the rough to-morrow on a larger scale—six miles to the inch.
4. Have you any personal knowledge of the country through which it is proposed to run these different lines of railway?—My knowledge is derived from the reports of the various surveyors. I have never actually been over the ground. I have had communications from Mr. Percy Smith, of Auckland, and Mr. Cussen, a gentleman who has been triangulating the King country, and he will be here on Thursday. Then there is Mr. Skeet, one of the surveyors of Taranaki, who has explored the country east of Stratford several times; he will be here to-morrow. Mr. Marchant, Chief Surveyor, of Wellington, who knows the country very well up to the Wellington boundary, is at your call now. And I hold in my hand a report by Mr. Cussen, describing the King country, which is part of the annual report of the Survey Department. But I do not think you need trouble yourselves with this just now, because it and other reports will be brought before you in a collected form by the Public Works Department.
5. Is that in the annual report coming before Parliament this session?—Yes.
6. Have you mentioned to us the names of all the officers from whom you received information?—I think I have. There is another gentleman I think of—Mr. Morgan Carkeek.
7. We have summoned him?—He is a very valuable and reliable man in a matter of this sort.
8. Can you give us any intimation of the value of the land; as to whether it is fit for agricultural settlement or otherwise?—I think I can.
9. From your own knowledge?—From derivative knowledge. I have no doubt at all it is fairly accurate, but possibly you may prefer to have it from the parties who really possess a personal knowledge, and I have already named these.
10. *Mr. Fergus.*] You know, generally, the nature of the land in the North Island?—Yes.
11. From a variety of sources?—Yes.
12. Can you tell us anything about the quality of the land through which what is known as the “central route” passes—the one from Marton to Te Kuiti?—At each end of the line—this, I must say, is derived information—the land is very good and suitable for settlement; but in the centre, after it passes Murimotu, and by Ruapehu, and generally about the head-waters of the Wanganui River, it passes through broken country—indeed, through a great deal of pumice country, a country which, possibly, would not be very suitable for settlement.
13. What do you consider the available quantity of land suitable for settlement on that route?—I have not thought of it in the way of giving definite areas. Before replying to that question I should like to scale the maps a little and give you something like a reliable estimate.
14. Then, I suppose, you would not be able just now to tell us what quantity of land, if any, there is in the hands of the Government?—There is actually none, or, at most, one or two small pieces. The map I have produced is valuable in that respect. It shows by colours the land that is Native and the Crown land. Both the Marton and Stratford routes, with minor exceptions, pass entirely through Native lands.
15. The question I wish to ask you is, whether the central line would open up the more available, that is cultivable, land, or the Stratford line?—The central route would open up more actually available arable land than the other one.
16. You mentioned that there is a certain distance of pumice country: how many miles of railway would there be through this pumice country?—I should not, myself, like to say the actual number of miles, but a very large proportion would be through pumice country.
17. Is the land on each side of the line, as far as your information goes, good level land or broken country?—It is very broken country—that is, the central portion of the railway.
18. What is the actual distance between Marton and Te Awamutu?—Two hundred and ten miles. That is what Mr. Rochfort gives.
19. Do you know the character of the country along the Stratford route?—Yes.
20. Any pumice land there?—Yes; it touches the verge of the pumice land, but not so much. The portion from Stratford inland—in fact, the whole way until you come to the Mokau country—is very rugged and broken indeed, and is all bush.
21. *Mr. Montgomery.*] You say your knowledge is merely derivative?—Yes.
22. And those from whom you got your knowledge will be examined before this Committee, I suppose?—Yes.
23. So that we shall get from them the actual facts?—Yes.
24. *Mr. Larnach.*] Have you heard the names of the witnesses that have been summoned by

the Committee?—No; I only know those in the Survey Department. [Names of proposed witnesses were here read by the Secretary.]

25. Can you suggest any one else?—No, I can think of no one else.

26. You have mentioned two proposed routes, but I understand there are three routes?—There are four lines that have been proposed.

27. Have you any idea which runs through most Native lands?—The Marton line, because it is the longer of the two.

28. Can you gather, from your experiences, which comprises the best land?—With regard to the Stratford and Marton lines, starting from the Te Awamutu end, these run in common: it is the same land for a considerable distance, and that common line opens up, so far as my information goes, good and available land at the north end.

29. That is the New Plymouth line?—Yes. It does not matter which you take—the Marton or the New Plymouth line; they both serve equally well. As to the opening-up of country, the question between the two lines narrows itself down to this: Which line opens up the best country from the south end? The Marton, decidedly.

30. That is the longest line?—Yes. It decidedly opens up the best country from the south end—all covered with bush, bare in parts, but all would do very well for grazing or dairying purposes. The soil is of good quality. It is the same character of country that there is behind Feilding.

31. Then, there is the Mokau line; what about that?—I may say, in a sentence, that you do not require to give that very much consideration, because it goes through such horrible country—cliffs, and engineering difficulties, and so on. As regards settlement, for the same reason, it is really unfit to support any large population. Just to show you how rough it is, I may mention that we are conducting a survey just now of a block of land north of Mokau, and it is so rough that the usual way of laying off rectangular sections is impossible. We have laid the country off into pretty large areas. Then, there is the No. 4 line, if you wish to refer to that. It is a line running from Te Awamutu, north of Lake Taupo, down the Repia Valley, to Hastings.

32. You can call that the Taupo line?—Yes. That would be a good name for distinguishing it. With regard to that line I can speak with a little more assurance, because I know the country. It is a very poor country, and not worth making a line through.

Mr. R. J. GILL, Under-Secretary, Native Land Purchase Department, examined.

33. *The Chairman.*] The Committee has summoned you, Mr. Gill, with a view of ascertaining to what extent the Government have become possessed of land along the various routes proposed for the North Island Trunk Railway. Mr. McKerrow has submitted this plan [producing plan], which shows all the land now in the hands of the Government, marked in white. Can you give us anything like the area of that land?—This plan is on too small a scale for that purpose. I understand that Mr. McKerrow is preparing a plan for the Committee. I saw him this morning, and I suggested that on the plan which he is preparing the whole of the lands that have been purchased, or are under purchase, might be coloured. I am not sufficiently conversant with the proposed routes of railway at present to speak positively as to what lands have been purchased contiguous to them.

34. Have you personally traversed these lines?—No. I may mention that I can give information as to the cost of the blocks of land which have been purchased or are being purchased.

35. Who, among your officers, could give us anything like a detailed description of the various blocks of land, as to whether the land is fit for settlement or not?—I think that Captain Gilbert Mair would be as good and reliable a man as is obtainable, with regard to the land between Wanganui and Taupo. I do not know that he is conversant with the land between Mokau and the Waikato. I am conversant with the country between Waikato and Taupo.

36. What is the general nature of the country along the proposed Napier route?—The land from Napier to Taupo is very indifferent land. It is nearly all pumice country.

37. *Mr. Larnach.*] With regard to the Mokau line?—I cannot speak as to that.

38. *Mr. Fergus.*] I would like to ask whether Mr. Gill knows the number or area of any blocks which are at present under negotiation to purchase; or, in the first place, if the Government has really any land on either of those routes?—A large area is at present under negotiation, but is not completed.

39. Is there any land really purchased there?—The plan is so small that I can hardly speak positively as to that.

40. There have been some purchases?—Yes.

41. You do not know the total area?—I do not know the locality or direction of the line positively. At Wanganui, a fortnight ago, the Murimotu-Rangipo lands were leased for twenty-one years. This is contiguous to it. Previous to that—four months ago—102,000 acres of land were purchased at no great distance from the line—I may say about twenty-five miles of the line. It is this side of Wanganui considerably. But I could indicate this on the plan which Mr. McKerrow is compiling.

42. Do you know if there is any Native land purchased on the Stratford route?—Yes.

43. At which end?—Bordering on the confiscation line.

44. That is at this end?—Yes; both inside the line and outside the line.

45. Is there much of it?—Yes, a good deal.

46. You could not give us any idea of the quantity of land at present held by the Government on the Stratford route?—No. My evidence would be much more complete if I could see a plan.

Mr. Fergus: It will be necessary to have a plan, I think.

The Chairman: Yes; and we can call Mr. Gill again; and in the meantime he can prepare a schedule of the lands in question.

47. *Mr. Larnach* (to witness).] In speaking of land purchases, do you allude to purchases simply by the Government or by other individuals?—Simply by the Government—that is all.

48. You are aware that there are four lines spoken of in connection with this railway?—Yes.

49. Do I understand that on the plan which is being prepared you will mark out the Native lands in respect of each of these lines?—Yes; the Government lands.

THURSDAY, 25TH SEPTEMBER, 1884.

Mr. R. J. GILL, Under-Secretary, Native Land Purchase Department, further examined.

50. *The Chairman.*] You have furnished a map [produced] to the Committee, and when you were examined before you asked to be called later on, with a view of explaining the tenure of the various tracts of land coloured on the map?—I have prepared schedules of the lands, which may be put in evidence.

51. Does the schedule refer to this map as submitted?—As far as my judgment goes of what land would be affected by the different routes. I also produce another map containing a little more information than the one submitted to the Committee. It shows more clearly what lands have been purchased, as well as those which are under negotiation for purchase. But still the map is not perfect, and I would ask to be allowed to take it back to the office to complete it. On the Napier-Waikato line are shown the blocks of land contiguous to the line which the Government have purchased, and the area of the land that has been purchased. I may be wrong in fixing some of the blocks of land that might be affected by the railway; I have put them in the schedule as far as my own knowledge of what lands I believe would be affected enables me to do. [Schedule produced, *vide* Appendix.]

52. Have you got a similar one in reference to the Marton line?—I have. [Schedule produced, *vide* Appendix.]

53. And one in reference to the Stratford line?—Yes. That schedule shows that 192,950 acres have been purchased by the Government, and that there are still 82,400 acres under negotiation for purchase. I have also shown the money that has been expended on the blocks, and I would like to draw your attention to the fact, that in fixing the value of any particular block, I have only given my own opinion. [Schedule produced, *vide* Appendix.]

54. *Mr. Larnach.*] You do not give any value of the lands?—No; only what they cost.

55. And the acreage?—Yes; and the money they have cost the Government.

56. *The Chairman.*] Now, with regard to the schedule of the Marton line that has been produced?—That shows 325,375 acres purchased, and 129,148 acres under lease.

57. *Mr. Larnach.*] Is that the Murimotu Block?—Yes.

58. Mr. Bryce spoke of it as being 140,000 acres?—We acquired it through the Land Court as 129,148 acres.

59. That is Native land that may be acquired by the Crown?—Yes.

60. *The Chairman.*] How does the Act of last year, which prohibits dealings with Native lands before the titles are ascertained in Court, operate in these cases? Are Government transactions excepted?—Yes.

MARTON-WAIKATO ROUTE.

INCOMPLETE TRANSACTIONS.—Blocks of Land still under Purchase.

Name of Block.					Estimated Area.	Payments to Date.		
					Acres.	£	s.	d.
84	Ngarakauwhakaraha	...	...	...	4,995	70	5	6
85	Kauautahi	...	...	...	9,000	438	2	2
86	Maketu	...	...	...	5,000	77	13	4
88	Otaira No. 5	...	...	...	59,000	925	0	0
90	Otaira No. 6	...	...	...	50,000	2,530	0	0
92	Maungakaretu	...	...	...	63,000	3,730	11	10
98	Tunapara	...	...	...	5,000	39	19	2
99	Te Wharau	...	...	...	3,000	1,300	0	0
103	Mangaetoroa	...	...	...	12,000	1,137	0	0
104	Tataramoa	...	...	...	5,000	800	0	0
105	Ngatukumarū	...	...	...	2,000	170	0	0
106	Taipohatu	...	...	...	2,000	71	0	0
107	Tuawhatea	...	...	...	2,000	400	0	0
108	Apamatua	...	...	...	4,000	306	13	4
109	Kupurangi	...	...	...	2,000	26	13	4
110	Paipaiaka	...	...	...	5,000	1,006	2	6
111	Okehu	...	...	...	6,928	2,307	11	8
112	Otaranoho	...	...	...	1,361	729	16	9
113	Papahawa	...	...	...	3,000	105	0	0
114	Pukeariki	...	...	...	3,000	75	0	0
115	Raikohua	...	...	...	3,000	44	0	0
116	Hautawa	...	...	...	2,000	58	6	0
117	Omata	...	...	...	4,000	145	1	7
118	Whataroa	...	...	...	492	161	10	10
120	Parekawou	...	...	...	2,000	783	10	10
126	Wairau	...	...	...	1,000	25	0	0
Total					259,776	17,463	18	10

MARTON-WAIKATO ROUTE.

BLOCKS of LAND purchased under Public Works Acts and gazetted Waste Lands of the Crown.

Name of Block.					Area.	Total Cost of Land.		
					Acres.	£	s.	d.
449	Kirikau	...	...	...	17,491	2,615	8	2
450	Retaruke	...	...	...	17,320	2,673	10	2
451	Huikumu	...	...	...	1,204	597	9	7
452	Umumore	...	...	...	842	513	16	0
460	Tawhiti Arihi	...	...	...	2,880	1,518	12	10
461-4	Rangataua	...	...	...	22,261	8,990	18	10
465	Atuahae	...	...	...	4,152	1,748	10	0
466	Te Parapara	...	...	...	915	438	15	6
467	Taruamouku	...	...	...	214	173	9	2
472-3	Karemarewa	...	...	...	3,679	1,706	9	6
474	Paratieki	...	...	...	6,000	1,497	7	0
475	Heao	...	...	...	8,365	1,677	1	9
476-7	Pikopiko Nos. 1 and 2	...	...	...	3,910	815	18	0
478	Waikupa	...	...	...	2,272	2,017	12	10
479-80	Otairi	...	...	...	18,834	6,874	16	9
481	Mangahouki	...	...	...	278	139	0	0
482	Paraekaretu	...	...	...	46,975	9,328	15	5
483	Otamakapua	...	...	...	103,062	53,955	10	5
484	Waitapu	...	...	...	29,484	14,756	13	2
485	Mangoira Ruatime	...	...	...	35,660	5,040	4	3
Total					325,798	117,079	19	2

LANDS leased by the Government for the Term of Twenty-one Years.

Muriruotu and Rangipowaiu Blocks ... 129,148 acres; rental, £13 per 1,000 acres.

NAPIER-WAIKATO ROUTE.

BLOCKS of LAND purchased under Public Works Acts and gazetted Waste Lands of the Crown.

Name of Block.					Area.	Total Cost of Land.		
					Acres.	£	s.	d.
279	Pokaiwhenua	...	...	...	6,520	10,925	0	3
280	Huhihuitaha	...	...	...	3,875			
281	Tokaroa	...	...	...	17,865	6,923	14	3
326	Kaingaroa No. 2	...	...	...	91,529			
330-1	Runanga No. 1	...	...	...	5,190	464	8	4
332	Tauhara South	...	...	...	14,000	1,743	0	0
333-4	Tauhara Middle	...	...	...	27,079	1,858	17	9
335	Opipi	...	...	...	390	1	10	0
336	Tauhara North	...	...	...	6,714	445	12	0
337-41	Oruanui	...	...	...	17,395	3,675	0	1
342	Hangihangi	...	...	...	141	143	7	0
343	Te Pokuru North	...	...	...	252	135	0	6
344	Te Hukiu	...	...	...	2,000	777	17	8
Total					192,950	27,093	7	10

INCOMPLETE TRANSACTIONS.—Lands still under Purchase.

Name of Block.					Area.	Payments to Date.		
					Acres.	£	s.	d.
67	Te Matai	...	...	...	1,020	225	8	0
68	Mangatainoka Mohaka	...	...	...	16,400	140	12	0
69	Mohaka	...	...	...	46,600	1,180	10	4
57	Oruanui	...	...	...	7,780	1,493	14	0
58	Rangatira	...	...	...	10,600	107	1	0
Total					82,400	3,547	5	4

STRATFORD-WAIKATO ROUTE.

LANDS purchased under Public Works Acts and gazetted Waste Lands of the Crown.

Name of Block.					Area.	Total Cost of Land.		
					Acres.	£	s.	d.
591	Mangaotuku	...	...	...	38,860	8,712	10	9
594	Whitinui	...	...	...	2,080	287	2	6
595	Mangamingi	...	...	...	8,200	1,024	7	0
596-7	Kaharoa Nos. 1 and 2	...	...	...	16,050	1,764	10	9
598	Pukekino	...	...	...	11,860	1,561	0	0
602	Kaitangiwhenua	...	...	...	91,630	12,491	0	8
603	Raoraomouku	...	...	...	8,697	2,949	18	6
592	Mangaere	...	...	...	6,250	783	6	8
593	Mangaehu	...	...	...	560	107	1	0
Total					184,187	29,680	17	10

INCOMPLETE TRANSACTIONS.—Land still under Purchase.

Taungarakau Block ... £70,000 acres; advanced to date, £2,028.

Mr. J. BLACKETT, Engineer-in-Chief, examined.

61. *The Chairman.*] Can you tell us, Mr. Blackett, what steps the Government have taken in connection with the proposed North Island Trunk Railway?—The Government have made explorations of three lines—one from Hastings, near Napier, by Taupo, to Te Awamutu; one from Marton northward, west of Taupo, to the same place, Te Awamutu; one from Stratford, by a line by way of the Upper Mokau, to the same place, Te Awamutu. We have got the results of these surveys, which are now almost in a position to be laid before the Committee, both as regards plans and reports.

62. That, practically, is all that has been done so far by your department?—I may state that there is an estimate appended to each report; and I might also explain that what we call the central route has not only been explored, but surveyed and levelled from end to end—not, however, as a contract.

63. Is all that plotted on paper?—Yes; that is all plotted on paper, in detailed sheets.

64. And you can submit them to the Committee?—I can submit a general plan; also the detailed plans.

65. What has been done on the other lines—on the Stratford line, for instance?—I will first finish the description of the central line. The southern part of the central route we have explored, and taken an aneroid survey of an alternative line, starting from Feilding by the Oroua River. The survey by the western route may be described as an aneroid survey.

66. With regard to the central line, you say you have taken an aneroid survey. Is that plotted?—Yes.

67. And you will be able to give the details of that to this Committee?—Yes.

68. Is that all that has been done by your department in connection with the central line?—No. Besides the plans you have before you already, I have another plan just received from Mr. Rochfort, which I can produce.

69. Will you tell us what plans you have got here?—Yes. (1) Sketch map of the North Island, showing three routes in green; (2) Mr. Rochfort's survey, general plan, but showing also eastern, western, and central routes (P.W.D. 12069); (3) Mr. Williams's survey, general plan (P.W.D. 11468); (4) Messrs. Holmes and Carkeek's survey (P.W.D. 11483).

70. I understand the surveys and sections are taken pretty accurately on the central route—Rochfort's line?—The second survey by Mr. Rochfort is an absolute survey by theodolite and level.

71. The yellow line on this map [referring to map] is Carkeek and Holmes's line. How has that been taken?—Aneroid.

72. Only aneroid; not with the instruments?—Only aneroid; but cross-sections of the hill-sides were taken. The Stratford line is one that cannot well be varied. An examination of the plan would show that the course of this line is practically determined by the different valleys.

73. What is your object in stating that?—No particular object, except that it will account for the peculiar direction that the line takes, and also that you are more confident as to directions on that line than you are on the central line.

74. Have you been over the routes of either of these two lines yourself?—I have not.

75. Have you any personal knowledge of the nature of the country through which the route passes?—No; except at the ends. I have not been through. I have given all directions as to the various surveys.

76. With regard to the Mokau line, what is the position of that; has any further survey been taken there?—The consideration of that line has been abandoned as one not being suitable to the wants of the country.

77. Abandoned from an engineering point of view, or what?—No; for other reasons. It is a coast-line, and does not answer the purpose of a trunk railway through the Island.

78. What I wish to know is, why you have abandoned that line: is it on account of engineering difficulties?—It was one that was felt not to be suited to the circumstances of the case, or one by which the country would be opened up, seeing that it was a coast-line.

79. The gentlemen named in the list of witnesses [produced] are those to whom we shall have to apply for detailed information as to the nature of this country?—Yes.

80. Are there any other witnesses you can think of?—I think you have got a full list.

81. *Mr. Fergus.*] I would like to ask Mr. Blackett whether he considers that an aneroid survey of the western route is sufficient on which to base an estimate—as careful an estimate as from a detailed survey?—You cannot make quite such a good estimate on the aneroid survey, but our experience has been that you can nevertheless make very good estimates from them.

82. You think an aneroid survey is quite sufficient to justify any one in selecting or condemning a route?—Perfectly so. An aneroid survey is perfectly trustworthy in that respect.

83. I suppose you have not taken into consideration all the engineering works on the Stratford line as accurately as you have on that which has been actually plotted?—The engineer that I employed on that work is a practical man, and his report I can take with confidence. He has given a very good report indeed in regard to the engineering difficulties. I was ordered by the Minister to have a survey made and levels taken of the Stratford line, but it has not been done, partly on account of bad weather. The men were on the point of starting when this Committee was instituted, so I have stopped them going into the country for the present.

84. I also wish to ask Mr. Blackett, from his investigations, if the general character of the works on the Marton-Te Awamutu line will be worse than those on the Stratford line, or *vice versa*?—The works on the central route are of a very favourable character.

85. For what reason?—I have not had time to look over the detail plans, as they only came in on Saturday morning, and they are very numerous; but I have the general longitudinal sections and report, and from these I judge that the works are of a most favourable character. The small number of large works on the line is really extraordinary, considering its length.

86. I notice, from this map, from Marton the line follows up almost exclusively the river valley?—Yes, nearly parallel with the Rangitikei River.

87. The country to the westward of this part of the line is unfavourable for railway purposes. There are no great engineering difficulties along the whole length of the line to Te Awamutu?—There are only four bridges of any consequence on the whole length of the Marton line, and the combined cost of these would probably not be more than £30,000.

88. Then, on the Stratford line, would there be more bridges, and of a greater expenditure?—I am not prepared to say that. The plans and reports show the nature of the works, the heaviest of which would apparently consist of tunnels.

89. There is another question I wish to put: What is the greatest height the railway reaches on these respective routes—Marton and Stratford?—The greatest height on the Marton line is about 2,600ft., and on the Stratford line 1,130ft.; but on the latter there are several summits of varying height, which are shown on the longitudinal section. If, as I understand, you wish to know the amount of the total rises and falls on each line, I have prepared a list of these. Taking Marton as the starting point for each, on the central line we find the total rises to be 4,911ft., and the falls 5,221ft.; on the Stratford line, starting from the same point, the total rises are 5,521ft., and the falls 5,831ft. This makes a difference of 610ft. more rise and fall on the Stratford line than on the Marton line. The total length from Wellington to Auckland by the western route is 464 miles; by the central route, 430 miles; and by the eastern route, 470 miles. On the eastern route you would have to make 170 miles of new railway; on the central route, 212 miles; and on the Stratford route, 142 miles.

90. *The Chairman.*] Can you give us the Engineer's estimate?—Not now; Mr. Rochfort is at work this morning finishing it; but we have estimates of the other routes in the report.

91. *Mr. Fergus.*] There is another question I should like to ask. There is some engineering formula whereby a certain distance on the flat is estimated as equal to so much on the rise?—It is variously estimated by different engineers. You are asking that, I suppose, *apropos* of what I stated as to the rises and fall on the respective lines.

92. Yes?—Well, allowing 25ft. rise for every mile in length, it gives an equivalent of twenty-four miles of extra haulage for a rise of 610ft.

93. *Mr. Larnach.*] I understood you to say that the central line was levelled from end to end?—Yes, it has been levelled, and we have the results in the office now.

94. Do I infer from that, that the late Government were favourable to that line? No, not necessarily. It was considered that, as we had the aneroid survey completed, and the Natives were favourable to our going through, we had better secure a levelled survey without loss of time.

95. It appears that more consideration must have been given to that line than any other by the late Government?—There has been, as it happens.

96. Therefore, that line was favoured most?—In that way; but I should not like you to draw any conclusion from that.

97. I understand from you that an aneroid survey might be called a flying survey?—It was not very "flying," as the country was difficult to traverse and covered with bush, and much wet weather was experienced, which made the progress slow.

98. An aneroid survey could be taken on horseback?—Not through such a country.

99. A great deal of it?—If you have open country, Yes; but this was not the case on the greater part of this line.

100. But, as a matter of fact, if the nature of the country permitted it, you could do so?—You could not ride over the line on a horse.

101. How closely can you take the altitude by an aneroid survey?—I think I can give you a very good example of what can be done by an aneroid survey. To explore the central route, Mr. Rochfort travelled over two hundred and forty miles, and when he had reduced his aneroid observations (taken during many months) over that length there was a difference of only 16ft.

102. *The Chairman.*] In the sum total?—Yes. The total errors were only 16ft.

103. *Mr. Larnach.*] Of course, I presume, a great deal would depend on the weather as to the correctness?—Yes; but by having a check-barometer, following at twenty-four hours' distance, as was the case in this instance, the chances of error are very much reduced.

104. Then, I understand you to say that Ministers had ordered a levelled survey of the Stratford line?—Yes; but the weather turned out unfavourable; we did not like to send them out at once; it would have been comparatively useless to do so, as so much time would have been lost.

105. Did you say you looked upon the Mokau line as having been abandoned by the Government?—I cannot answer for the Government.

106. But you are acting under instructions?—I think I may say that the Government did not consider that the coast-line was one that ought to be considered, for the reasons I have stated.

107. *The Chairman.*] You stated that estimates have been made of these lines: are you prepared to give those estimates to the Committee?—I can give them, or the officers who prepared them can do so, whichever way may be thought best.

108. Who made the estimates?—Mr. Rochfort made his own estimate, and the other engineers made theirs, but they have been examined in the head office.

109. Who examined them?—I have done so, but not very minutely. The method on which they were made out was agreed upon beforehand. I think both Messrs. Holmes's and Williams's estimates might be taken as very fair, and that Mr. Rochfort's, when complete, will be found to be so likewise.

110. Will you be prepared to put before this Committee estimates of the cost of these lines that you can vouch for sufficiently to guide the Committee?—Yes, I think I may say that.

111. When will you be prepared with them?—In a few days' time; but in the reports as presented you will find the estimates, on which I should like to be examined afterwards. With regard to the central line you may take the estimates now being prepared as trustworthy.

Mr. J. W. A. MARCHANT, Chief Surveyor and Acting Commissioner of Crown Lands, Wellington, examined.

112. *The Chairman.*] We have summoned you here, Mr. Marchant, with a view to getting any information you can give us in connection with the North Island Trunk Railway-line. Are you aware of the routes that have been proposed for this line?—I am acquainted with the southern extremity of the Rangitikei-Hautapu route.

113. That is known as the Marton route?—Yes.

114. What we call the central route, if you will kindly refer to it as such in your evidence?—Very good.

115. You are personally acquainted with that route?—I have walked over it, or rather over a portion of it.

116. To what extent do you know it, starting from Marton?—Up to the Waihora Creek, a branch of the Hautapu. I have been along the Rangitikei and the Hautapu fully as far as the Waihora.

117. *Mr. Fergus.*] How many miles is that?—About eighty-five miles.

118. *The Chairman.*] Practically you know the line from Marton to the Wangaehu River?—I know the country as far as Ruapehu.

119. What is the general nature of that land: is it fit for settlement: is any of it agricultural land?—Are you speaking of the whole route?

120. Of the portion which you know. I understand that you have travelled from Marton to Ruapehu?—Yes.

121. Well, what proportion of the land do you consider is fit for agriculture?—I may best answer that by describing the route. For ten miles out of Marton the land is agricultural.

122. How far on either side of the line?—From the Rangitikei to the Turakina. That is all settled country.

123. And with regard to the next ten miles?—The next ten miles pass through the Pourewa Valley, which is mostly under forest, fairly good land.

124. Is that flat land or hilly land?—It is a comparatively broad valley, with hills on each side.

125. Do you consider it fit for settlement?—Certainly it is. On the right hand or eastern side is the Rangatira Block, of about nineteen thousand acres, of fair average soil, bush country. On the western side is the Paraekaretu Block, which is settled upon, and cultivations have been effected upon it to a considerable extent. About twenty thousand acres of this block communicate naturally with the Pourewa. The next twenty-five miles of the line follow the Rangitikei Valley.

126. What is the nature of that land?—Fairly good land, consisting of flat terraces, with high hills, covered with mixed bush, running back to the westward. There is an important connecting point with the country to the eastward at Otara.

127. What extent of land has the Crown got there?—The Crown lands on that side aggregate to about one hundred and fifty thousand acres.

128. Sold or unsold?—Unsold. The natural outlet of half of it would be towards Feilding. The northern portion of the Otamakapua Block would, I think, be served by the proposed bridge at Otara. We have now reached the Hautapu Junction.

129. *Mr. Larnach.*] How far is that you have got now?—Forty-five miles. The line past there runs over flats, and occasionally over high cliffs and spurs which run out towards the river.

130. Good or bad land?—Fairly good land on the flats, but all bush country. From 45 to 60 miles the line passes along the Hautapu flats, and seems occasionally to cross the river. The flats consist of good soil, covered with mixed bush, with very steep hills to the southward. To the northward, across the Hautapu, is high hilly country (to the best of my belief), covered by mixed bush, also average-quality land.

131. *The Chairman.*] Now, from 60 miles northward?—From 60 miles to about 85 miles the line flows generally the Hautapu Valley: a good deal of it open, fairly-good soil: a country well-adapted for settlement. The remainder of the distance, say to 95 miles, is generally what I should class as inferior grazing land.

132. What soil is it?—The main hills consist of limestone, but overlaid in places with pumice.

133. To what depth?—It is really a desert on the plain, consisting of bare shingle with very poor soil indeed; but to the eastward on the limestone hills there is very fair natural grass.

134. *Mr. Larnach.*] Are there any sheep there now?—Yes. It is occupied by Messrs. Moorhouse and Co., as a sheep-run.

135. *The Chairman.*] You have no information yourself, personally, beyond that?—I have not been on the ground beyond Murimotu. The Crown has a lease of the Murimotu and Rangipo Block, the area being about one hundred and forty thousand acres.

136. In what direction does it stretch?—The line runs through the southern extremity, the great bulk of the block lies to the northward. I have not yet mentioned the tenure of the land along this route. The Crown has an interest in the Otairi Block, about the 25th mile.

Mr. Montgomery: We can get that from Mr. Gill.

137. *The Chairman* (to witness).] Perhaps you will supply us with a list of the tenure of all the lands you have been describing?—I will do so.

138. You have talked of the Hautapu Valley: what is the average width of it—the average amount of flat land?—I could not speak definitely as to that. It was very wet weather when I swagged through it. I was exploring for a road-line. The flats may run from five to forty chains, but not continuously. They are small flats running along the terraces.

139. Then, generally, the tops of the terraces are flat?—Yes; sometimes a spur runs down ending in a bluff. The line passes along the terraces above the river-bed. That is the line I proposed for the road (referring to map).

140. What is the general nature of the soil on the terraces?—It seems to be deep good soil.

141. Are the terraces broken with ravines?—Very little indeed compared with the general run of valleys in that part of the Island.

142. *Mr. W. White.*] What quantity of agricultural land is there in the distance mentioned?—I have made no estimate.

143. Could you get an estimate?—I do not think there is enough surveyed data for that purpose.

144. How many acres are there of Crown lands that would be benefited by this line up to the eighty-five miles?—At a rough guess I should say about a hundred thousand acres. I could furnish information on that point better in a schedule form.

145. Of what quality is this Crown land?—The Otairi Block consists of five thousand acres of very good bush land, a mixed bush country with good soil; the balance is broken, hilly, inferior land. About fifty thousand acres of the Otamakapua is good average mixed-bush country.

146. *Mr. Fergus.*] Is there much private land along the line which would be served by this railway?—The private lands may be assumed to extend, at a guess, about twenty-three miles. That would be through the Rangitikei District, and then through the Paraekaretu Block on the west with the Rangitira Block on the eastward.

147. Is there none beyond that?—Then come Dalziel's and the Crown lands, where the line passes through the Otairi Block, which is partly in the hands of private individuals.

148. But I wish to know that which is absolutely in the hands of private individuals?—The northern portion of the Otairi is in the hands of private individuals, but I cannot give the area exactly from memory. Then there is the Ohingaiti Block. There is the Murimotu, 140,000 acres lease, and Hammond's, Marshall's and Curl's runs, a portion of the Otamakapua.

149. What is the character of the timber along the line, starting from Marton?—As well as I can recollect, up the Porewa Valley is mixed bush.

150. Totara?—Not in that part, I think. I saw totara, matai, pine, and rimu on the Rangitikei and Hautapu flats; totara on the hills; generally mixed bush of red pine, matai and rimu, &c., on the hills.

151. Is it of the same character all the way through?—It is generally of that character. At Otairi there is an area of black birch, but the general character of the country is mixed pine bush.

152. Do you know anything about the Stratford route?—No.

153. *Mr. Montgomery.*] When you refer to "agricultural land," do you mean arable land?—The land near Rangitikei is in private hands. About ten or twelve miles from Marton is under cultivation, and then it passes into bush.

154. That you do not consider arable land?—No.

155. Then, there is no arable land that you passed beyond the settled districts?—I think not. It is possible that at Ngaurukehu that portion might plough well.

156. Is that the country you spoke of as very poor land?—No; I spoke of the land coming out at Te Kapua as being good land.

157. In going through this part of the country, did you go off the line to the right and left, or did you make observations from the places where you went along?—I walked through the line, and have been all through the Crown lands. I have been through the country by what is called Murray's Line several times, also frequently, in various directions, from Wanganui.

158. My question was intended to elicit information as to the land on each side of the line, because in forest land you could not generally see very far?—No. I have been over the country a good deal, and on the high hills—what they call the Kawaeweka Range—a very high, steep hill.

159. *Mr. Larnach.*] Is it not a fact that a great deal of the bush land in this country is, when cleared, the best for agricultural purposes?—I would not say the best, but it would be very good grazing land. Some of the bush land is very rich indeed.

160. So that it does not follow that because it is bush land it is useless for cultivation?—No at all.

161. What is the climate in that direction—in the country you are alluding to: is it wet or dry, or do you consider it a more moderate climate than Wellington?—I should think it is a good climate; not very wet; and I should think also it is warmer than here. At Murimotu, however, I have seen snow on the 1st May, but it did not lie long.

162. Mr. Gill has promised to give us a map showing the Native lands, and the extent. You have no objection to certify to that map, I suppose, so that we would have, with Mr. Blackett's, a double certificate?—I shall be quite prepared to do so.

MEMORANDUM by Mr. J. W. A. MARCHANT to the Hon. E. RICHARDSON.

New Zealand Survey Department, 24th September, 1884.

WHEN called upon at an hour's notice to give evidence upon the central route, I was only in a position to speak generally as to the character of the country, &c.; since then, I have considered the whole subject, and have to submit, for the information of the Committee, the particulars they requested me to furnish.

1. The area in the Wellington Provincial District which would be benefited by the central route I estimate at 2,000,000 acres.

2. I assume that the following would be the important tributaries or feeders to the railway at the points named:—

Hunterville.—A line westward to the Turakina, and thence northwards through the Turakina and Mangapapa Valleys.

Pokiori.—A line, *via* Murray's horse-road, through the northern Otairi, to the Mangaone Valley.

Kiekie-Otara.—A line to the eastward to open Otamakapua, Mangoira, and the Upper Oroua District.

Hautapu Junction.—A line, *via* the Rangitikei and Moawhango, to connect with Owhaoko and other blocks.

Ngaurukehu.—A line to the south-westward to open up the the Upper Mangaone and Mangapapa Valleys.

Turangarere and Tuhirangi.—Lines to the eastward and northward to open up Birch's and Moorhouse's runs and the Taupo country.

3. The other main lines in the country known to me would be southward and westward, to connect the Upper Mangapapa, Turakina, Wangaehu, Mangawhero, and Wanganui Valleys.

4. If it be admitted that roads can be taken through these various routes, it is manifest that a central railway would serve a large area of the northern Wellington Provincial District.

5. The information contained in the attached Schedule A is based upon a general knowledge of the country and surveyors' reports, and gives, as far as my judgment and recollection serve me, a fair description of the lands. I have to state that I have experienced some difficulty in preparing the return, inasmuch as several years have elapsed since I visited some of the localities.

6. The summary of the lands on Schedule A shows that the tenure for the first 86 miles is as follows:—

	Acre.
Crown lands	133,800
Lands alienated to Europeans	83,947
Native lands leased to the Crown or Europeans	444,297
Native lands	298,237
Total	<u>960,281</u>

7. The character and quality of these lands are such, in my opinion, that if they were opened up by railway and roads, and offered on liberal terms, on the free-selection system, subject to settlement and improvement conditions, they would be taken up and occupied by European settlers.

8. Appended will be found copies of reports from staff and other surveyors, relating to the nature of the lands in several of the blocks. These reports are by,—

- (1.) Mr. District-Surveyor Dundas, upon the Rangatira, Otamakapua, Hautapu, and Moawhango Districts;
- (2.) Mr. District-Surveyor D. H. Monro, upon the Kirikau Block;
- (3.) Mr. Assistant-Surveyor John Annabell, upon the country generally;
- (4.) Mr. Assistant-Surveyor H. C. Field, upon Otairi Block;
- (5.) Messrs. Palmerson and Scott, upon the same block.

J. W. A. MARCHANT,
Chief Surveyor and Commissioner of Crown Lands.

SCHEDULE A.

Mileage.	Name of Block.	Area in Acres.	Tenure.	Remarks.
1 to 9	Rangitikei ..	10,000	European freehold	Mostly open country, agricultural land, settled upon.
	Paraekaretu ..	25,000	Ditto	Mostly hilly forest, part cleared, fair pastoral land, generally settled upon.
9 to 20	Tarakitihi ..	3,075	Maori (partly leased to Europeans)	Forest and open, hilly and flat, good land.
	Rangatira ..	19,500	European freehold	Forest, hilly and flat, good land; part being subdivided for sale.
	Otairi Nos. 1A and 2A	18,800	Crown lands ..	Mostly high, hilly forest country, good and fair; partly opened up by horse-road.
	" Nos. 1B and 2B	16,500	European freehold	Mostly high, hilly forest country, good and fair, partly cleared and stocked.
20 to 27	" No. 3 ..	3,772	Ditto	Hilly and flat forest, good land, partly cleared and stocked.
	" Nos. 4 and 1c	1,370	Maori	Hilly and flat forest, good and fair land, partly cleared and stocked.
	" No. 1d ..	9,367	Ditto	Hilly and flat forest, good and fair land, with clearings on Rangitikei.
	" No. 1E ..	9,175	European freehold	Mostly high, hilly forest, fair land.
27 to 45	Otamakapua ..	60,000	Crown lands ..	Mostly hilly forest, good and fair land.
	Mangamoko ..	6,498	Maori (leased to Europeans)	Hilly and flat, forest and open, good land, stocked.
	Takapurau ..	2,454	Ditto	Hilly, forest and open, good land, stocked.
	Hautapu, S.W., Upper Mangapapa, and Turakina	160,000	Maori	High, hilly forest and scrub, with flats and open country; good and fair land.
45 to 86	Te Ruanui ..	11,370	Maori (leased to Europeans)	Mostly hilly, open land, good soil, stocked.
	Hautapu, N.E. ..	100,000	Maori	Mostly hilly, forest and open, good and fair soil.
	Rangipo-Waiu ..	98,000	Maori, partly leased to Crown and occupied by Europeans	Hilly and flat, nearly all open; good and fair pastoral land towards Moawhango, but very inferior stony and pumice land to the west and northward along the Wangaehu River.
	Murimotu ..	46,400		
		601,281		
	The more remote blocks are,—			
	Middle Turakina, Mangapapa, and parts of Ohaumoko-Maungakareta	26,000	Maori	Mostly hilly forest country, good and fair land.
	Mangoira and Upper Oroua	55,000	Crown lands ..	Ditto.
	Orouamatua ..	115,000	Maori (leased to Europeans)	Mostly open country, stocked.
	Owhaoko ..	163,000	Ditto	Ditto.
	Total ..	960,281		

SUMMARY.

	Acres.
Crown lands	133,800
European lands	83,947
Native lands	298,237
Leased (Native land) ..	444,297
Total	960,281

Mr. A. DUNDAS to Mr. J. W. A. MARCHANT.

Sir,—

Palmerston North, 15th September, 1884.

In reply to your telegram of the 13th instant, I have the honour to forward the following description of the country and timber on each side of the Rangitikei and Hautapu Rivers:—

West Side.—About two-thirds of the Rangatira Block is agricultural land suitable for small farms, the remainder being good pastoral country; thence to the north there is a good width of agricultural land, partly open, intersected by the gullies of the Makohina and its branches, and running out at about four miles above Ohingaiti Clearing; from this point to the junction of the Hautapu and Rangitikei (4 miles) the steep spurs of the Otairi Range come down to the Rangitikei; from the junction, along the west bank of the Hautapu to the open country below Turangarere, I understand there is a belt of level country between the river and the foot of the spurs; thence past Turangarere towards the Murimotu, undulating and ridgy country, with flat valleys, mostly open.

East Side.—From south-west boundary of the Otamakapua Block for four miles there are high cliffs, with ridgy and undulating country behind; thence to Pakihikura Stream (5 miles) there is level country for three-quarters of a mile to foot of spurs; thence to Mangamoko Stream, high cliffs, with ridgy and undulating country at back; thence to opposite Ohingaiti Clearing, flat and undulating country; and from there to the Mangawarariki the country is rather broken: all this country (on east side) being cut up by deep gullies. From Mangawarariki, across the Kawatau, extending several miles up the Rangitikei River, there is a flat one-half to three-quarters of a mile wide, cut up by deep ravines. From the junction of the Hautapu with the Rangitikei, for some miles up the latter,

there is flat country ; and from the watershed between the Hautapu and Moawhango there are long valleys running between flat ridges into the Hautapu.

After reaching the open country there is a quantity of flat and undulating land, extending past Turangare and back towards the Moawhanga, which would be suitable for small farms.

Soil.—The soil differs in places, and it would be difficult to particularize, but as a rule it is very good. The river flats are generally rather stony, but with very good soil. The ridgy country will, when cleared, carry grass well.

Timber.—The timber on the flats is principally tawa, with rimu, kahikitea, &c. ; on the ridges it is as a rule rimu and rata, with maire, hinau, &c. I have seen no totara of any extent, except on the ridges between Hautapu and Moawhanga.

The country, except where described as level, would not be suitable for small sections. Generally, I think, the size should not be less than from 200 to 500 acres. The most broken part is the Otairi Range, and the most difficult part to give road access to is on the east side of the Rangitikei River.

I have, &c.,

A. DUNDAS,

District Surveyor.

Mr. J. W. A. Marchant, Chief Surveyor.

EXTRACT from a LETTER from Mr. D. H. MUNRO to Mr. J. W. A. MARCHANT.

Wanganui, 14th July, 1875.

The Kirikau Block is mostly covered with rough, hilly bush, with fern flats here and there in the bends of the Wanganui River. The Kokakonui and Kokakoriki gullies are partly open ; the latter, together with the hills rising on each side of it, covered for the most part with light second growth and fern ("hunua"), the original bush having been destroyed by fire. Both these gullies afford tolerable access to the back of the block. The portion added to the block at Te Rauwhare contains a few hundred acres of undulating fern land, rising gradually as it recedes from the Wanganui River. The portion added to the block at Te Iringa-a-Te Whui, and extending down the Ohuha Stream to the Kawautahi, is all bush and mostly hilly. Good sawing timber, including totara, rimu, and matai, is to be found in most of the bush gullies. The soil is of good character in all parts of the block.

Mr. J. ANNABELL to Mr. J. W. A. MARCHANT.

Mr. J. W. A. Marchant, Chief Surveyor.

Wanganui, 16th September, 1884.

IN reply to your telegram, I consider Otairi fair grazing bush-country, with good flats for homesteads on Rangitikei River ; Ngaurukehu, Te Kapua, and Te Ruanui, fair pastoral land ; Maungakaretu, rough, but good soil. Rangataua and lands from Murimotu towards Wanganui River seem low-lying undulating hills, and good deal of level, particularly about Manganui-a-te-ao River, with, I believe, much totara bush and deep rich soil ; and towards west of Ruapehu large open flats show from Kirikau Trig. Stations ; beyond, towards the north, seems mostly open land.

JOHN ANNABELL,

Assistant Surveyor.

Mr. H. A. FIELD to Mr. J. W. A. MARCHANT.

SIR,—

Waikanae, 2nd September, 1879.

I have the honour to forward you a short report on Otairi Block, as required.

The block is all rough bush country, except three patches of fern on the Rangitikei, and another bit of rough fern ground on the Mangapapa Stream about Pumaro. There is also a little flat ground in valley of the Pourewa, at Te Kieke, and along the course of the Rangitikei, all of which, with the exception of fern above mentioned, is very heavily timbered with kahikatea, matai, rimu, and totara, and might at a future time be valuable for the timber on it. The soil on the Turakina appears to be hard and cold, and covered with scrubby bush, resembling very much the adjoining Paraekaretu Block. All the country above the long ridge at Te Namu, and all east of the Pourewa Stream, is heavily timbered, and covered with a rich loamy soil, that can hardly be excelled.

There is already a road laid off up through the block. It follows up the valley of the Pourewa, and, winding along the eastern side of it towards its head, rises over the ridge ; thence along the eastern face of Tauporae, and crossing a hollow in the ridge between Tauporae and Te Kumu, and thence along the western side of ridge to Te Kumu, crossing ridge again a little east of Te Kumu, and following down the eastern side of a small branch ridge to the Mangaone Stream ; thence it is laid off through to the plains at Te Kapua. A road to get at the western side of the block will have to be taken up from the Paraekaretu, but that will be different, owing to the precipitous nature of the streams. A very good road could easily be got up the Rangitikei, starting from a little above the north-east corner of Paraekaretu ; thence across to Manganoho ; then following along just outside the boundary of Otairi to Te Kieke, crossing the Makohina Stream near its mouth, and thence by way of Pauerawera, Ohingaiti, and Powakarua to the upper boundary. I believe this would be the best way to take the main road from Marton, instead of the way of Te Kumu, as laid off. So far as I have seen, a railway could be taken this way easily ; most of the way would be on level ground.

I have, &c.,

HENRY A. FIELD,

Assistant Surveyor.

Mr. J. W. A. Marchant.

Chief Surveyor, Wellington.

MEMORANDUM from Messrs. PALMERSON and SCOTT to Mr. J. W. A. MARCHANT.

Mr. J. W. A. Marchant.

Palmerston North, 15th August, 1881.

We herewith send you the information requested in your memorandum of the 5th June, relative to the character of the soil, bush, topography, &c.

Otairi No. 1 consists of about 46,530 acres, of very broken, hilly country, the soil of which is fairly good, and suitable for pastoral purposes. It is heavily timbered, with the exception of about 2,000 acres bordering on the Turakina River, which is good fern and scrub land; there are also about 2,000 acres of good fern and scrub land lying along the Rangitikei River.

Otairi No. 2 consists of about 831 acres, of low, hilly country, bordering on the Mangapapa Stream. A considerable portion of it, having formerly been a Maori settlement, consists of open fern land, or is overgrown with light scrub; soil very good.

Otairi No. 3 consists of about 3,843 acres, of rich, undulating country, heavily timbered with rimu, kahikitea, matai, matai, &c.

Otairi No. 4 consists of 500 acres, is very broken, hilly country, and heavily timbered; the soil is fairly good, and suitable for pastoral purposes.

PALMERSON and SCOTT.

TUESDAY, 16TH SEPTEMBER, 1884.

Mr. JOHN SHEEHAN, examined.

163. *The Chairman.*] You are aware, Mr. Sheehan, that this Committee has been appointed to inquire into the relative merits of the different routes proposed for the North Island Trunk Railway?—Yes.

164. It has been suggested to the Committee that you are possessed of information which you would be willing to place at the disposal of the Committee on this subject. I should like to ask you whether you are personally acquainted with the country through which the respective lines would pass?—I am with the proposed Taupo-Napier route. I have been over that country frequently. I have also been over the central line to Rangitikei as far as Tokano, and a considerable distance on the other side, but not right through it, and from Marton northwards. On the Stratford line I have been close up to White Cliffs on the one side and to Te Kuiti on the other side, and from a point there I had a view of the country that I passed for a distance of about twenty-five miles.

165. Can you give us any idea as to the nature of the soil—its fitness, or otherwise, for agricultural settlement—on the Taupo-Napier line?—Shortly after the proposed Napier line leaves Te Awamutu—say, about ten or fifteen miles—the country begins to consist almost entirely of very light pumice soil. Travelling on to the crossing of the Waikato it becomes decidedly pumice, and from that down to the Tarawera is some of the worst country we have in the North Island.

166. *Mr. Fulton.*] A distance of how many miles?—I could not tell you. From Te Tapuaharuru to Tapuaharuru the country is of the most sterile character possible. It is all poor pumice country, especially so from Tapuaharuru down to Opepe. Knowing the country, I should be sorry to see any friend of mine taking it up to make a living out of it. Coming down from Opepe to Tarawera it is mostly pumice country. Some of the cuttings on the line of road show 80 feet of pumice. Down from Tarawera the country begins to improve, and from the Pohui down to Napier, a distance of about twenty-five miles, the land gradually improves, limestone formation comes in, and the country is good stock country. Certainly two-thirds of the line is poor country, and mostly composed of pumice.

167. *The Chairman.*] Now, take the next line. Will you tell us what you know about that?—The central line differs very materially from the eastern route in regard to the quality of the country. From the point where we cross the Waikato River it does pass through some pumice country, and, reaching Lake Taupo, it avoids pumice country, passing on the western side. It appears, from what I have seen of the country myself, the prevailing winds settle where the pumice should be. From Taupomoana the line passes through good country, but in places very much broken. My knowledge of the country terminates at about the 130th mile marked on the plan produced, coming from the Waikato side, and I take up again my knowledge of the country at 30 miles on the Wellington side, starting at Marton. The information I possess with regard to the balance of the country is very considerable, gained by my own agents whom I sent out when conducting land sales. I had reports furnished by them to me.

168. You brought us down on the map to the west side of Tongariro?—Well, coming south from that point the information I have is from men in my employment—surveyors—who say that the land is of very good quality but very much broken, down to a point thirty miles from Marton.

169. You wish to convey to the Committee that all the land between Tongariro and a point thirty miles from Marton is more or less of a broken nature?—Yes; the soil is of good quality, though.

170. Well, then, with regard to the thirty miles?—All that is good land.

171. Are you aware of how much is settled?—There is not much settled beyond the thirty miles, but the settlements are of this kind: large stations held by private persons, consisting of holdings of many thousand acres.

172. The Tarakaritu Block is settled?—Yes.

173. Now, with regard to the Stratford route, what information can you give us about that?—I have been on the northern side close up to Te Kuiti, that is, about twenty-five or thirty miles out. I have also been on the Hikurangi Range, which rises about 1,000 feet above the sea-level, and from that you get an extensive view of the valley leading out to the Mokau. The land there carries grass and clover. The Hikurangi Range gives you a good view of the country—a very level country;

it was simply almost like a sea, a vast plain. The country is all fit for settlement. On the Stratford line I do not profess to know much about the country beyond perhaps thirty-two miles from Stratford. The country is considerably broken. With regard to the Mokau line, up to Urenui the country is fairly level, but I am informed that up to where it crosses over the mouth of the Mokau River it is very broken. The great bulk of the country from Te Awamutu, by either of the west coast lines, is Native land, open to be acquired by the Government, and thereby made a means of paying the cost of the railway. Taking the central route, the end is almost entirely in the hands of private persons right down to Lake Taupo. Leaving Lake Taupo and passing through the Murimotu Block and Rangipo, that line is also private property under lease. In fact, there is very little left of Native land along that part of the line. Between Te Kuiti and coming down to Manga, on the western side of Lake Taupo, there is Native land, but all from Lake Taupo right to Rangiaowhia is in the hands of private persons.

174. *Mr. W. White.*] I think Mr. Sheehan said that the land on the central route from the 130th to the 30th mile is good land. Is not there a lot of pumice stone on that?—It mostly runs through pumice country. What I said was that I could speak of the line thirty miles from Marton; that is good land.

175. *Mr. Fergus.*] As a matter of fact, there are one hundred miles of the central route that you do not know anything about except from hearsay?—I know it from Te Awamutu down to the south side of Lake Taupo, and from Marton about thirty miles up from the other end. The nature of the balance I know from the reports of my men.

176. Your personal knowledge though leaves one hundred miles out?—It may be so. I do not profess to know anything of the line from the south of Lake Taupo to a point about thirty miles from Marton, personally.

177. What is the character of the land from the south side of Lake Taupo, so far as you can gather?—I have said that the reports brought to me by persons in my employ, whom I sent out to make investigations as to the nature of the land, say that the soil is fairly good, but the country is very much broken.

178. Not any pumice?—Very little pumice. Pumice is mostly found on the western and northern sides.

179. Either the central route or the Stratford route serves the good land which you know absolutely of your own knowledge?—I should say that the Stratford line would serve more of the good land, and land that the Government might acquire.

180. From your knowledge of the Marton and Stratford routes, on which has there been the most population?—On the Stratford route.

181. There are more Maoris settled on the Stratford route even now than on the Marton route?—Yes. Almost away down to Lake Taupo there is hardly a settlement on the central route.

182. You are of opinion that the Stratford route would serve best for opening up the good land there?—Unquestionably.

183. It would suit the central line as well?—Yes.

184. Are you aware that there are any Maori settlements along the route from Stratford upwards?—About twenty miles after leaving Stratford you come into the Mokau country, and that the most densely-populated country in the North with Maoris.

185. Is it not a fact that the Natives are mostly along the coast, and not in the interior?—They are mostly on the coast. All the tribes go down to the coast in certain seasons for a change of food.

186. That would account for the fact that there are more settlements on the Stratford route than on the Marton route?—Yes.

187. Is the Maori population extensive from Marton upwards to Murimotu?—No. The Maori population follows the course of the Wanganui River to a large extent. On the Murimotu-Rangipo side there is no great population.

188. And in the Tuhua country?—Yes, there is.

189. The Marton railway runs through the Tuhua country?—It runs closer to it than the other line does. The access to it from the central line would be closer than the proposed route.

190. *Mr. Larnach.*] I understood you to say, Mr. Sheehan, that in the central line the greater part of the land is in the hands of private individuals?—Yes; not all by freehold—by sale or lease.

191. Do I understand that on the Stratford or western line they are chiefly Native lands, or lands held by the Crown?—The Crown holds little or nothing. The land is what you might call virgin country, in the hands of Natives.

192. And that land is chiefly good?—Chiefly good land.

193. If all the circumstances were nearly equal, what line would you favour from your knowledge of the country, and looking to the future?—Of course, in giving an answer to that question you must allow for a certain amount of prejudice. I think the best line of those before the Committee is the Stratford line.

194. If possible, I should like you to abolish all prejudice, and look to the future settlement of the country?—Of course, I am only human, Mr. Larnach, and I cannot avoid prejudice to a certain extent; but, trying to avoid it, in my opinion I think the Te Awamutu-Stratford line would open up the most country available for settlement. I might mention that in 1878 Dr. Hector went through that country at my request—from Waitara into Alexandra—and there is a report of his tour somewhere in the blue books. It gives an account of the country, and refers to the indications of minerals.

195. Nearest to which line is it supposed the auriferous country exists?—There is a part of the country up there supposed to be auriferous. In 1871 the Provincial Government of Auckland,

of which I was a member, sent up two prospectors, who began operations from Tapuaehawa. They found that the farther they got west and south the better the prospects were. The gold country, if it is at all payable, is probably near the central line. There have been specimens found on the side towards Mokau River. At the present time there is in Wellington—I saw him in town this morning—a man named Mathew Barry, who has been in the Tuhua country, and from whom you might get information as to the gold-bearing prospects of the country—as much as he will give you. He was only turned out of that country a few months ago by the Natives.

Mr. D. FRASER, Farmer, Rangitikei, examined.

196. *The Chairman.*] You are aware that this Committee has been appointed by the House of Representatives to take evidence with a view of selecting the best route for the main trunk railway-line through this Island?—Yes.

197. It has been suggested that you are able to give us some information on the subject. Would you tell the Committee whether you have been through any of the proposed routes?—I have been up the Marton line from Marton, on three different occasions, as far as opposite Tongariro, and then down to the east of Lake Taupo, and out on the other side of Lake Taupo to Tuhua. I have also been from Napier by coach to Taupo down to Ohinemutu, and back from Ohinemutu through the horse-track to Cambridge. I am not acquainted with the country on the west side of Ruapehu.

198. Will you tell us what sort of country it is, starting from Marton, up the central track?—For the first ten or twelve miles from Marton it is all clear, open land, and occupied. Then, there is a valley, of some twelve or fourteen miles, called the Pourewa. A track goes up there, and about fourteen or fifteen miles from the clear land there is a track called Murray's Track, which goes round on the east side of the Otairi Hill and joins the Hautapu some distance up. All the land from Marton to the foot of the Otairi is of excellent character—splendid land, heavily timbered—principally pines. The soil is very good. There is broken land too, of course, but even on the tops of the hills it is very good, with the exception of this Otairi, which is a very narrow ridge, and there is a small piece of birch land, and the soil is not good. Then, I have been right up the river, and at a place called Makohine there is a flat on the terrace above the bed of the Rangitikei River, ranging from half a mile to a mile and a half in width. I have been over the old track which the Natives used to travel, about twelve miles from the mouth of the Makohine. The land is all good there. Above that, to the mouth of the Hautapu, I have not traversed. At the head of the Hautapu there is a waterfall called Turangarere. I have been there and crossed to where the head of the Rangitikei takes its rise.

199. *Mr. Larnach.*] Is that the waterfall which falls about 60ft.?—No; it is a small waterfall. I should say it is not more than 15ft. or 20ft. The land there is clear, open land, and very good soil. Just about twelve miles from there is a track across to Birch's station. They have a large number of sheep there—about thirty or forty thousand. That track continues down to Napier. Then, there is another track that branches from there to the West Coast. It goes through a good deal of clear land down to a place commonly known as Hazeldeen's, and leads down to the Wanganui. That is all good soil right along, although broken in many places; but nowhere along the river is there what you would call really flat land; it is undulating land, but one-fourth, at all events, is ploughable, and fit for farming use.

200. *The Chairman.*] Clear of timber?—There is a good deal of it clear now. On my first visit there, in 1852, there were a great number of Natives settled all the way along there. In fact, from the mouth of the Makohine up to the mouth of the Hautapu, and above it, they used to grow wheat. I have bought as much as eight thousand bushels from the Natives there at a time.

201. *Mr. Larnach.*] You are still speaking of the country abutting on the central line?—Yes, on both sides of the Rangitikei. The land from the mouth of the Makohine, I understand, is all Native land upon the west side, with the exception of a portion of the Otairi Block, which the Government have—some sixteen or eighteen thousand acres. On the opposite side of the river, there is the block called Otamakapau, going up as far as the mouth of the Kawatau; it goes from the east, and is nearly opposite the junction of the Hautapu. The timber on the terraces and flats there is of very good quality—a great deal of totara, some of the finest patches of totara I have seen. There is a small piece of twenty or twenty-five thousand acres of clear land in about the centre of this Otamakapua Block which is reserved.

202. *The Chairman.*] A Native reserve?—A Native reserve, but it is occupied now by Europeans. The bulk of the timber in the Otamakapua, along the side of the Rangitikei, is not so heavy. A good deal of the land is covered with koromiko and scrub.

203. Are you of opinion, from your observations, that the great bulk of the land that would be tapped by that line is fit for settlement?—All from a short distance of this end to the Ruapehu. I think all that is fit for settlement. The soil is excellent all the way along, and it would open up a piece of land out as far as Rangitikei, where the birches are. Of course it is very difficult for any one to give a definite opinion who has merely travelled through without any object. My first object was to take that piece of land lying between the Hautapu and the Rangitikei River—a V-shaped piece of land of about twelve miles across from Turangarere, and running down to the junction of the Hautapu and Rangitikei Rivers. But there was a dispute among the Natives themselves, and I could not take it. It was quite good enough for me if I could have made arrangements to have taken it.

204. You told us before that you are not acquainted with the Te Awamutu end of this line?—No; I am not. I have been over the other side of the Taupo Lake as far as Tuhua.

205. Do you know anything about the gold-bearing country there?—Although I am an old digger I did not see any indications of gold.

206. Do you know anything of the Stratford line?—Nothing further than the township of Stratford itself. I have been there.

207. You stated, I believe, that you travelled between Napier and Taupo?—By coach.

208. Will you just state your opinion of that piece of country?—With regard to two-thirds of the distance from Taupo Lake towards Napier, if they gave me fifty thousand acres for nothing, to make my living out of it, I would not take it. The land is bad and worthless.

209. *Mr. Fergus.*] Talking of the country from Marton upwards, are there any indications of Maori settlement there as far as Ruapehu?—The traffic of the Natives, of course, was done by canoes, and they all lived upon the banks of the Rangitikei River. In 1850, at a settlement called Otara, there were between two and three hundred Natives settled there, and they were there for years and years. Above that—ten or eleven miles—there is another settlement of about eighty Natives. On the Hautapu, again, there are three different settlements, and on the Rangitikei there were several settlements.

210. According to the distance you have described, you have been up about eighty miles of that country?—Yes.

211. What would you say was the average width of land, say, good ploughable agricultural land?—The ploughable agricultural land would be in patches alongside the valleys and sidlings of the streams. As far as I could judge, I should say there are fully eight or ten miles of good land on both sides, and fully a third of that could be ploughed.

212. Of the country beyond the eighty miles you do not know much?—No; I have not been there, except that I have been in the Tuhua country.

213. How did you get there?—I went round from Taupo to Tuhua.

214. Of the country from Tuhua to Ruapehu you do not know much, I suppose?—No.

215. Is there any good marketable timber on the Marton line from what you saw between Marton and Ruapehu?—There are some of the finest clumps of totara and other timber I have seen from the Makohine to the clear land on the Hautapu.

216. *Mr. Montgomery.*] You say that for eighty miles the land is fit for the plough for eight or ten miles on either side?—Yes; one-third of it is.

217. Is the country timbered or open from twenty-three miles from Marton up to the eighty-mile point?—I think there is more open country than timber.

218. Contiguous to the railway route?—Yes; the railway would run right through it. All the way where it leaves the Hautapu until it joins the foot of Ruapehu it only goes through a small clump of timber.

219. What is the character of the soil on the open country?—It is very good soil. There is koromiko growing there.

220. Where koromiko is growing you call it open land?—Yes. There is also fern and flax in the valleys.

221. There is no grass?—Yes. On the plains it is tussocky grass.

222. Then, this open land is not timbered, but is generally covered with koromiko, fern, and flax?—Yes. We always take koromiko as an indication of the land being good. Koromiko scrub is preferred to manuka.

223. *Mr. Larnach.*] You say you know the land as far as Ruapehu. There is a good deal of land beyond there?—I have not been past there, but I have heard so.

224. Have you any idea of what distance of good land there is after leaving Ruapehu, northward?—I should say that the greater part of it is fairly good land; from there right across, all the way.

225. One hundred miles?—I should think so.

226. Have you any idea how much of the land along that line is held by the Crown, and how much by Natives and private individuals?—The first twenty-five miles from Marton is, of course, all in the hands of private individuals. Then, there is one block on the east side, of about sixteen or eighteen thousand acres, belonging to the Government—a portion of the Otairi Block. Then, there is another portion of the same block, of a similar size, belonging to private individuals. Then, all the land from there right out to the Murimotu is Native land.

227. On both sides of the line?—No; on one side—the west side. The land on the east side is a portion of the Otamakapua Block that comes up to the Kawatea.

228. To whom does it belong?—It belongs to the Crown. There are three blocks—104,000 acres in the Otamakapua; 29,000 acres in the Waitapu; and the Mangawhera Block, which was bought a good many years ago, about eighteen or twenty thousand acres; and from that again all the land is in the hands of Natives, excepting when you get up to the waterfall I have mentioned. Then, there is the land occupied by Messrs. Moorhouse and Studholme, leasehold; Morrin's leasehold; and Birch's, on the east side, a very large area, also leasehold.

229. In regard to any of the lands you speak of, are there, so far as you know, any provisions as to purchasing clauses?—You cannot get any purchasing clause with any Native land.

230. I understand, then, there is a good deal of land held by private individuals along that line?—Yes.

231. How long have you known that country?—I went to Taupo in 1866, and I have been there on two different occasions since then. I went up the Rangitikei as far as thirty-two miles in 1852, when there were a great many Natives living all up and down the river.

WEDNESDAY, 17TH SEPTEMBER, 1884.

WAHANUI, examined.

232. *The Chairman.*] This Committee has been appointed to inquire into the feasibility of making a railway through this Island, and we have asked you to come here to-day to tell us what you know of the land through which the different lines would pass. Do you think there will be any difficulty in getting a line through the Tuhua country?—I can only speak of the land running from Tongariro to the White Cliffs northward. We had some discussion with Mr. Bryce about a railway through that land. He asked us if we would agree to a line being tried for a railway through that country, and we agreed on this understanding: that, when it was decided what line there was to be, our consent would be formally asked to the line being made. We wished that all the final arrangements connected with our lands should be settled first.

233. Have you been through this country since the surveyors went there and surveyed the lines?—I came along through the country as far as my own boundary, and then down the Ohura River.

233a. Have you been on the north part of the Stratford route since it was surveyed?—I have been on the Mokau line, not since it was surveyed, but previously. I have not been on the other part of the country. The piece from the junction of the central line to the junction of the Stratford and Mokau lines passes in front of our habitations.

234. Which of these lines goes through the best country for agricultural settlement?—The central line. To the westward of Taupo, on the Stratford line, there will have to be some tunnelling; the country is very broken. The fault of that line, however, is that it is longer than the others. The advantage of the Mokau line is its shortness.

235. Apart from a consideration of distance, which route do you think is the best for settlement?—The land to the junction of the central and Mokau lines is very good. Then on the Mokau line it gets very indifferent. The Mokau line is simply a coast-line.

236. Now, in regard to the central line?—The north end of the central line is very good until it comes to the westward of Taupo. The disadvantage of that part to the westward of Tongariro and Ruapehu is the pumice. I am not acquainted with the country beyond that.

237. Has any part of the country between Te Awamutu and the boundary you have described passed out of Native tenure?—None of the land comprised within my boundary has passed into the hands of Europeans. I excluded the land belonging to Europeans from my boundary.

238. *Mr. Fulton.*] Either by lease or sale?—No; there are no leases within the boundary; no portion of it has been sold. The land is good from mile 60 to 100 on the Stratford line, as marked on the map, and bad between 20 and 60. I have followed down the Stratford line as far as the Ohura River. I am familiar with the country from Te Awamutu down as far as the Ohura River. The country west of the river is very broken. From Te Awamutu down to Mokau River the land is all good, and is level.

239. *The Chairman.*] Which of the two lines would you and your friends prefer being made?—We have no choice in the matter. We did not ask for either of them to be made.

240. But the Government have surveyed both, and now we want to ascertain which is the best, and would also like to know which route the Maoris themselves would prefer?—I will now give my own opinion. The line I would prefer is the Stratford line. I have no authority whatever lower than the boundary I have described—from Tongariro to the White Cliffs. I could not give my consent for the line to be made southward of that boundary; the land belongs to the other tribes.

241. The white people wish to have a road to travel quickly through the country: do you not think the Maoris would like that?—We approve of it.

242. Why do you prefer the Stratford route?—Because the land is rich.

243. Better on that line than on the other?—Yes. A portion of the central line is pumice. I have been asked many questions since I have been in Wellington about arrangements concerning our land. It is my desire to have all these matters settled.

244. The Committee is only allowed to inquire into the question of a railway route, and the Native Minister and the Government must settle the other questions?—Quite right. I have no particular partiality for either of the routes being selected. I am quite content for any one of the routes to be adopted; but I am sure the Stratford line is the best, because it goes through good land. A good deal of the land that the central line runs through is pumice. The advantage of the central line, however, is that the country is much flatter, and it passes into the vicinity of a great quantity of totara, which would be available for sleepers. If our arrangements respecting this land were completed, I should be in a position to assist considerably in pointing out the best country.

245. You are sure that none of the land in your boundary has passed out of the Native tenure?—It all remains with the Natives. The Europeans have some leaseholds just about Tongariro.

246. Will you and your friends give every assistance towards making these lines, so as to get through quickly?—That is a question I cannot answer now, because I am here by myself. I should have to consult my people before replying.

247. But you have said you would all like to see a railway running through?—If I were to tell you now that I could consent and would help to make the line, I should be taking too much upon myself. Let me go back and consult with my people.

248. You yourself are favourable?—The little matters that I brought down in my calabash to have put right have not been attended to; and before replying to your question I would like to have my own matters put right. It will not do for me to give way all at once without some concessions on the other side. I think we had better both hold back. If the Government will only assist me in the object with which I have come to Wellington, I will do all in my power to assist the Government in carrying out this matter, and I will be very strong to give effect to the wishes of the Government in regard to this railway-making.

TUESDAY, 16TH SEPTEMBER, 1884.

Mr. JOHN ROCHFORD, 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 Mangahuru, 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 ROCHFORD, 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.

277. Will there be anything steeper than that?—No.

278. Are you sure of that?—I am perfectly certain; and even that could be done away with by lengthening the line.

279. How much?—It might, perhaps, make four miles difference in the total length of the line. By lengthening the line a gradient of 1 in 70 might be continued throughout.

280. That is, 1 in 70 would be the steepest?—Yes; I feel confident of that, and can prove it on the plans I possess.

281. What are the sharpest curves on that line as now laid out?—Nine chains.

282. Are there many of them?—Yes, a good many of them.

283. Are there any reverse curves?—None without a short piece of straight.

284. And if you lengthened the line by these four miles, would it make any difference to the curves?—No, I think not; the country is much about the same all through. The slopes on the hills are generally very light indeed. There is no country such as the Rimutaka.

285. *Mr. White.*] Which line are you referring to as having no worse grade than 1 in 70?—The central line.

The Chairman: His evidence is all confined to the one line.

286. *Mr. Fergus.*] How long were you in that country altogether?—Eighteen months.

287. How much of that time did you spend in exploration?—The time occupied by survey was about three months. A great deal of the time I was delayed by Maoris.

288. How long were you delayed by Maoris?—I have described all that in my report.

289. Then, what is the actual time you were exploring?—I think about six months.

290. Do you think an aneroid survey is sufficient on which to base an estimate of any line?—I feel confident it is.

291. An aneroid survey alone?—Yes. The first survey of the Rimutaka, and several other lines I have been connected with, came out within a very few feet—under 20.

292. Do you think it would be possible to save the £84,000—reckoning £400 per mile—which you put down for a road, by constructing the line at each end, and running the materials over that way?—A great deal of it could be saved, no doubt, in that way; but, of course, the necessity or otherwise of a road would depend on the speed with which it was desired to carry on the line. If you wished to begin at several points at once, you must have a road.

293. But would not that increase the cost of the line?—Not very much, I think.

294. There is the cartage of hauling materials and so forth.—The line would be a very long time in constructing unless you made a road.

295. Then you think it would be necessary to have a road?—I think it would, over a great part of the line.

296. *Mr. Fulton.*] Would £400 per mile make anything of a road?—I think it would. That would be at the rate of £5 per chain. Of course the road would not follow the railway exactly.

297. What sort of a road would you make for that money?—Take the timber off where there is bush, and form, say, 16ft.

298. That sum would not metal the road at all, would it?—I think it would where it was necessary to metal it. It would not be necessary in all places—in the open country, for instance. In the bush, of course, the land cuts up very quickly.

299. What are the sharpest curves allowed by the Government?— $7\frac{1}{2}$ chains are allowed now.

300. *Mr. Larnach.*] I understand there are no curves on this line under 9 chains?—None.

301. How many curves are there like that?—I could not tell you.

302. As far as you remember, are they numerous?—There are a good many in the valleys. But of course you get long valleys that are very straight, and don't require any. I should like to have an opportunity of explaining the sections to the Committee, if possible.

The Chairman: We will come to that directly.

303. *Mr. Larnach:* Don't you think, if there is to be much traffic on this road, a mere formation of it will not be sufficient for carrying railway material?—It would become useless, I should imagine, unless it were metalled. I think it would be. Most of it could be metalled even for the amount estimated. The road would be for the conveyance of stores for the labourers, and contractors' plant, &c. Railway materials would come along the line.

304. Is there much rain along the line?—Not more than usual in other parts. A good deal of the country would stand without metal.

305. *Mr. Fulton.*] What is the whole length of tunnelling?—The longest tunnel is 1,214 yards. The rest are only small ones.

306. *Mr. Larnach.*] If this line were proceeded with, and a road made, would that road be of much consequence to the district afterwards?—I don't think it would be possible to run it parallel with the line.

307. Would it be of much use after the railway is in operation?—Decidedly. My idea is that it would not be advisable to run the road by the side of the line, but run it into points where supplies could be obtained from the ends of present roads, and so on. Most probably the length would be very considerably under the length of the whole line.

308. Do I understand that this estimate of yours is not really to make a road running continuously in the same direction as the railway, but to make roads coming from other roads?—Yes. Running alongside the railway would not be of much benefit to the district afterwards.

309. *The Chairman.*] I understand from the general tone of your evidence that the road is wanted during the construction to enable the working population on the railway to get their stores, also to get timber and similar materials required for the construction of the railway, and that two hundred and ten miles is only an estimate of the distance? It does not necessarily mean that the two hundred and ten miles will be alongside the railway, but merely to connect with present roads?—Yes. There are several points from which connections could be got.

310. You have not only surveyed this line, but to a great extent explored the country round about it?—Yes; I have been on most of the country on either side.

311. Will you give the Committee a general idea of the nature of the land through which this line passes, as to its fitness for settlement or otherwise?—That is given in my supplementary report.

Extract read, as follows:—

“*The First Section, Marton to Hautapu*, forty-three miles, is good land all through, and more than half is level, and, except some six or seven miles, all this section is bush, mostly valuable milling timber, and ballast can be got near. The only feature of importance is the Makohine Viaduct; but the following ideas should be carefully worked out before a detailed survey is made: First, whether a better line would not be got by following up the Porewa Valley some three miles further to Pokiore, and then crossing the watershed between the Rangitikei and Porewa. Second, whether it would not be better to follow up the Makohine, and avoid the necessity for the viaduct. Third, whether a shorter line could be got up the Makohine, to fall in to present line at Three-log Creek or Hautapu; and whether the bends caused by the Hautapu could not be shortened.”

312. You say it is good land all through. From what point of view?—Chiefly good agricultural land, almost without exception. And there is also a large extent of country which would feed into that, which is also good.

313. Do you mean to say it is good agricultural country as it now stands; or is it heavily bushed, and will it only be agricultural land when the bush is taken off it?—It is heavily bushed, and the bush would have to be taken off it. The bush is of splendid quality, and would no doubt pay for the removal.

314. And the land would be good agricultural land afterwards?—Yes.

315. What is the tenure of the land?—Most of the land is in the hands of Natives beyond the twenty-third mile, but part is under treaty with the Government to purchase or lease, I do not know which.

316. *Mr. Larnach*: None of the land is in private hands?—None above that point.

317. *The Chairman*: Then, in your supplementary report, you say: “*The Second Section, Turangarere to Hautapu*, was surveyed the reverse way; but, continuing my description forwards, the land is very good all through, and, except some ten miles, is all bush; the timber is good milling timber. Ballast can be got at several places, and plenty will doubtless be opened out in the cuttings. In the open part of this section limestone outcrops occur in many places some fifty feet above the general flat of the valley, and will no doubt be useful in cheapening cost of culverts, &c. Turangarere is the point from which a communication would be established with the inland Patea, which is a very extensive block of country of splendid character, and is on the road to Napier from Murimotu.” You say that this is all good land?—Yes.

318. It is all bush?—Except some ten miles.

319. What is the length of that section?—That section is twenty-six miles.

320. It is good land when cleared of timber?—Yes; and the open land is very good as a rule.

321. Then, for ten miles it is open land?—Yes.

322. And good agricultural land?—There is a large portion of hill about it; but the hills are very low.

323. Would you describe the hills as downs, or really steep hills?—I would describe them as downs.

324. Is it land that you could plough; or is it too steep to plough?—I am sure you could plough the most of it.

325. *Mr. Larnach*.] The land is good in itself?—Very good in itself.

326. *The Chairman*.] Continuing your report, you say,—

“*The Third Section, Turangarere to Waimarino*, was surveyed forwards, and for the first seven miles is tolerably good open land, grass in the valleys and on hill-sides; tops of hills generally good totara bush; the next thirteen miles the land is open, and, except some four or five miles in the Waitangi Valley, is poor, with pumice sand; but limestone exists, outcropping, as in the last section, all through at a level of about fifty feet above the surrounding flat. This last is the Murimotu Plain, leased as sheep country. Good bricks have been made in the neighbourhood; and the pumice sand and local limestone are said to produce mortar of a remarkably good character.

“After this there are about twelve miles of level forest country, timber and soil both good, and to west of the line about 100,000 acres of similar land: still further west, between this and the Wanganui River, there is an area of 100,000 acres of broken country (papa rock and marl), but the land is generally of good quality, and the timber chiefly taua. On the east side of the line hereabouts the country rises, forming a level table-land, moderately good, but not by any means to be compared with the lower flat. The timber on this table-land is largely mixed with kaikowhaka, a poor sort of cedar, only fit for cabinetmakers' work. This table-land ends at the flanks of Ruapehu, from which mountain spurs run down into it.”

—I should like to say that at the beginning of this section Turangarere has a connection with the inland Patea country, an immense district, which can nearly all be called agricultural land. Drays have come from Napier within nine miles of that point. It is a splendid block of country.

327. *Mr. Larnach*.] Is it in the hands of the Natives?—Yes; but part of it is leased to Messrs. Birch.

328. *The Chairman*.] What is the length of the third section?—Forty-three miles.

329. Have you anything to say about the third section beyond what is in the report?—No. The Murimotu Plain is very poor; but directly you go to the forest country beyond, which is of very considerable extent, the land is very good. In this there are some little isolated limestone hills I

noticed; but the country right through is flat for, I think, seventeen miles, although the railway line does not go quite so far along it, but rises on to a table-land. Then take the fourth section. I think the description in my report is tolerably fair. Of course there is some pumice in that country.

330. Did you notice in your explorations any indications of minerals?—I did not.

331. Any coal?—I have seen coal there. I brought a number of specimens back with me.

332. From what part of the country?—Near Te Kuiti. I brought specimens from close to Tauwaranui.

333. Would that coal which you speak of, near Te Kuiti, be at the head-waters of the Mokau?—No; at the head-waters of the Waipa; and the other is on the Wanganui River.

334. Is it good coal?—It is brown coal.

335. All of it?—Yes. I have a number of specimens in these buildings now.

336. It is all brown coal?—Yes; I tried every specimen.

337. *Mr. Fergus.*] You said yesterday that most of this line would be somewhat similar to the Canterbury Plains?—Yes.

338. Are you aware of the cost of constructing a line through the Canterbury Plains?—I know that the average cost was about £6,000.

339. This is £6,093. Is that a small cost for the construction of a line through favourable country?—I consider it is an average price. For a great deal of the country it will be very much less. Lots of it would not come up to that amount by £2,000 per mile.

340. Then, the heaviest portion of the country would be considerably more?—Yes; but I think the light part is very considerably in excess of the heavy part—in fact, I know it is.

341. And the cost of the line over the Canterbury Plains was considerably more?—Yes; but on that line the bridging is remarkably heavy.

342. You know the land pretty well through the Canterbury Plains, and also from Oamaru down to Dunedin?—No; I do not know the latter line.

343. You know that through the Canterbury Plains, then?—Yes, all of it.

344. Do you consider that the land on the Marton line would average that on the Canterbury Plains from Christchurch down to Timaru?—I should say it was better, except in regard to the Timaru end.

345. You think there is better land along the Marton line than there is on the Canterbury Plains, on an average?—Decidedly.

346. What would you give as the extent of good land from Christchurch to Timaru? Is there as great an extent of good land on the Marton line as on that line?—I should say there is quite as much good land. I should say there is even more. There is a large extent of country.

347. I mean per mile?—Yes, quite as much; only this is bush, and on the Canterbury line it is open.

348. *Mr. Montgomery.*] You have gone over each side of the Marton line some miles, in the course of your explorations?—Yes, a great many miles—twenty, I should say.

349. Over all the line, from end to end?—Well, through the greatest part of it.

350. *The Chairman.*] As much as twenty miles?—Yes; but there are parts where I have not been that distance.

351. *Mr. Montgomery.*] Have you gone more than four miles?—Yes, considerably more than that. I have gone right through to the Wanganui River: that is about twenty miles.

352. Did you go backward and forward in order to get the best line, thus enabling you to see a good deal of the land?—Yes.

353. What do you mean by agricultural land?—I mean land that would be fit for growing crops.

354. Land that is now covered with bush do you call agricultural land?—Decidedly, provided it was of sufficiently good quality.

355. It would require the bush to be cut down?—Yes; but at one end of the line there is a great quantity of open land.

356. The bush would require to be cut down before the land could be used?—Decidedly.

357. And then it could be ploughed?—Yes.

358. Would it not require to be stumped?—Of course; the usual process of bush-felling.

359. It would simply be grass land until it was stumped? It could not be ploughed till it was stumped?—No; I should think not. I never saw any ground yet that was ploughed till it was stumped.

Mr. Fergus: I have seen some thousand acres.

360. *Mr. Montgomery.*] This is thickly-timbered land?—Yes.

361. It is not so thickly timbered as generally about Woodville?—I think it is. I think the trees were much larger.

362. And as close together?—Yes, I think so.

363. What is the open land south of the Murimotu Plains, compared to the Murimotu Plain land? Do you consider the land on the Murimotu Plains fit for cultivation?—No.

364. And the other land you speak of is much better than that?—Considerably better. There is a line very distinctly marked where the good land ends and the pumice country begins.

365. The Murimotu Plains is pumice country?—Yes.

366. *Mr. Fulton.*] Do you recommend any further exploration of the Feilding route?—No; not to connect with this line.

367. Is there plenty of ballast to be got all along the Marton line?—It can be got in places sufficiently near to make it all along the line.

THURSDAY, 18TH SEPTEMBER, 1884.

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

368. *The Chairman.*] You gave a lot of information yesterday about the nature of the land you had seen in your explorations, and you were good enough to state that you would prepare a classified return of the land.—Yes. I have been engaged in its preparation since I gave my evidence yesterday, but I have not yet had time to complete it. It will, however, be ready by to-morrow.

369. *Mr. Larnach.*] I understood you to say there was a good deal of good land on the central line?—Yes.

370. Fit for agriculture?—Decidedly.

371. Have you ever been on the Taieri Plains, in the South?—No, I have not. I know the Canterbury District very well, but not the Taieri.

372. Do you know anything of the Stratford or western route?—No, except just at the beginning.

373. In your cross-surveys from the central line how near did you go toward the Stratford line?—I have been to the Wanganui River in a good many places.

374. What distance would that be from the Stratford line?—The average distance would be about fifteen miles.

375. About half-way?—(After measuring on the map)—About eleven miles.

376. As you travelled in the direction of the western line from the central line what was the nature of the country? Would you say the country was good country the further you went in the direction of the Stratford line?—I did not cross the Wanganui River.

377. But in going westward from the central line, was the country good—going from one line to the other?—Yes.

378. Does it promise to be good land for settlement?—Yes. There is a considerable amount of flat land on the line, and behind that a belt of about ten miles of papa country.

379. And that promises to be good country?—Yes.

380. It is all in the direction of the western line?—Yes.

381. So that the country, leaving the central line behind, promises to be good country?—Yes, all good country to the Wanganui River.

382. *Mr. Montgomery.*] You spoke yesterday of the Canterbury Plains: have you ever been down at Southbridge?—Yes; but the question that was asked me yesterday related principally to the land on the main line on the Canterbury Plains.

383. You mean along the railway route?—Yes.

384. You simply referred to the land contiguous to the Canterbury line—you only know the land on the Canterbury Plains by going along the railway line?—Oh, yes; I think I have been nearly all over it. I have been all over it, engaged in the survey.

385. Do you say the land there is as good as this land?—Yes.

386. As Rangiora and Kaiapoi?—Yes. I do not think you could find land that is better than the greater bulk of this is.

387. *Mr. Fulton.*] Would the country, generally, through which this central route proposes to go, be better than along the line which connects North Canterbury with Cook Strait by way of Tophouse and Wairau Valley?—Vastly better.

388. Would the engineering difficulties be anything like equal to those?—No, they would not; the Wairau Gorge is a very costly obstacle, and so is the saddle.

389. What difference per mile would you think there would be in the cost of construction?—Roughly, about £1,000 per mile.

390. You made a survey of that line?—Yes. There are many more advantages connected with the Marton line. There is timber, and the line would open up far better country.

391. *Mr. White.*] I understand that, when you refer to the quality of the land, you mean the land after the bush is taken off?—I don't suppose it would be altered.

392. But the bush has first to be removed?—Yes; but that does not refer to all of it. A portion of the country is open and good.

393. But the greater portion is bush or scrub?—Yes. I am preparing a rather full statement on that point.

SCHEDULE HANDED IN BY MR. ROCHFORD.

SCHEDULE of LANDS on Central Route of North Island Main Trunk Railway within Ten Miles of Centre Line.

Locality.	Side of Line.	Bush.		Open.		Mixed.		Quality.
		Arable.	Pastoral.	Arable.	Pastoral.	Arable.	Pastoral.	
Crown or Private Lands.								
9 to 20 miles ...	E.	A. 15,000	A. 7,000	A. ...	A. ...	A. ...	A. ...	Good.
" ...	W.	15,000	8,000	...	...	...	...	"
Middle Turakina ...	W.	...	...	...	...	17,000	33,000	"
22 to 33½ ...	...	9,000	26,000	...	...	...	...	"
Otamakapua ...	...	...	...	...	...	8,000	39,000	Good and patchy.
Total ...	...	39,000	41,000	...	...	25,000	72,000	

<i>Native Lands.</i>								
33½ to 45 miles ...	...	2,000	11,000	...	...	...	...	Good.
45 to 58 ...	E. and W.	15,000	45,000	...	...	...	...	"
58 to 72 ...	W.	25,000	50,000	...	...	...	...	"
" ...	E.	...	...	...	...	18,000	36,000	"
Part of Inner Patea ...	...	...	...	55,000	109,000	...	...	Limestone, good.
72 to 86½ ...	S.	...	...	...	...	23,000	...	Poor.
" ...	N.	...	...	...	...	36,000	...	"
86½ to 98 ...	W.	100,000	7,000	...	...	...	...	Good.
" ...	E.	4,000	12,000	...	...	...	...	Fairly good.
Broken country towards Wanganui	W.	...	...	...	...	9,000	27,000	Patchy.
98 to 107 ...	E.	10,000	2,000	...	...	...	...	"
" ...	W.	17,000	50,000	...	...	...	...	Good.
Down Wanganui, A-te-ao	W.	...	...	...	...	8,000	27,000	Patchy.
107 to 113, towards Taupo	W.	...	...	24,000	8,000	...	...	Very poor.
Ditto ...	E.	4,000	12,000	2,000	...	...	...	Patchy.
113 to 120 ...	W.	16,000	22,000	...	...	...	...	Good.
" ...	E.	6,000	12,000	...	...	...	...	"
120 to 131 ...	W.	14,000	28,000	...	...	...	...	"
" ...	E.	21,000	42,000	...	...	...	...	"
131 to 137½ ...	S.	...	...	...	...	24,000	24,000	Patchy.
" ...	N.	...	...	...	...	9,000	19,000	"
137½ to 160 ...	W. and S.	...	...	...	...	55,000	170,000	"
" ...	E.	...	...	...	...	25,000	50,000	"
160 to 166 ...	W.	4,000	12,000	...	...	...	...	Good.
" ...	E.	...	...	...	15,000	...	...	Poor.
" ...	E.	...	...	...	...	7,000	21,000	Patchy.
166 to 175 ...	E.	...	...	...	...	16,000	34,000	"
" ...	W.	...	...	...	...	16,000	34,000	"
175 to 194 ...	W.	20,000	11,000	40,000	21,000	...	...	Good.
" ...	E.	11,000	6,000	45,000	22,000	...	...	"
194 to 212 ...	W.	10,000	10,000	38,000	38,000	...	...	"
" ...	E.	...	...	37,000	37,000	...	...	"
Total ...	...	279,000	332,000	241,000	250,000	246,000	442,000	

Crown or Private Lands.

Total bush ...	...	...	...	...	...	Arable.	Pastoral.
" mixed ...	...	...	...	...	...	39,000	41,000
						25,000	72,000
Total Crown and private lands ...	...	...	...	...	...	64,000	113,000

Native Lands.

Total bush ...	...	...	...	...	...	279,000	332,000
" open ...	...	...	...	...	...	241,000	250,000
" mixed ...	...	...	...	...	...	246,000	442,000
Total Native lands ...	...	...	...	...	...	766,000	1,024,000

GRAND TOTAL of LANDS commencing at Ten Miles from Marton, that will give Traffic to the Railway within Ten Miles of the Proposed Line.

<i>Crown or Private.</i>							
Arable ...	...	...	...	...	...	...	64,000
Pastoral ...	...	...	...	...	...	...	113,000
<i>Native.</i>							
Arable ...	...	...	...	...	...	...	766,000
Pastoral ...	...	...	...	...	...	...	1,024,000
Grand total							1,967,000

Of this quantity I should estimate a million and a half as good land fit for settlement; the balance will be fair pastoral land.

FRIDAY, 19TH SEPTEMBER, 1884.

Mr. J. Rochfort attended and submitted the following statement:—

SIR,—I have the honour to make the following statement *re* land along the central route railway, commencing at the south-west boundary of the Parikarito Block, nine miles north-east of Marton. The Rangatira Block lies on the east side of the line, and in the Porewa contains about twenty-two thousand acres of bush country, with good marketable timber; about two-thirds are good agricultural and the rest good pastoral land.

On the west of the line is the Parikarito Block, extending to about twenty-two mile, or three miles beyond the Township of Hunterville. About half this block, to about four miles from the line, would feed into the railway. It contains 23,000 acres. This block is all sold, and occupied in many places, and roaded throughout, practicable for horses. On the flats of the Porewa and valleys the timber is heavy and the land good, the low hills are more lightly timbered; about one-third is arable and the rest good pastoral land.

North of the Parikarito lies the middle Turakina Valley. It contains about fifty thousand acres, and would feed into the railway. The nearest point is seven miles from the 20-mile peg. A fairly-good road is in progress. There are good flats along the Turakina and Mangapapa Valleys, the bulk being hilly bush and scrub lands, all well adapted for pastoral purposes.

From 22 miles to the north-east boundary of the Otairi Block, at 33½ miles, there are 35,000 acres which would be served by the line. A horse-road, well graded, runs through half of the block and falls into the railway-line. At 33½ miles the Crown lands end. The land is mostly covered with heavy bush, of marketable quality; about one-fourth is arable and the rest good pastoral land. The Crown holds about three thousand acres. Along the river, from 26 miles to 30 miles, there are two considerable open flats covered with fern and flax; the largest is called Ohingaiti; it is about a mile and a half long. This is on the high terrace where the line is surveyed. Below it, towards the River Rangitikei, there is another extensive open flat, much longer, on which there are several Native kaingas and cultivations. One at 29 miles is called Otara. Opposite there is a favourable place for crossing the Rangitikei with a road-bridge to connect the country on the east side, known as the Otamakapua Block. It is the best place for connecting the north end of this block with the railway-line.

From 33½ to 45 miles, at an average width of four miles, there would be 13,000 acres on the west side of the line. Along this portion the Otairi Range approaches the Rangitikei River, and there are several long spurs ending in high bluffs on the river. Some of these spurs unite and form high table-land, along which the line would run, and greatly reduce the work of formation. The slopes are generally gentle, and the land of good quality and well suited for pastoral purposes. It might be settled in 300-acre or 400-acre blocks, and each block would have flats in it. The timber is taua, matai, maire, rimu, and some totara, of good marketable quality. In some of the creeks there is gravel, but the main rock throughout is marl, in places hard, and containing shells.

The Otamakapua Block, on the east side of the Rangitikei, contains 140,000 acres, one-third of which, at the north end, would probably be served by the line. The character of the country is generally flats, near the Rangitikei, on high table-land, through which the side streams run with deep banks; at the back the country is rough and much broken by low hills, well suitable for pastoral purposes; the timber is smaller than that across the river. Many of the hills are covered with scrub and koromiko, &c. There are three blocks of land within the block which are still Native, but under lease to Europeans; the three together contain 9,000 acres; they are used for cattle runs. The Kawatau River is the boundary of the Otamakapua Block as well as of the Crown lands. Beyond this boundary I have not been more than two or three miles. A large area will be surveyed by the railway.

From 45 miles to the first open country, 58 miles, the Hautapu has high marl banks within five miles of the end, when they decrease quickly until the banks are low. Extensive flats run along the river, but there are three spurs, which run out and form high bluffs. One of these can be got round by cutting, but the other two must be graded over. I estimate that, taking both sides of the river at nine miles back, there are sixty thousand acres of land of excellent quality which would be served by the railway; one-fourth would be arable and the rest good pastoral land. The timber is matai, kahikatea, maire, &c., of marketable quality; some of the totara are of great size; the undergrowth is rangiora scrub.

From 58 to 72 miles, on the west side of the line to 72 miles (south boundary of Murimotu Block) the country is part bush and open; there is a good deal of totara on both sides of the river. On the west side of the line there are 75,000 thousand acres within ten miles of the line, one-third would be arable and the remainder very good pastoral land. On the east side there would be

54,000 acres within the same radius, and to which the same description would apply; both are in limestone country; the open land is fern, koromiko, and grass, &c.. This is called the Inner Patea country, and adjoining the last-described land there is a still larger area of good open limestone country that would make use of the railway. Messrs. Birch and Moorhouse and Co. hold 164,000 acres under Native lease. This land consists of long valleys and low downs generally covered with grass, one-third would be arable and the remainder good pastoral land.

From 86½ to 98 miles the land is mostly flat bush, the two nearest miles to Murimotu have a large admixture of birch, but the land is good. Beyond, the bush is kahikatea, matai, taua, maire, and totara; there are several small clearings, grass and fern, and the land is generally of good quality. On the west side, within ten miles of the line, there is an area of 107,000 acres, of which about one hundred thousand acres are flat. Between this and the Wanganui River there is a belt of low broken country, papa and limestone rock, with taua bush, and in places heavier timber; the land is generally good. Half of this area would be served by the railway and half by the Wanganui River. On the east of the line, within five miles, there are 16,000 acres, of which one-fourth would be fair arable land and the rest good pastoral; a part of this (the Rangitaua Block) is Crown land.

From 98 to 107 miles the line runs on a higher table-land, through which the rivers run with high banks, necessitating the viaducts shown in the diagram. This land is not of such good quality as the lower flat; the timber is rimu, hinau, maire, matai, and birch, largely mixed with kaiko-whaka; there are about twelve thousand acres of table-land to the east of the line, one-fourth of which would be fair arable land, and sixty-seven thousand acres on the west, one-fourth of which would likewise be good arable land. Still further west, towards the Wanganui River, about thirty-five thousand acres of land would make use of the railway. Down the Manganui-a-te-ao there are many small Native settlements and cultivations where kumeras, taro, and wheat are grown. On the river-sides there are generally fern flats through which the river runs, with very high banks; the principal rock is shell limestone; some of the land is very good. The bush generally is light taua. The Manganui-a-te-ao offers a good means for road communication with the Wanganui River.

From 107 to 113 miles (Waimarino) the country is open tussock grass and poor land; to the north-east there is a run of open and nearly-flat country, past Lake Roto Aira to Taupo; this is very poor country, held under Native lease as a sheep-run. There are some few patches of moderately-good country, where the Natives generally are located and have cultivations, but, if this railway should be made, Waimarino will be an important junction. On the east of the line there are about thirty-two thousand acres fit for pastoral purposes.

From 113 to 120 miles the line runs near the Piopiotea. Several miles are along high terrace bush land of good quality; the timber for the first two or three miles is light, but after that it is marketable, consisting of matai, kahikatea, rimu, taua, maire, and some totara. There would be 38,000 acres available on the west, and 18,000 acres on the east, of which a third would be good arable, and remainder good pastoral land.

From 120 to 131 miles it is bush land, of good quality; timber similar to last, except that the last three or four miles are chiefly large totara trees of great length without branching. In this length of line there would be on the west 42,000 acres, of which one-third would be arable, and 63,000 to the east, of similar character, one-third would be good arable and remainder good pastoral land.

From near 131 miles a Native horse-track goes by Ruamata to Taupo; the track is bad, but the land along it is very good soil. A better road can be got up the Wanganui River. From a little lower down another Native track goes to Taupo by way of the Puketapu and Pungapunga River. The country along this line shows pumice in places, and is not so good for land as the Ruamata track, but there are some good patches of totara in some of the valleys. Up the Pungapunga is where the Natives believe gold to exist. I saw some quartz and slate, but the indications are not good. There are two settlements and cultivations up the river.

From 131 to 137½ miles (Taumaranui) to the south of the line, 48,000 acres of land would be available; it is chiefly open, what bush there is is totara. The soil is fairly good, one-half would be arable and the remainder good pastoral land. There is some drift pumice in the soil, but I do not consider it injured by it. To the north of the line there are 28,000 acres of patchy land, one-third of which would be arable, part is very good and part pumice.

From 137½ to 160 miles (Waimiha) the country is generally open, with considerable fern flats all along the Ongarue River, with a good many Native villages and cultivations. The land is generally covered with heavy fern, but it is patchy, part being very good, and part largely mixed with pumice sand; the hills are often bush on top, and generally good soil. On the west and south of the line there are two blocks of 109,000 and 61,000 acres accessible to the railway, one-third would be arable and remainder good pastoral land. On the east there would be 75,000 acres, which include the low-wooded country at the back called Tuhua, said by the Natives to be good country. I have not been on much of it, but have looked over it from several points; I should estimate one-third of it as arable. There is some good land and Native settlements up the Taringamutu, and a large amount of totara.

All the country down the Wanganui, at least as far as Maraekowai, or the confluence of the Ohura and Wanganui, would be served by the central route line. The Ohura offers a road communication through the centre, connecting with the line at 154 miles, where the Native track is from Mokau. All upper good land of the Mokau is also accessible. I consider the central route would embrace all the country along the western route to within sixty-two miles of Stratford.

From 160 to 166 miles on the west there are 16,000 acres of low bush hill country, with strong fern in the valleys. Most of the bush land is very good, and the timber marketable; about one-fourth would be arable. On the east there are 43,000 acres of land, a third of which up the Waimiha and Ongarue is open flat country and very poor; the remainder is fair pastoral land, with one-fourth arable.

From 166 to 175 miles the country consists of long flat valleys, with low hills between them, with bush clumps; the open land is grass or fern, of moderately-good quality. There are 5,000 acres on the west and 5,000 acres on the east of the line, a third would be arable. I should class this as land which should be held in blocks of four or five hundred acres.

From 175 to 194 miles (Mangapu) on the west there are 92,000 acres within ten miles of the line. I estimate two-thirds open and one-third arable. It is mostly limestone country, of very good quality; dotted over it are many Native villages and cultivations; wheat and oats are grown, and also maize and hops. The river, which has little fall, is the high road of traffic with the towns outside. On the east of the line there are 84,000 acres of land, of which four-fifths are open and one-fifth arable. This block is mostly good, and what little forest land there is is generally kahikatea and pukatea.

From 194 to 212 miles on the west, within ten miles, there would be 96,000 acres; beyond this the traffic would work to Kawhia Harbour. The land is chiefly open and good soil, with some considerable swamps. About half would be arable, the rest good pastoral country. Fern is the general growth. There are many Native settlements and cultivations; wheat and all kinds of crops are grown. On the east, within ten miles, there are 74,000 acres, mostly open fern land, of good quality. One-half of this would be arable and the rest good pastoral land. There are also several Native villages and cultivations on the block.

I have, &c.,

The Chairman, Main Trunk Line Committee,
North Island.

JOHN ROCHFORD.

ESTIMATE HANDED IN BY MR. JOHN ROCHFORD.

CENTRAL ROUTE.—SUMMARY ESTIMATE, TEN-MILE SECTIONS.

Miles.	Item.	Amount.	Total Amount.	Miles.	Item.	Amount.	Total Amount.
		£	£			£	£
1-10	<i>Marton to Hautapu—</i>			11-20	<i>Turangarere to Hautapu—</i>		
	Bush-cutting	114			continued.		
	Earthworks	5,287			Bush-cutting	499	
	Bridging	1,665			Earthworks	4,342	
	Masonry culverts	460			Grading	15,100	
	Wooden culverts	3			Bridging	2,600	
	Pipes	129			Masonry culverts	285	
	Road alteration	53			Permanent-way, stations, &c.	30,000	
	Permanent-way, stations, &c.	30,000	37,711				52,826
11-20	Bush-cutting	2,980		21-24½	Bush-cutting	357	
	Earthworks	2,208			Earthworks	1,203	
	Bridging	900			Grading	26,200	
	Masonry culverts	273			Tunnels	5,121	
	Pipes	86			Masonry culverts	1,210	
	Permanent-way, stations, &c.	30,000	36,397		Permanent-way, stations, &c.	13,500	
21-30	Bush-cutting	1,092					47,591
	Earthworks	848			Total		151,230
	Grading	24,800					
	Viaduct, Makohine	7,740					
	Masonry culverts	214					
	Stream diversions	8					
	Permanent-way, stations, &c.	30,000	64,702	1-10	<i>Turangarere to Waimarino—</i>		
31-44	Grading	49,100			Earthworks	7,804	
	Permanent-way, stations, &c.	42,000	91,100		Grading	1,600	
					Bridging	800	
	Total		229,910		Masonry culverts	457	
					Wooden culverts	64	
1-10	<i>Turangarere to Hautapu—</i>				Pipes	137	
	Bush-cutting	62			Permanent-way, stations, &c.	30,000	
	Earthworks	662					40,862
	Grading	19,600		11-20	Earthworks	5,003	
	Bridging	400			Grading	7,200	
	Masonry culverts	80			Bridging	1,625	
	Pipes	9			Masonry culverts	671	
	Permanent-way, stations, &c.	30,000	50,813		Wooden culverts	34	
					Pipes	54	
					Permanent-way, stations, &c.	30,000	
							44,587

CENTRAL ROUTE.—SUMMARY ESTIMATE, TEN-MILE SECTIONS—continued.

Miles.	Item.	Amount.	Total Amount.	Miles.	Item.	Amount.	Total Amount.
	<i>Taurangarere to Waimarino—continued.</i>	£	£		<i>Te Awamutu to Waimarino—continued.</i>	£	£
21-30	Bush-cutting	2,900		41-50	Bush-cutting	595	
	Earthwork	8,492			Earthworks	17,473	
	Grading	9,000			Grading	11,225	
	Bridging	1,065			Tunnels	33,941	
	Masonry culverts	706			Bridging	300	
	Wooden culverts	7			Masonry culverts	138	
	Pipes	39			Wooden culverts	54	
	Stream diversions	49			Pipes	174	
	Permanent-way, stations, &c.	30,000			Creek diversions	210	
			52,258		Permanent-way, stations, &c.	30,000	
31-39½	Bush-cutting	3,520		51-60	Bush-cutting	175	
	Earthworks	31,995			Earthworks	24,903	
	Grading	24,000			Tunnel	2,034	
	Bridging	1,150			Bridging	2,265	
	Viaduct, Mangaturuturu	8,250			Masonry culverts	1,915	
	" Manganui-a-te-a-o	3,415			Pipes	795	
	" Mangatote	6,200			Permanent-way, stations, &c.	30,000	
	Masonry culverts	706					62,087
	Pipes	97		61-70	Earthwork	13,001	
	Stream diversions	60			Bridging	2,000	
	Permanent-way, stations, &c.	29,250			Masonry culverts	900	
			108,643		Pipes	364	
					Permanent-way, stations, &c.	30,000	
	Total		246,350				46,265
1-10	<i>Te Awamutu to Waimarino—</i>			71-80	Bush-cutting	35	
	Bush-cutting	44			Earthwork	8,690	
	Earthwork	14,092			Grading	3,200	
	Bridging	800			Bridging	3,550	
	Masonry culverts	543			Masonry culverts	800	
	Wooden culverts	174			Pipes	132	
	Pipes	102			Creek diversions	25	
	Stream diversions	1,475			Permanent-way, stations, &c.	30,000	
	Road alterations	56					46,432
	Permanent-way, stations, &c.	30,000					
			47,286	81-90	Bush-cutting	1,020	
11-20	Bush-cutting	440			Earthwork	7,450	
	Earthwork	5,575			Grading	21,300	
	Bridging	1,750			Bridging	200	
	Masonry culverts	95			Masonry culverts	482	
	Pipes	126			Pipes	44	
	Stream diversions	366			Permanent-way, stations, &c.	30,000	
	Permanent-way, stations, &c.	30,000					60,496
			38,352	91-105	Bush-cutting	334	
21-30	Bush-cutting	494			Earthwork	5,353	
	Earthwork	8,744			Grading	35,100	
	Grading	4,000			Bridging	550	
	Bridging	650			Masonry culverts	215	
	Masonry culverts	680			Pipes	70	
	Wooden culverts	144			Permanent-way, stations, &c.	30,000	
	Pipes	156					71,622
	Stream diversions	373					
	Permanent-way, stations, &c.	30,000					
			45,241				
31-40	Bush-cutting	290					
	Earthwork	27,857					
	Tunnels	7,245					
	Bridging	800					
	Masonry culverts	1,863					
	Pipes	778					
	Creek diversions	120					
	Permanent-way, stations, &c.	30,000					
			68,953				
					Total		580,844

SUMMARY.

Marton to Hautapu	£229,910
Turangarere to Hautapu	151,230
Turangarere to Waimarino	246,350
Te Awamutu to Waimarino	580,844
Add road	1,208,334
	84,800
Total	
	£1,293,134
Amount per mile	5,693
Cost of road alongside	400
Total cost per mile (including permanent-way, stations, and rolling-stock)	£6,093

MEMORANDUM.—Earthwork was taken at 1s. 6d. per yard all through, without reckoning lead; 6d. per yard more would increase cost £316 per mile.

Mr. H. M. SKEET, surveyor, examined.

394. *The Chairman.*] You are in the Government service?—Yes.

395. In the Survey Department?—Yes.

396. Where have you been mostly engaged?—All through Taranaki.

397. Have you been engaged on the survey of either of the proposed lines of railway for the North Island?—No.

398. Your knowledge of the country, then, is from surveys undertaken for the Survey Department?—Yes.

399. Point out to the Committee, on the map, what part of the country you have traversed?—The country I am able to speak about is from Patea, in a line northward, to the head of the Mokau River, and also down the Wanganui to the sea, from the junction of the Ohara.

400. Have you been north of the Mokau?—Yes; I have been fifteen miles north of the Mokau River, and inland about four miles.

401. How far to the east of the western line have you been?—About five miles in one place to the eastward of the northern part.

402. Will you tell the Committee the general features of that country: is it broken?—It is hilly, but you can hardly call it broken, because the hills are not so very high; but it is rather rough in places.

403. Is it country that you consider fit for settlement?—In some places it is not.

404. What proportion of it would you consider fit for settlement, say within the five miles that you travelled, and ten miles to the westward?—That part of the five miles is good for settlement; it is lower down where it is unfit. From Ohura up to the Mokau the country eastward is fit for settlement, with the exception of small patches where it is black birch; but the other way there are places where it is unfit except for the timber.

405. Why?—Because the black-birch country is most unsuitable for farming or agricultural purposes.

406. Because the land is poor or broken?—Because the soil is poor.

407. What do you know about the lower part of the line, coming down from Ohura to Stratford?—The part in the middle is rough, with patches of black birch. That is in the vicinity of Tangarakau. Coming towards Stratford it gets better. From Stratford to a stream called Makahu the country is good, in certain parts rough.

408. Do you know anything about the actual levels of that country?—With the exception of the tops of the hills.

409. Have you taken any heights yourself?—Yes; I have taken the heights of the hills from trig. stations, and I generally carried an aneroid barometer, and took the heights as I went along.

410. Is any of that country very high?—The highest runs from 800ft. above the sea-level to 1,800ft.; that is, about the waters of the Tangarakau.

411. *Mr. Montgomery.*] What is the nature of the land twenty miles north from Stratford from a settlement point of view?—Good.

412. On both sides?—Yes, for certain distances.

413. What distance?—There are some places on the Waitara River, for instance, where it is rough.

414. What is the nature of the country twenty miles north of that again?—That is where the rough part is.

415. It is not fit for settlement, you think?—In places it is fit.

416. And with regard to the next twenty miles?—The first part of that is rough. It is the valley of the Tangarakau.

417. How much is fit for settlement?—About half.

418. And the next twenty miles?—It is fit for settlement, and certainly for a considerable distance on both sides of the line.

419. And the next twenty miles?—That is good. It brings you into the Mokau country. Westward there is some rough country in the upper part.

420. That makes one hundred miles?—Yes.
421. From that point up to the junction, what is the nature of the country?—I do not know it.
422. When you say it is fit for settlement, do you mean it is agricultural land?—Well, in places. I mean that some is fit for runs and some for farming purposes.
423. What do you understand by agricultural land?—Land fit for the plough, principally.
424. Do you mean fit for the plough now?—No.
425. After being cleared of bush?—Yes.
426. After being stumped?—No; after the bush is down; level land that you could plough and could be farmed. The hilly country would do for sheep-runs; that I would call pastoral.
427. Has that bush upon it too?—Not in all places.
428. Some of it is open?—Yes.
429. What is on it now?—Fern and native grass.
430. Is the bush heavy along the line, generally speaking?—In places.
431. What is the nature of the bush?—The heavy parts are rimu, rata, matai, kahikatea, and pukatea; totara in places, but not a great quantity of totara.
432. Would there be much expense incurred in clearing it for agriculture?—Not above the usual expense. The heavy bush would be expensive, but not the lighter bush.
433. What is the usual charge for clearing such land as you would call light-bush land, and laying it down in grass?—It was from £1 to £2 5s.
434. Is that for laying down grass also?—Not the grass: that is an extra consideration. That price is for clearing.
435. And for the heavy bush land?—£2 upwards to fall the bush and burn it, and clear it; not including grass.
436. *The Chairman.*] Leaving the stumps in?—They do not take the stumps out.
437. *Mr. Montgomery.*] Does you price refer to the first burning or the second?—The first.
438. It does not include the collecting together of the logs?—No.
439. *Mr. Fulton.*] In your report of the 30th July you speak of an extensive coal field?—Yes.
440. Have you had specimens of the coal analysed?—I have not.
441. Can you give the Committee an idea of the quality of the coal?—It is similar to the Mokau coal. I think there are specimens of that in the Museum.
442. Is it brown coal or true coal?—Dr. Hochstetter says it is brown coal.
443. Specimens have been brought down to Wellington?—From Mokau. It is an extensive country—about thirty by twenty miles.
444. *Mr. Larnach.*] Are the patches of black birch, to which you have alluded, large?—No; they run generally northwards and south-east.
445. What is the average size of the patches?—In some places they are two or three miles across.
446. Are they numerous?—In places they are.
447. Is the timber marketable?—Yes.
448. You know the term “rolling downs,” I suppose.—Yes.
449. Are the hills you have described what would come under the definition of rolling downs?—No.
450. Are they ploughable?—The higher parts are not.
451. Are any of them of limestone formation?—Some. There is limestone in the formation, towards Mokau principally.
452. Altogether, you have been up the Stratford line about a hundred miles?—Yes, all through the country; not right along the line, but all round it.
453. In proximity to it?—Yes.
454. What do you think of the land altogether?—I could hardly say. Taking it altogether, it would be hilly and forest land.
455. Of the average quality?—Well, the first part is good, the middle is bad, and the other end is good again.
456. I gathered that the bulk of it was good?—Yes, —
457. Who are chiefly the owners of the land along the line? Is it chiefly held by Natives or by the Crown, or is it in the hands of private individuals?—I should say by Natives and by private individuals the greater bulk of it.
458. Does the line run more through the lands of the Natives or those of private individuals?—More through the land of the Natives.
459. Very much more?—Yes. [Witness here explained, by means of a large map, which was Native land, Crown land, and land in the hands of the hands of private individuals, &c.]
460. *Mr. W. White.*] The Crown land is confiscated land, I suppose?—Not all. The western part of it is.
461. *The Chairman.*] You have not visited the country along the central line?—I have only seen it from trig. stations from a considerable distance.
462. *Mr. Larnach.*] How many years have you been in the district you have been describing?—The first time I went there was in 1876.
463. *The Chairman.*] And you have been in that district ever since?—Yes; and through it at different times.

Mr. MORGAN CARKEEK, authorized surveyor, examined.

464. *The Chairman.*] You are not in the employ of the Government?—No.

465. You are aware, I suppose, that this Committee has been appointed by the House to make a recommendation as to the best route for the North Island Railway?—Yes.

466. The Committee has been given to understand that you have been employed in surveying one of the proposed lines?—Yes; the line from Stratford to Te Awamutu, through the Upper Mokau.

467. In conjunction with Mr. Holmes?—No; originally I went by myself. It was only over the upper part of the line that I went with Mr. Holmes.

468. Between Mokau and Te Awamutu?—Yes; Mr. Holmes was with me over that, but not between Stratford and Tangarakau.

469. Starting from Stratford, would you describe the nature of the country through which this line passes?—From Stratford it passes through good country, with rimu and white pine-bush for about thirteen miles, and good land towards the general course of the Patea River. Then the country changes, and on coming up the branches of the Patea we crossed a high broken range, and descended into a branch of the Patea called Mangaotuku. There the land is good again. Then it becomes somewhat swampy, with black-birch ranges on eastern side. The black-birch range was parallel with the line from the 23rd mile to the 30th. The range to the eastward is black birch. The valley, although narrow, is good soil.

470. What is the average width of the valley?—Not more than 20 chains in some parts, and it runs down to 5 chains.

471. What is the height of the hills on the other side?—About 600ft.; the saddles about 400ft. Of course, that would not be above sea-level.

472. From the bottom of the valley?—Yes.

473. After leaving the 30th mile, what is the nature of the country?—The gullies are good, and they open out to a width of about 10 chains in the Makahu. Between 30 and 40 miles it is exceedingly rough; that is the main watershed between the Patea and Wanganui Rivers.

474. Rough on both sides?—Yes.

475. Is the soil good?—Only in the gullies.

476. And what is the width of the gullies?—About 3 or 4 chains.

477. Are the hills timbered with black birch?—On the tops, and some on the slopes.

478. From 40 miles to 45 miles, what is the character of the country?—It is pretty good in the valleys. The hills are covered with stunted bush and manuka scrub, and the country all broken. The ranges rise to 1,000 feet above the valley.

479. From 45 miles to 50?—It is comparatively good, consisting in the first part of little valleys covered with manuka scrub, and then it comes to very bad land again.

480. From 50 to 55 miles?—It is a mere gorge, with steep hills on both sides, but there is a little flat of about a chain or so where the railway could be made along. Some of the spurs are so steep that a man could not walk up them.

481. From 55 miles to 60?—It is bad to about the 58th mile: some of the worst country I have seen in New Zealand.

482. *Mr. Larnach.*] Do you mean the worst character of land?—Yes, black birch; precipices on both sides, no soil, and the ranges rising about 900ft. up the gorge.

483. *The Chairman.*] From 58 to 60 miles?—It is up into a saddle. The surrounding country is still bad.

484. Is there any good land there?—No; the land continues the same until the 63rd mile.

485. On both sides of the line?—Yes.

486. Can you tell us the general nature of the country from mile 63 to about 70?—It is white-pine bush in the low valleys, with low hills, and the land gets better. There is tawa bush along the banks of the streams, showing better soil.

487. Is the land broken there?—Yes, along the ranges. From 68 to 70 miles is all good, being a valley of about half a mile in width. From 70 to 75 the line passes through a low saddle into the Ohura River?—The Mangaroa Valley runs up to the north-west some five miles; the hills getting bad, and running into high and steep ranges.

488. What is the average width of the flats?—About 20 chains, with clumps of white pine and tawa bush, and good soil.

489. And what of the ranges?—Tawa part of the way, and birch on the top. On the eastern side it is open country. From about 72 to 78 miles is open country, but the soil is poor, and covered with fern and birch scrub in places. From there up to 80 miles we go up a branch of the Okura, called Waikaka. The land is flat here, about 10 or 15 chains wide, and there are some small gullies running in from the eastward, with good land about 10 chains wide, and high spurs between. From 82 to 85 miles it becomes a mere gorge right up to the saddle. At the 85th mile there is a waterfall with a drop of 250 feet. From mile 85 there is an easy rise up to the saddle at the 87th mile, through open fern country.

490. What is the country on both sides of the line there?—Fern and scrub. The land gets better near the saddle.

491. And from the saddle at 87?—Down to about 90 is a rough hillside, and from there to 95 is easy open fern and swampy country, the soil getting better.

492. That is the general country on both sides?—Yes.

493. How far to the east and west of the line?—Two or three miles on both sides. Generally the land is improving.

494. From 95 onwards?—At 97 we come on to the limestone country, and follow up the Mokau River; very good country, grazing land, with better country to the westward.

495. And what to the eastward?—The spurs are rather steep, running up to the bush ranges.

496. Beyond the 100th mile?—It is still good open country, with limestone, up to 105; light soil covered with fern, and the flats there could be ploughed. On the east there is a rather high range; good soil.

497. And beyond that?—It still keeps on good soil until we get to the saddle at the 110th mile.

497A. What is the width of the good land there?—In the Mokau Valley it is about half a mile wide.

498. What is the land rising out of the Mokau Valley?—Good limestone hills.

499. You could not plough it?—No; they are good sheep and cattle hills. A good run could be made there.

500. From the 110th mile?—We then go down into the head of the Waipa.

501. How is the country there?—It is better still. I think it is the best part of it. From 110 to 115 miles there are nice ~~easy~~ spurs, nice little gullies, well watered, and the bush is tawa and rimu, and the country is good till it joins Mr. Rochford's line.

502. Have you taken levels along this line?—Only by the barometer. We had a barometer with us.

503. How close did you take the barometrical readings?—I should not think we would be more than 30ft. or 40ft. out.

504. I mean, how frequently?—Every day.

505. Did you plot this section that has been lithographed [map produced]?—If I did not, it agrees with mine. I plotted one. I think the one produced is Mr. Holmes's. I never sent in a complete one—only to the Tangarakau.

506. Have there ever been any actual levels taken with spirit-levels?—No, nor measurements.

507. Any cross-sections?—No. We had nothing but barometers with us.

508. Were there any cross-sections taken with the barometer?—Not that I am aware of. There were other parties out beside myself afterwards.

509. You have been describing the land you have gone through as good and bad, and so on: can you give us any sort of an idea of the proportion of land that is fit for agriculture?—Near Stratford I did not go far off the line at all; when I got to the bad country I went two and three days' journey off it. There the country is not fit for agriculture at all.

510. You have talked of small valleys here and there being pretty good; are these ploughable now?—No; there is bush on them.

511. You cannot plough that land, then, till it is cleared?—No; there is one small clearing on the Mangaotuku, part of which could be ploughed.

512. Taking an average of five miles on either side of this line, is it fit for settlement?—Out from Stratford, down along the Patea River, a distance of about eighteen or twenty miles from Stratford.

513. And from there northward?—A goat could not live on that land. That would be from the 25th to the 60th mile. It is fit for nothing.

514. On either side of the line?—For eight miles to the westward and right over the Wanganui, about ten miles to the eastward.

515. From the 60th mile, where you describe the land as getting better, what proportion of it is fit for settlement?—Only in the valleys, till you get into the Ohura, about the 63rd or 70th mile. There the hills are low, with tawa bush and pine.

516. From 60 miles to 70 that proportion is fit for settlement?—That is the portion I was not on. I know it is good, for I saw it from the ranges.

517. From the 70th mile upwards you say it is all improving: what proportion of it is agricultural land?—To the eastward a large proportion of it is fit for occupation, but very little for the plough. The hills are covered with fern and scrub, and some very good soil. The valleys are good.

518. But why is it not fit for the plough?—It is too steep. There are flats on the hills occasionally. The hills are clayey and poor soil, but on the slopes it is better.

519. What width of land is there fit for the plough?—I should say about a mile on each side of the Ohura. Of course there are valleys that we may not have seen running through this.

520. And as you go farther up the line?—It continues good all the way from 75 to 80 miles.

521. What land is there northwards of the 80th mile fit for settlement?—Nothing till you get to the 85th mile. Then it improves all the way down; it is all fit for settlement. It is a limestone country.

522. What proportion of the Upper Mokau country do you consider ploughable?—Not a tenth of it.

523. But would it be good grass land?—Yes.

524. Is any of the good land that you describe covered with bush at the present time?—No; it is open flat.

525. *Mr. W. White.*] Can any of these grades [plan produced] be improved?—I could not say, because the distances are not accurately measured with a chain on that line; it is all guess—taken with the aneroid, and the distances guessed.

526. Then, the grades cannot be depended upon?—No.

527. Are they likely to be better or worse?—The chances are that they would be worse, because the hillsides are very steep.

528. They may be worse than 1 in 70?—In the rough part of the country I believe it is quite probable.

529. From the 34th to 35th mile?—There is a very nasty saddle just beyond the 35th; by the barometer I make it 300ft. You ought to get a tunnel through it, because it is a very narrow ridge.

530. From mile 42 to 45½?—That would be very good; it goes up an easy valley.

531. Then, from 47½ to 50½?—The grade might be right as stated; but it is a very rough piece of country.

532. The grade is shown on the plan as 1 in 50. Would it be likely to be worse than that, or better?—No; it is quite possible you could get a grade of that.

533. From mile 57 to 59?—The grade there would most likely be very bad.

534. Worse than 1 in 50?—I should think so; but, of course, without measurements it is hard to say.

535. From 60 to 64?—It is very uncertain what the grade would be there. There is a rough descent there into the Eao Valley.

536. Worse than 1 in 50?—Very probably.

537. *The Chairman.*] Did Mr. Holmes go over that?—He has never been over the lower part of the line at all.

538. *Mr. W. White.*] From mile 66½ to 69?—It would be very good.

539. Not worse than 1 in 50?—I do not think so. I have not been over that, however; I joined again at the 70th mile.

540. From 85 to 91?—It would be bad. It would, most likely, be steeper than what is stated on the plan.

541. From mile 94½ to 95?—That would be good. It is open country, and an easy slope down—almost level.

542. From 109 to 112?—That would be a bad place to get down. Still, I think, a grade could be got there.

543. Do you know what the curves are likely to be?—I should think there would be some very sharp curves from the 45th mile to the 60th. It is somewhat similar country to the Rimutaka from Kaitoke to the Summit.

544. What would be likely to be the sharpest curve?—I could not say without measurements.

545. You have no idea?—No idea.

546. What do you call a sharp curve?—Such curves as those are on the Wanganui line. About 4- and 5-chain radius, I consider would be very sharp.

547. Is there likely to be a 5-chain radius there?—Yes; I think so.

548. Are there many places along the line that would require such curves?—No; I think not. That is about the worst of it.

549. *Mr. Fergus.*] How long were you over your survey and exploration?—I was nearly twelve months over it altogether.

550. Then, you had a very good look over the country?—Yes.

551. Do you know the country between New Plymouth and Stratford on the railway route?—I have been over the railway-line.

552. You know the general character of the country, then?—Yes.

553. Is there any country between 23 miles from Stratford up to 90 miles as good as between New Plymouth and Stratford?—In the valleys it is better soil, but on the hills, instead of being slopes, it is perpendicular. The valleys are very small.

554. *Mr. Montgomery.*] If more time were given to the survey of this line, do you think you might get easier grades? To make a complete survey of that line you would require more time, I suppose?—Yes, certainly; but we thoroughly explored the country.

555. *Mr. Fulton.*] You spoke previously of barometrical readings, and the Chairman asked you how often you took them: how close together were they taken?—We only took them when we got to any prominent feature, such as a gully or saddle.

556. *The Chairman.*] Is the Committee to understand that the barometrical heights taken on this line are taken at the particular points given on the plan?—I did not draw the plan.

557. Do you think they were taken much closer than that?—I do not think they were taken even as close. They were taken in the valleys and then on the saddles.

558. *Mr. Fulton.*] How long were you over the actual survey of the route?—There has never been a survey made of the route.

559. You have laid down a sketch of it?—I made a map with the prismatic compass, and the Engineer has put the track down from that information.

560. The maps supplied to this Committee, then, have been made from your sketch?—Yes. This is the original map [pointing to map on wall].

561. *Mr. Larnach.*] If a detailed survey was made you would have to keep on your route?—Yes. There is no other way through the country. I am quite satisfied as to that, and so are all the others, I believe.

562. You say from 25 miles from Stratford to the 60th mile is absolutely worthless country?—Yes, with the exception of the gullies.

563. And the gullies are only patches?—They are small—little patches of rich soil a few chains wide.

564. You are quite satisfied on that point?—Yes.

565. Did I understand you to say that Mr. Holmes had never made a survey of the lower part?—Mr. Holmes has never been even on the country between miles 15 and 50. He may have been, however, since I was there; but he had not been up to the date when he wrote his report.

566. Then he wrote the report on that part without going over it?—Yes.

567. Has anybody else been on it?—Mr. Ross.

568. Any one besides Mr. Ross?—Only our men.

569. *The Chairman.*] When did you leave?—I came down with Mr. Mitchelson in May last.

570. *Mr. Larnach.*] From your evidence I gather that this line would be a most expensive line to make?—I should think so; but I am not an engineer. I have only had to do with road works.

571. But owing to the number of gullies, hills, and steep gradients?—I should think it would be as expensive as this side of the Rimutaka. There is no ballast in that country for a railway from beginning to end of it. It is papa rock generally. After leaving the Patea River I did not see a stone till I got to the Mokau.

572. But there is plenty of timber?—Only in the gullies.

Mr. C. B. KNORPP, Inspecting Engineer, examined.

573. *The Chairman.*] You know the object of this Committee?—Yes.

574. With which of the proposed lines have you any intimate acquaintance?—I have been over a portion of the line from Marton to Te Awamutu, and also over a portion of the line from Te Awamutu down towards Stratford, and over the line round the Mokau to Waitara. I have been over the ground, and I have, in former years, been over part of the line from Napier—several portions of it—where it approaches the coast-road.

575. What portion of the central line have you been over?—From Marton along up to Hautapu, and across Murray's track, and up the Murimotu, and round the east of Ruapehu to Tokano, and then to west of Ruapehu to Waimarino, and then came back through Tokano, and then till you get to the crossing of the Wanganui. Then I went up partly along the line and partly along the tracks to Te Awamutu.

576. Can you tell the Committee the nature of the surveys that have been made on that line?—The first survey that was made was just a reconnaissance survey, with the aneroid, by Mr. Rochfort. Then he made an approximate section from that, and afterward made a preliminary survey with the instruments.

577. You have seen the sections he laid down?—Yes.

578. Do you consider, from your knowledge of the country, that those sections can be improved upon?—Before the final location there would be room for improvement, I should think, because, for want of time and similar reasons, the Engineer cannot always locate the best. Generally great improvements are made; but the heights, and so forth, will remain the same.

579. Taking the general cost of the construction of New Zealand railways, what is your opinion as to the comparative cost of this line?—I have made an approximate estimate on Mr. Rochfort's first preliminary survey, and from what I saw of the ground, and according to what we usually find is to be allowed for rails, rolling-stock, and stations, and all that sort of thing, I made the cost from Marton to Te Awamutu £1,260,000.

580. Does that include any road alongside the line?—Of course there would be roads made, but that would be included in the cost of the work. The contractors would probably make roads. It does not include a through road alongside the line, but it would include roads necessary to give access to the work. I presume the line would be constructed from both ends at once, so that the heavy material would come up by the open railway.

581. As a matter of fact, on the sections submitted to the Committee there are no gradients worse than 1 in 50?—None.

582. Mr. Rochfort has told us that they could be reduced to 1 in 70, and that there are no curves worse than 9 chains: will you tell the Committee, from your knowledge of working railways, what is the speed that could be safely run on such a line?—Do you mean the maximum speed?

583. Taking the way in which the time-tables are set now; for instance, the express train in the South?—I think that is fixed at twenty miles per hour. It would depend on the engines very much. I should think you could run twenty-five miles per hour very well.

584. You do not quite follow me. Suppose this line is laid down as proposed on these plans, with the small improvements which Mr. Rochfort is of opinion can be made, would you be able to train through on this line at the same speed as from Dunedin to Christchurch?—I should say so, quite; 1 in 70 would be a very good grade in portions.

585. From what you have seen of the country, is it adapted for railway construction? Have you got ballast and timber at hand?—There is timber in a great many places along the line; in fact, I should say almost everywhere, except, perhaps, just towards the Waikato.

586. And is there material for ballast?—Yes.

587. And what is your idea of the fitness of the country for settlement?—The country varies very much. The southern portion, up as far as the Hautapu, is very good land, tawa, white pine, and rimu; there are some fine valleys in it. In some portions it is broken, and there is a very small extent of birch, but a very small extent only, just on the highest part of Murray's track. Then, up to where the road goes off to Tokano, the good land ends about there on the north side. Then, towards the south, the land appears to be good again. We went in some distance there. Round about Ruapehu and Waimarino the land is very poor, and also a small piece at Waimeha, just before you come into the Mokau country. Up to Te Kuiti it is splendid land, with clover growing.

588. *Mr. Fergus.*] You know the country pretty well between Oamaru and Christchurch?—I have been through there several times—along the railway principally.

589. Would you say that the general run of land along the Marton line is as good as the land between Oamaru and Christchurch?—I would not say that.

590. Say from Timaru to Christchurch?—That is some of the best land in the country.

591. Would you think that the land along this line would, on an average, be anything like the country, taking it as a whole, from Dunedin to Christchurch?—That is rather a difficult comparison to make. One country is under cultivation and the other is in its native state. It wants a great deal better judge of land than myself to answer that question.

592. You know the line pretty well between New Plymouth and Stratford?—Yes.

593. That is not very much in a state of cultivation?—No.

594. Would you think, then, that the land was as good as that?—Some of the land is better. It would be easier to clear. It is rather light land at New Plymouth. There is better land between Hautapu and Marton—at Te Kuiti—limestone country. Of course, with regard to the intermediate part, I did not go south-west of Ruapehu, and so did not see it.

595. You think there is plenty of timber?—There is totara in patches, and a great deal of rimu.

596. *Mr. Montgomery.*] What is the quality of the soil for the first fifteen or twenty miles from Marton?—Good soil; it is strong clay soil.

597. Timbered?—There is some timber on it. It is good timber—rimu.

598. From that distance up to Ruapehu, what is the quality?—It is all good land up to the south of Ruapehu.

599. Timbered land?—Yes.

600. For how many miles on each side of the line did you examine it?—Sometimes we could see fifteen or twenty miles, and sometimes only a few hundred yards.

601. When you describe the land on each side, do you mean that you travelled over it, or saw it from the heights?—I described it from what we went over and what we saw from the look-out.

602. And you think it is good land?—Yes.

603. It is timbered?—It is something like the land about Woodville, which I know you are acquainted with.

604. Is it so heavy as between Masterton and Woodville?—No; there is not so much large timber on it.

605. What is the nature of the country?—It is undulating country, with river flats.

606. Is it as fit for settlement as between Masterton and Woodville?—Quite.

607. That is, from Marton right up to Ruapehu?—Up to about ten or fifteen miles south of Ruapehu.

608. What would be the total distance from Marton to that point?—It would be about eighty miles from Marton on Mr. Rochfort's first map.

609. And then it becomes inferior country?—From there I have not been over the exact line because it went through swamps and bush. I have only seen it from a height, and therefore do not know it. At Waimarino it is very poor pumice land—that is, to the northwards of Ruapehu; and then it is very poor land again at Waimeha. Then, as soon as you get on to the other side of the watershed of the Mokau, it is good again.

FRIDAY, 19TH SEPTEMBER, 1884.

Mr. KNORPP, Inspecting Engineer, further examined.

610. *Mr. Fulton.*] You have gone through calculations as to this line, have you not?—As to estimates?

611. Yes?—I have gone through with Mr. Rochfort's aneroid survey, and went over the line and made an approximate estimate.

612. And that approximate estimate is near Mr. Rochfort's?—I do not know what his is.

613. What do you estimate that the line will cost per mile?—Well, I think it comes up to just about £6,000 per mile, but that would not include the cost of the land, because it is difficult to know what the price of the land will be.

614. Have you any idea of what is the average price for the purchase of land where the line goes through private lands?—That varies very much according to the district. I have got a *résumé* of railways that have been made, but I could not tell you from memory.

615. Do you consider, then, that £6,000 per mile indicates a line which is easy of construction;—Easy of construction generally, but with some difficult points.

616. What is about the average cost of construction of railway per mile?—The average cost of construction up to 1881 was about £7,500 for the North Island, and £6,500 for the South Island? that was, including all charges.

617. Including the purchase of land?—Yes, as far as purchased up to that date.

618. Then, you would not call this an exceptionally-favourable line as compared with the South Island railways, if it is to cost £6,000 per mile without the purchase of land?—I think it would be considered an expensive line for the South Island, but for the North Island it would be considered a cheap line.

619. *Mr. Larnach.*] You spoke yesterday of the rate of speed that you thought a train could travel on it if the central line were constructed: that it would be a similar rate of speed to that reached on the existing lines?—Yes.

620. But, judging from the levels, and presuming the line to be well made, could a train run at the same speed as on the Great Western in England?—I would not undertake to say that.

621. You have travelled over the Great Western?—No.

622. Have you travelled over the line to Edinburgh?—No; I have never been to Scotland. The gauges have something to do with the speed. The gauge in this country is 3ft. 6in., and in that country it is either 4ft. 8½in. or 5ft. 2in.

623. You mentioned that there was a good deal of limestone land on this route?—Yes.

624. Have you any idea of the extent?—I have no idea of the quantity, but I can show on the map the distances to where the limestone extends along the line.

625. You have no rough estimate?—No; I could not give estimates, but I could show it on the map. Up to the Mokauiti, from the Auckland end, is limestone, and then on the Ongarue.

626. Does it extend on both sides of the line?—Yes.

627. Did you accompany Mr. Mitchelson on his journey?—I did.

628. Which route was that?—We went through from Marton to Te Awamutu, and then again from Te Awamutu inwards along the Stratford route up to certain distances, and then went down the Mokau on the coast-line.

629. How long were you with Mr. Mitchelson in going through?—We were about a month altogether.

630. That was on both lines?—Yes.

631. And what conclusion did you come to in your own mind as to which was the more advisable route?—I do not know. Am I bound to answer that question?

632. I think it is a fair question?—I should say I did not know enough about the through route to be quite certain.

633. Which is the "through route"?—From Stratford. I have not been over certain parts of that country at all from Stratford.

634. From what you saw, what conclusions did you arrive at?—From what I saw I thought the central route from Marton round by Ruapehu would eventually be the most valuable line, because it opens up the country more, and opens up more land than the other; part of the Patea District would be opened up by it too. On the other route, as far as I can judge, there would be no feeders at all. It would only open up the land adjacent to the line itself, and, from descriptions given, it is very poor birch country for about forty or fifty miles; and, another thing, the central route would prevent any further trouble with the Natives.

635. *The Chairman.*] Will you tell us to what extent you have examined the country between Te Awamutu and Stratford?—I went along with the Engineers who were investigating a route along part of the country from Te Awamutu down to the Mokauiti. We travelled down the Stratford line to about the fifth mile, as it is marked on the map.

636. Did you not travel over any other portion of the line?—No.

637. What was the nature of the piece of country to which you have alluded?—It is very good country; limestone country a great deal of it.

638. Is it open country or bush?—It is mostly open fern country. It is easy country. A portion of it is the same as on the central route; the construction is easy too.

639. It is mostly open country?—Yes.

640. But is it fit for settlement?—Yes.

641. Would you call any of it agricultural land?—I should think it would be almost all agricultural land.

642. Are you aware what amount of survey has been made on that line?—I believe there has only been a reconnaissance survey made with the aneroid.

643. Do you know if there have been any cross-sections?—No instrument-work at all.

644. And the line was not marked out on the ground?—No.

645. Have you seen the sections that have been plotted?—I have seen those that you have on the plan.

646. The forty miles that you have travelled along you say is easy land: is it easier than a similar length on the central route?—It is the same kind of country.

647. You cannot tell us anything about the lower portion of the Stratford route?—Not from personal knowledge. I have been several times in Stratford during the construction of the main through line, but not on the new line.

648. *Mr. Montgomery.*] I wish to know if you can tell from memory, or knowledge of the matter, how much of inferior or comparatively-worthless land there is on the central line: how many miles of it does the line run through?—I can only speak from what I have seen, of course. The inferior land is near Waimarino.

649. What distance is that from Marton?—For several miles there seems to be poor pumice land there; and then at Waimiha, near where there would have to be a tunnel, it is also poor land. There would be quite ten miles of poor land there.

650. To the north of Murimotu. To the south-westward of Ruapehu I have not been over.

651. *Mr. Fulton.*] Did you take out any estimates of the Stratford route?—No.

652. *Mr. Larnach.*] Did you make full and particular notes of your journey?—Yes.

653. I suppose you have possession of those now?—Yes; I have some notes that I made.

654. *The Chairman.*] Are the surveys sufficiently far advanced on the Stratford line to enable you to make as good and reliable an estimate as on the Marton line?—Not sufficiently advanced at all, because there is no instrument-work.

655. They are not sufficiently advanced: you could only make an estimate with the assistance of the Engineers who were on it. I did make an approximate estimate of that too, but this was simply for Mr. Holmes's statement, and he would be able to give you information on that point.

656. *Mr. Larnach.*] Could you form any opinion from what you saw of the Stratford line what it would cost per mile in comparison with the central line?—The estimate was £7,000 per mile.

657. *The Chairman.*] That is £1,000 per mile more than the other?—Yes.

658. Do the plans, as you have examined them on that reconnaissance survey, indicate steeper gradients and sharper curves, or the reverse?—The grades seem to be steeper—1 in 50.

659. And what about the curves?—The curves were not shown.

660. The survey is not sufficiently advanced?—No. What we did was to take the rises and falls and see what grades could be obtained.

661. Will you tell us generally what is the nature of the land through which the coast route goes?—I went down the Mokau; there I saw a great many high hills covered with black birch, and it seemed to be pretty rough country, and poor land on the hills. And along the coast the ranges come close up to the coast; about a mile or half a mile only of some fair land, but no extent of it.

662. Did you in the course of your travels over that country come across any minerals?—We saw some coal cropping out in the Wanganui, to the west of Ruapehu; some coal was shown us near Tamaranui.

663. You did not see the seam yourself?—No; but I saw it on one of the tributaries of the Wanganui, and to the west of Ruapehu, on the way from Tokano.

Mr. E. MITCHELSON, M.H.R., examined.

664. *The Chairman.*] Of course you are thoroughly acquainted, Mr. Mitchelson, with the object of this Committee, and therefore I will at once simply ask you whether you have examined the proposed routes of railway personally?—Three of them.

665. Which three?—The Marton-Te Awamutu, the Te Awamutu-Stratford, and the Te Awamutu-Mokau lines; in other words, the central and the two western lines.

666. Have you traversed the whole of the Marton line?—Yes; from end to end.

667. Will you kindly tell the Committee what your opinion is as to the fitness or otherwise of the land along that line for occupation and settlement?—Well, perhaps it would be as well if I were to read extracts from my report as to the land.

668. That is not a published report?—No.

669. You can put in the report as a whole if you like?—No; but I am quite prepared to read extracts from it, though I have no objection whatever to supply the Committee with the whole of the report, excepting the concluding remarks, which are of a private nature. It is as follows:—“North Island Main Trunk Railway.—For this railway from Wellington to Auckland three routes have been suggested, as follows: No. 1. The eastern route, running by way of the Wellington-Napier Railway as far as Hastings, and thence *via* the Ripia Valley, Lake Taupo, and Te Awamutu to Auckland; distance by this route, 466 miles. No. 2. The central route, *via* the Manawatu and the Foxton-New Plymouth Railway to Marton, and thence *via* the Rangitikei and Hautapu Rivers to Waimarino, Taumaranui, Te Kuiti, Te Awamutu, and Auckland; length, 428 miles. An alternative line to the southern part of this route, between Feilding and Hautapu, is now being explored. No 3. The western route, by way of the Manawatu and Foxton-New Plymouth Railways to Stratford, and thence *via* Tangarakau and Ohura Rivers to Te Awamutu and Auckland; length, 470 miles. There is also an alternative proposal in this case, namely, to follow the existing railway from Stratford to Waitara, and thence to run *via* the White Cliffs, the Mokau River, and the Awakino Valley and Upper Mokau Valley to Te Awamutu and Auckland; distance, 467 miles. The eastern route I did not consider it necessary to examine, as the character of the country traversed by it is so poor in quality as to place it out of consideration; but the central route I have fully explored; and I have also traversed the western route to a sufficient extent to enable me to form an opinion of the general character of the country through which it would probably pass. I will refer first to the central route. Upon my arrival at Marton I was met by Mr. Rochfort, the Engineer in Charge of the central-route survey, and received from him all necessary information for my guidance. I started the following morning, accompanied by Mr. Rochfort, and travelled along Murray's track through the bush as far as Pokiore, where we camped in order to spend the following day in viewing the country. Up to about twenty miles from Marton the line runs almost parallel with Murray's track, and then strikes off in the direction of the Rangitikei River. A short distance from Marton the bush is entered, and extends to the valley of the Rangitikei. The land is of good quality and well adapted for grazing and pastoral purposes, some of the flats and table-lands being exceedingly rich in quality. From the Rangitikei the line passes on to the Hautapu Valley, and travels up that valley until the open country is reached. The land in the Hautapu Valley is exceedingly rich, and is admirably adapted for occupation by small settlers, varying, as it does, from broken to undulating and flat land. The line travels through sixty miles of bush between Marton and the open country, and would render available a very large quantity of valuable totara, rimu, kahikatea, and other timbers. As soon as the open country is reached a very large extent of most valuable land is tapped, suitable for both agricultural and pastoral purposes, the whole of the Turangarere and inland Patea country being opened up by this line.” I may here stop to explain to the Committee that, although the line does not pass through this land that I refer to, yet it will open it up, because it will pass very close to it. The line, in fact, runs through just a small portion of it. The land is all open and of excellent quality. It is owned by Natives. A large leasehold run there is occupied by the Birches. This is an important point in considering this line, because a very large quantity of country would thus be opened up.

670. *Mr. Larnach.* Have you any idea of the extent of country?—Several hundreds of thousands of acres. “From Turangarere [continuing to read report] to the old village of Raketapama the line passes through good open country, and then enters the Murimotu Plains, where the land is exceedingly poor, consisting of pumice and pumice sand. The line continues to travel through poor country until it reaches the south-western side of Ruapehu, when the land again improves in quality, but is covered with mixed bush. The whole of the land lying eastwards of the line up to within about eight miles of Lake Taupo, on both sides of Ruapehu and Tongariro, is exceedingly poor, and is covered with an inferior tussock grass, the slopes of the hills being the only places where even decent feed for sheep can be found. The land on the south-western side of Ruapehu, which slopes down towards the railway, is of poor quality, and is partly covered with a dense forest of birch. From the Ohekune clearing, which is about 105 miles from Marton, the line takes a turn, and runs for fifty miles almost in a straight line to the Wanganui River, passing over good table-lands and undulating and flat lands, on which there is a large quantity of useful marketable timber. From this point the line runs along the banks of the Wanganui, until it reaches the settlement of Taumaranui. The land along this portion of the line, although on the banks of the river, is not very good, owing to the quantity of pumice that is mixed with the soil. It is from this point that the Tuhua country would be opened up. The whole of the Tuhua country is covered with dense bush, but the soil is of good quality, although some of the land is rugged and broken. A large quantity of magnificent totara is to be found there, and several coal seams are in close proximity to the railway. It is also stated that gold is to be found all through the Tuhua Ranges. There is also a large block of good open land two miles to the southward of Taumaranui, called Makokomiko. From Taumaranui the line passes through a narrow valley to Waimiha. The land in this valley, along the banks of the stream, is a fair quality, and the fern ranges on both sides of the valley and the surrounding bush both contain fair average grass land, although it is exceedingly rough and broken. On the banks of the Ongarehu Stream, about eight miles south of Waimiha, Mr. Mountford's line from Ohura strikes Mr. Rochfort's line. The whole of the land in the vicinity of Waimiha is of very poor quality; but, as soon as the hill above

the Hinemoa Stream, through which the tunnel has to be cut, is reached, the land begins to improve in quality, and from this point to Te Awamutu, a distance of fifty-two miles, the line passes through a tract of splendid open country, consisting of fern ranges, rolling downs, and flats, a good deal of which is ploughable. Even now, without any stock upon it, the whole country is covered with clover, growing amongst the fern. At Te Kuiti the land is exceedingly fertile; and, in my opinion, this district is entitled to rank as the garden of the Waikato. Taking Te Kuiti as the centre of a circle, and looking north, south, east, and west for twenty-five miles in each direction, the proportion of indifferent land that could be found would be very small. The total length of new line by the central route would be about 210 miles, 100 of which is through bush and the balance through open country; and, although only seventy miles of this open country is really good land, the area of first-class land at the southern end (the Turangarere and inland Patea country) which would be opened up would be very large. It may also with perfect truth be stated that the line would open up on one side 210 miles of good country, as the bush land is also good beyond dispute; and the line where it passes through the Murimotu Plains (which is the worst land along the whole route) is not, at the greatest distance, more than ten miles from the bush. The line would open up valuable mineral as well as agricultural and pastoral lands, gold, it is stated, being plentiful in the Tuhua country as well as in the Rangitoto Ranges, at the Waikato end of the line. Limestone is also to be found in abundance in the Hautapu Valley, at the back of the Waimarino, and from the Waimiha Valley right through to Te Kuiti. At Waimarino a township could advantageously be established, as from this place objects of great interest to tourists—Ruapehu, Ngaruhohe, Tongariro, Tokeano, and Lake Taupo—could easily be reached. The hot-sulphur bath on the slope of Tongariro is said to be the finest in the world. The line by this route would be easy of construction. The grades are all favourable, and there are no great engineering difficulties to be surmounted. The estimated cost of constructing and engineering the line is £6,500 per mile, or a total of £1,360,000." That is the whole of the report in reference to the central line.

671. *Mr. Fergus.*] You have described the limestone formation in one part of the country. What is the geological formation of the country all through—this end, for instance—is it limestone, or what?—The Marton end, after leaving the Rangitikei, and as far as Hautapu, is all limestone.

672. And from Hautapu northwards, as far as Te Kuiti?—From Waimiha to Te Kuiti it is all limestone country.

673. And where does the pumice commence?—At Murimotu.

674. And how far does it extend?—About fifty miles.

675. And from that point onwards it is magnificent country?—To the right of the line the pumice extends for a very great distance.

676. I suppose you know the country between New Plymouth and Stratford, along the route that the railway takes at the present time, or, say, between New Plymouth and Patea?—Yes; I have been through it.

677. Is this country, on an average, as good as the country on which that railway-line travels now?—No.

678. Is it as good as the country between Stratford and New Plymouth?—About equal to that. I do not think there is any land in the country to equal that between Patea and New Plymouth.

679. That is a patch of good land; but beyond that it is not so good. Well, you have seen the country on the Canterbury Plains—between Christchurch and Dunedin?—Yes.

680. Would you say that this line from Marton to Te Awamutu, which is nearly the same distance, would pass through, on an average, as good country as that?—I should say certainly not, because the line through which this line passes is principally pastoral land, and the line through which the Christchurch—Dunedin line passes is mostly agricultural.

681. *Mr. Larnach.*] How long were you on the new line?—Thirty days on both of the routes.

682. From end to end?—I was fifteen or sixteen days on the central line from end to end.

683. *The Chairman.*] Will you now continue your report?—"Western route.—I will now refer to the western route. In this route two lines have been explored: one following down the Awakino and Mokau Valleys to the sea, and thence along the coast to Waitara; and the other keeping more inland, and joining the Foxton—New Plymouth Railway at Stratford or Ngaire. The former of these alternative lines I have examined as far as where the latter route branches off into the Waikaka and Ohura Valleys. As far as I have seen it, the line by the former route is good, and passes through good country. It would also open up all the land towards the Awakino, but from the Awakino River to Pukearuhe, or White Cliffs, the line would run parallel with the coast, and the land along that portion of the route is exceedingly broken and of no value for settlement purposes. From Pukearuhe to Waitara there is a narrow strip of good pastoral land, running parallel with the sea, but the whole of this land is within easy access of the Waitara Railway. I therefore consider that the coastal line from Mokauiti to Waitara must be abandoned, as no practical good would result from its construction. Besides, I consider it highly objectionable to construct what is to be a trunk line along a route running parallel with and near to the sea, if at all possible to avoid it. I inspected the Stratford end in company with Messrs. Ross and Holmes, the engineers who have been engaged on the survey. For the first twenty-eight miles after leaving Te Kuiti we travelled by the central route until, on reaching Te Nira, the line branched off to the westward. From this point the railway would pass through open country until it reaches a Native village called Wharehunga, which is five miles south of Mokauiti and fifty-five miles from Te Awamutu. The whole of the land for this distance is of limestone formation, and the soil on the average is of very fair quality and in some places exceedingly rich. The land is generally undulating, with some broken portions, but on the whole is well adapted for grazing purposes. As will be seen from the map, the central and western routes are identical for some distance from Te Awamutu, and for a length of fifty-five miles from that place the land upon these routes is of a similar character and equally good; and, in point of fact, either of the lines would open up for fifty-five miles or so very nearly the same country. At Mokauiti the line leaves the coastal route and turns into the Waikaka Valley, and thence

consecutively into the Ohura, Mangaroa, and Eao Valleys, passing through the Tangarakau country, and thence into Stratford. From Wharehunga right through to Stratford the line passes through dense bush, with small patches of fern here and there. The land in the Ohura and Mangaroa Valleys is exceedingly good, and, as the bush is not of so heavy a character as that at the Stratford end, it could easily be cleared and the land put under grass. This portion of the country is well adapted for occupation by small settlers. From the Ohura a branch line was prospected by Mr. Mountfort to join Mr. Rochfort's line twenty miles from the Ohura, but, in my opinion, either the central or Mokau-Ohura line is preferable to it, and it has in fact no special value, as either the central or Mokau-Ohura line would open up all the country through which it passes. The bush land from Wharehunga to where the line enters the Tangarakau country is of a broken character, but the quality of the soil is good, especially in the Ohura, Mangaroa, and Eao Valleys. As will be seen by referring to the maps, about forty miles of exceedingly-broken country are met with in the Tangarakau District. The line through these ranges will be most difficult and expensive to construct, and will open up no country fit for settlement. The timber met with on this portion of the line is principally birch. At the Stratford end the line again emerges into splendid country, the land for twenty-five miles from that township being undulating in character, with some very rich flats, and the bush becoming lighter as the distance from Stratford increases, until a point about thirty miles from Stratford, towards Tangarakau, is reached, where the land becomes broken again. With ample time and more extended explorations it is possible that a somewhat better line could be got through this broken country, but very great improvement in it is not probable; and that great difficulties have already been surmounted in surveying this portion of the line will be evident from a glance at the character of the country indicated on the maps. The total length of new line by this route is roughly estimated at 148 miles, fifty-five of which pass through open country, the rest being bush. The country opened would comprise agricultural, pastoral, mineral, and timbered land. Outcrops of gold are also to be seen in several parts of the Ohura and Tangarakau Districts, and gold is said to exist on the Tangarakau and Upper Mokau. The estimated cost of constructing and equipping this line is £7,000 per mile, or a total of £1,036,000; but it may be found after making permanent surveys that the length of line can be shortened somewhat.

684. I think I understood you to say that you had not travelled the whole of that line?—No; excepting the centre piece. In other words, I have travelled the whole of the Stratford line with the exception of the distance between 30 and 77 miles. I may say, before proceeding further, that the reason I did not traverse that piece was because the Natives obstructed us and forbade us to go through. When, one day, we returned to the camping ground of the day before, after being turned back, we found our beds, tents, and provisions had all been burned.

685. *Mr. Fergus.*] It was not on account of the nature of the country, then, that you did not travel over those forty miles or so?—No; it was only on account of the Native difficulty.

686. It was quite possible for you to get through?—Quite possible.

687. Is there any land along the route, from twenty miles out of Stratford for a distance of sixty miles, suitable for settlement?—The first thirty miles is magnificent country.

688. But I am leaving that part out of the question. I am commencing at a point, say, thirty miles out of Stratford. Is there any land beyond that, up to sixty miles, suitable?—I should say not very much; it is very broken.

689. It would not be worth while for any one to take it up?—There are forty miles unfit for settlement, I should say.

690. Beyond that, say seventy miles out of Stratford, what is the country like?—It is fit for settlement. It is really good country up to Te Awamutu.

691. That is a distance of how many miles?—About seventy-eight miles, making 108 miles of good land altogether from Stratford.

692. What proportion of that land would be agricultural and what pastoral?—It is all pastoral, but very rich pastoral land.

693. There is not very much agricultural land of it?—No.

694. Consequently the population would be of a more scattered character than if it were agricultural land?—Yes; I do not think there is any agricultural land on either of the routes, except a small quantity at Turangarere. There is a small portion equal to Canterbury.

695. Are there any evidences of Maori settlements along that line?—No, there are not.

696. And on the other line?—Not along the line, but in the Mokau country there are Natives settled there. I was rather surprised to see so few Natives in any portion of the country through which I travelled; I expected to see a very great number.

697. You know something about coal?—Yes.

698. You saw some coal there?—Yes.

699. What is its character?—It is only brown lignite.

700. You did not see any real coal?—Yes; at the Upper Wanganui.

701. But *real* coal?—No.

702. Any on the central or western route?—No; it is all lignite. But it is of a dark colour; a darker colour than what we have north of Auckland, but it fritters in the same way on being exposed.

703. Do you think the central or western route would open up the best timber country?—The central line, certainly. In the Upper Wanganui I saw the finest totara forest I ever saw in my life.

704. And you also say there is a large quantity of coal on the Marton-Te Awamutu route?—Yes.

705. As much as you saw on the other?—No.

706. Would the line from Te Awamutu down to the first sixty miles of that line equally serve the good country if made either by the central or Stratford route?—There are about fifty-five miles from the Auckland end and about seventy on the other.

707. Do you not think that by either of those lines the good land would be served equally?—For fifty miles, I should say, they would.

708. *Mr. Fulton.*] The evidence you have given in answer to Mr. Fergus's questions with regard to the forty miles in the centre of the Stratford line is hearsay only?—Yes. I may say this: that I had fully intended to have travelled over the line, and started with that intention, because I am used to bush travelling, only the Natives prevented us from going farther. The Native Minister (Mr. Bryce) wrote a letter to the Native chief there, requesting him to assist me in every possible way, and when I asked the chief to send a few Natives with me to carry provisions and tents he refused my application, except on the condition that I took fifty armed men with me, which I declined to do. The Natives that obstructed us are the same Natives who robbed the Public Works Department and the trig. survey party, and I believe the property they stole at that time is still in their hands.

709. *Mr. Larnach.*] The forty-seven miles of country that you did not pass through is what you believe to be very poor?—I saw it pretty well; I went to the top of the trig. stations at each end, and looked at it with a pair of glasses. Then, coming down along the coast I also had good opportunities of seeing it. I do not think there is the equal of such country in the whole colony.

710. *Mr. Fulton.*] From what point of view?—For being so broken.

711. *Mr. Larnach.*] You formed an opinion as to which was the best line to construct?—Yes. There are two ways of looking at the matter. I am not prepared to give an opinion here. Of course, I have formed an opinion, but I do not feel justified in giving it here.

712. But you have formed an opinion?—Yes, I have formed an opinion.

713. Have you any objection to state what that opinion is?—Yes.

714. You decline to state it?—I decline to state my opinion here, but reserve to myself the right of stating it publicly on the floor of the House.

Mr. R. W. HOLMES, Civil Engineer and Surveyor, examined.

715. *The Chairman.*] You have been engaged in surveying one of these lines of railway?—In exploring it.

716. Which line have you explored?—The Stratford—Te Awamutu line.

717. Will you point out roughly on the map what country you have explored?—From Te Awamutu southwards to within fifty miles of Stratford, and about fifteen miles inland from Stratford.

718. Have you taken sections along that line?—Not levelled; only with the aneroid.

719. And how close together have you taken these aneroid heights. Is the section prepared from your aneroid observations?—Yes.

720. And are the distances marked on the plan I hold in my hand the particular spots at which you took observations?—Yes.

721. Did you take any in between them?—No; only at the points shown.

722. Have you taken any cross-sections along this route?—No.

723. Simply the heights as shown on the plan?—That is all.

724. Have you had any experience in laying out lines of railway before?—Yes.

725. Where?—In Taranaki.

726. Which line?—Southwards from Stratford to Hawera, and from Hawera southwards to Manutahi.

727. Had you much difficulty in finding this particular line of route?—Not a great deal.

728. Are you satisfied that you have got about the best line that can be got through that piece of country?—No; I think we can improve it in places.

729. To any large extent?—I think we can avoid the Tangarakau rough country between the 50th and 70th miles.

730. You think that can be avoided?—I think so.

731. You said you have been over the first fifteen miles?—Yes.

732. What is the nature of the country from a settlement point of view?—It is good.

733. Fit for settlement?—Yes.

734. Is there much timber on that?—It is all bush.

735. And serviceable bush for cutting?—Yes.

736. Then, there is a gap from fifteen to fifty miles that you have not been over yourself?—No, I have not been over that.

737. Has this part of the line been plotted from your observations?—From Mr. Ross's and Mr. Carkeek's observations.

738. From 50 miles along that line will you describe the country as you found it?—Between miles 50 and 60 the country is very broken—very rough; the river runs through almost a gorge along that part.

739. And you laid out the railway through that gorge?—Yes, to come right down it.

740. What is the width of the gorge?—The river would be almost a chain wide, and the gorge from ten to twenty chains at the bottom.

741. And do the hills rise steeply from that?—Perpendicularly.

742. To what height?—To about 300ft., and then it is very steep to about 1,200ft.

743. And with regard to the country from 60 miles?—Up to 80 miles the river valleys are very good land. They vary in width up to a mile and a half wide; flat grounds; the hills are low, none higher than 400ft.

744. Are they open?—Up to 75 miles the land is all bush, and then there are fern clearings interspersed with the bush. From 80 to 83 miles the valley narrows in considerably.

745. And the hills there: are they the same height?—As you get to the watershed they get higher.

746. Do they rise steep?—Pretty steep.
747. Is any of that land fit for cultivation?—Yes.
748. What proportion?—Not more than half a mile wide between 80 and 85 miles.
749. Only just the flats?—Yes; and the tops of the hills are good grazing country.
750. And from 85 miles?—To 90 the country is not much good: too rough.
751. What is the class of timber?—Along the watershed it is nearly all black birch.
752. From 90 miles?—From 90 right away to the end it is about the same; it is all good land.
753. What will be the nature of the railway-line so far as you have examined it: will there be many curves, or will the line be pretty direct?—The general direction is very direct. Rising on the watershed, there will be a good many curves in places. I consider that the worst place is between the 85th and 90th miles.
754. Have you any sharp curves on that piece?—I do not think we should want anything sharper than a 10-chain radius.
755. The gradients are all laid on the plan simply from the barometrical heights you have taken?—That is all.
756. Did you measure any of these distances?—No.
757. It is all guess-work?—All guess-work.
758. How do these distances usually come out when you come to measure them?—Pretty well. The distances are not taken altogether from my own guess-work.
759. My object in asking the question was to ascertain whether you thought, on a fuller and more detailed survey, these grades could be improved without lengthening the line?—Yes; of course it would increase the amount of work.
760. But without seriously increasing the amount of work?—They could be improved in places. I have shown grades there that I am certain could be got,
761. Have you made an estimate of the cost of this line?—Yes.
762. Have you got it with you?—Yes.
763. Is it in such a form that it can be printed?—[Witness produced estimate.]
764. Has that been checked at all by anybody but yourself?—Not that I am aware of.
765. Have you made that estimate on any particular basis of prices?—Only from my experience of what lines have cost that I have been working on.
766. Then, it has not been checked in the Public Works Office?—I do not know; I sent it in with my report.
767. What is the total length of the line according to your estimate?—One hundred and twenty-three miles.
768. And what is your estimate of the cost of that length?—For the formation alone, I have reckoned £4,000 per mile right through; that is an average cost.
769. Does your estimate only cover the formation?—That is all. I put down the permanent-way, station, and rolling-stock at £3,000 per mile.
770. What does the formation include, then? Does it include anything beyond formation and bridges?—No; formation and bridges.
771. No roads to the line?—No.
772. Is there ballast along the line?—I did not see any at all.
773. What is the general run of the formation right through?—Clay and papa rock; there is a little limestone near Mokau.
774. Did you see any minerals along there?—Nothing but coal.
775. What is the nature of the coal?—There is a five-foot seam in the Tangarakau district.
776. What sort of coal?—The same as the Mokau coal. I think they call it brown coal. It burns to a yellow ash.
777. In writing the report which the Committee have got before them regarding the Stratford route, you gathered your information about the piece that you did not travel from Mr. Ross?—Mr. Ross and Mr. Carkeek.
778. *Mr. W. White.* There are several lengths on this plan (No. 7) without any grades being given. What is the reason for leaving them out?—That is where the line runs up a river valley. It is nearly level.
779. What would be the grade of the particular portion that you mention as being very bad?—It would be a very flat grade, except the rise from the Tangarakau River up to the saddle—about 1 in 50.
780. You think the grades mentioned here can be improved?—In one or two instances.
781. Which are those?—One is at the 62nd mile.
782. To what extent could it be improved?—That I can hardly say, except on more detailed survey.
783. Could it be improved 10 or 5?—Of course it could be run out a couple of miles longer.
784. That would take it up to the 64th mile?—About 65½.
785. And where is the other grade you could improve?—At 95 miles and at 110.
786. You could not say to what extent you could improve those?—The one at 110 could be improved to anything you like.
787. What would be about the additional cost of improving these grades? Would it add very much to the cost?—It might double the cost, or perhaps make it three times the amount.
788. That is per mile?—Yes.
789. On that particular grade?—Yes.
790. In calculating £4,000 per mile you have reckoned the grades as shown on this drawing?—Yes.
791. What rate per yard do you reckon for your earthwork?—About 1s. 6d.
792. And the ballast?—Between 2s. and 3s.
793. To put on the line?—Yes.

794. Where do you get your ballast from for that?—That has to be found. have not seen any.
795. What have you reckoned it at?—Just at the usual rate.
796. What is that?—It varies from 2s. to 4s. I have not gone into detailed prices at all in my estimate.
797. *The Chairman.*] Have you taken out the quantities?—No.
798. Then, the basis of this estimate is this: that you have formed your opinion on the line as you have gone along it, as to whether it is easy, moderate, heavy, very heavy, or tunnel?—Yes.
799. And you have put an average price per mile for the work—for the easy, moderate, heavy, very heavy, and so forth?—Yes.
800. Without going into details at all?—Yes.
801. Do you know of any other estimate being made of that line?—No, I do not.
802. You have estimated the cost of the formation of “easy” construction at £2,500?—Yes.
803. And for the “moderate” £4,000?—Yes.
804. The “heavy” at £5,000, and the “very heavy” at £7,000 per mile?—Yes.
805. And the tunnels at £900 per chain?—Yes.
806. *Mr. W. White.*] Have you any estimate of the number of yards in the “easy”?—No.
807. How do you arrive at the amount per chain or per mile of what is called “easy”?—By comparing it with work that I do know the price of.
808. Where was the work that you allude to?—In the Taranaki District principally.
809. Then, you have no estimate whatever of the number of yards?—No.
810. Could you not have taken the ballast and left that out, and estimated rather than take the formation? I mean, would it not have been a more accurate estimate if you had reckoned the number of yards per chain required, and put a price upon that?—I could not do so. I had no information. The ballast is not included in the formation.
811. But in this estimate of yours the ballast has been reckoned at 2s. or 3s. per yard?—No. it is not in that estimate at all.
812. It is included in the permanent-way. How much has been reckoned for that?—I reckoned £3,000 per mile to cover the permanent-way, stations, and rolling-stock.
813. *Mr. Gore.*] Is there much good land along the route in comparison to the quantity of bad land?—I reckon from the 90th mile to the 123rd is all good for a width of nearly ten miles.
814. And what does the other portion consist of?—From 85 to 90 would be no good; and from 60 to 80 about two-thirds of it would be good agricultural ploughable land. From 50 to 60 I do not think that it is good for anything, either for agriculture or grazing.
815. *Mr. Fergus.*] How long were you up there altogether, occupied in exploring the land and taking a survey?—Nearly three months.
816. You were employed chiefly between miles 50 and 123?—Yes.
817. Your evidence is practically this: From 50 up to 90 there is very little land of much good at all, from 50 to 60 the width of the gorge is about ten chains, and from 60 to 80 it varies to about a mile and a half, and from 80 to 85 the valley narrows, and from 85 to 90 there is not much land at all?—Yes.
818. In other words, from 50 to 90 there is very little good land at all?—It is very good land at the bottom of the vallies, what there is of it.
819. What acreage do you consider there would be from the 50th to the 90th mile of land that was good either for agriculture or grazing, or for any other similar purpose—in fact, fit for settlement of any description?—I consider that from 60 to 80 there would be three miles wide of such land, taking it right across country.
820. And from 80 to 90 there is nothing?—It would be very narrow; only a few thousand acres altogether.
821. You know the land round about Parihaka and Patea?—Yes.
822. Is there any of the land from 60 to 80 to be compared with the land there?—There is not the same extent.
823. I mean in quality?—Yes. I think the land at the bottom of the valley of the Mangaroa and part of the Eao are equal to it.
824. Are they of any extent?—The valley would not be more than a mile wide. You could plough a mile wide. The rivers are very much like the Whenuakura in character.
825. There is plenty of timber for bridging purposes all along?—Only black birch.
826. Then, you would find some difficulty in getting timber to the bridges?—Yes, unless you used black birch.
827. Did you not make any search for ballast when you were up there?—We just looked along the rivers.
828. That is the most probable place you would see it. Did you not?—We saw a little gravel in the valley of the Mangaroa; it was water-worn shingle.
829. Any quantity of it?—Very little of it. There is a little hard cemented gravel in the Tangarakau.
830. Plenty of sand?—There is a little sand in the Mangaroa.
831. From Stratford outward for fifteen miles you know the country?—Yes.
832. Have you any idea of what the character of the country is from 15 to 50 miles? You must have come in contact with many surveyors?—It is narrow valleys, with high hills on each side.
833. Very high hills?—Varying in height from 300 to 1,000ft.
834. And what would the timber be?—Rimu, matai, white pine, and tawa.
835. Not birch hills?—Only on the tops of the very highest hills.
836. Are many of those hills suitable for settlement?—A good many people think that all up along the Mangaotuku Valley is fit for settlement.

837. That is only hearsay evidence?—Only hearsay evidence.

838. *Mr. Montgomery.*] How far have you gone on each side of the line?—I have been right up the Ohura Valley to the Ongaruae, and right across the Native track from the Ongarue to the Mokau, about twenty miles up the Ohura, fifteen miles east of the line and about ten miles to the west, in the same latitude. Between the 100th mile and the end—the 123rd mile—I have only been a mile or so on each side.

839. You said you did not explore particularly as to where you could get ballast. That is an important matter?—We had no means of prospecting.

840. And along the line you saw no ballast except at the place you mentioned?—That is all.

841. *Mr. Fulton.*] As far as your explorations have gone, you believe you have found the best route that could be found on that line?—Yes; with the exception of Tangarakau. I have an idea that that can be avoided by following the Eao instead of the Tangarakau.

842. *Mr. Larnach.*] You say that in your opinion the line can be improved upon. Do you mean that by improving upon it you would increase the cost, or would you improve upon it without increasing the cost?—I believe you could improve the Tangarakau portion without increasing the cost.

843. Any other portion?—Not that I am aware of.

844. Are there many gullies or ravines to be bridged on the route that you surveyed?—About the usual number of cross gullies that one meets with.

845. Any deep ones?—In two places there are bad ones.

846. You made no cross-section survey?—No.

847. Then, how did you make your calculations without them?—Just by comparing the country with other country that I know on which lines have been made, and by taking the prices that I know.

848. You wrote a report of this line?—Yes.

849. Did you travel over the whole of it?—Not between the 15th and 50th mile. I was never over those thirty-five miles.

850. And your report includes that?—Yes.

ESTIMATE HANDED IN BY MR. R. W. HOLMES.

NORTH ISLAND MAIN TRUNK LINE.—WESTERN ROUTE. *Estimate of Part between Stratford and Te Awamutu.*

From Stratford to Junction with Central Route.

From	To	Easy Work.	Moderate Work.	Heavy Work.	Very Heavy Work.	Tunnels.
M. c.	M. c.	M. c.	M. c.	M. c.	M. c.	M. c.
0 0	12 50	12 50	..	..	..	..
12 50	14 35	..	1 65	..	..	..
14 35	14 45	..	..	..	..	0 10
14 45	16 0	..	1 35	..	..	..
16 0	27 75	11 75	..	..	..	..
27 75	30 15	..	2 20	..	..	..
30 15	30 20	..	..	..	..	0 5
30 20	32 0	..	1 60	..	..	..
32 0	33 70	1 70	..	..	..	..
33 70	35 50	..	..	1 60	..	..
35 50	35 66	..	..	..	..	0 16
35 66	39 6	..	..	3 20	..	..
39 6	42 30	3 24	..	..	..	..
42 30	44 20	..	1 70	..	..	..
44 20	44 24	..	..	..	..	0 4
44 24	45 40	..	1 16	..	..	..
45 40	45 46	..	..	..	..	0 6
45 46	47 40	..	1 74	..	..	..
47 40	48 30	..	..	0 70	..	..
48 30	48 35	..	..	..	..	0 5
48 35	50 25	..	..	1 70	..	..
50 25	51 0	0 55	..	..	..	..
51 0	60 40	..	..	9 40	..	..
60 40	63 60	..	..	..	3 20	..
65 60	66 40	2 60	..	..	..	..
66 40	68 60	..	2 20	..	..	..
68 60	80 72	12 12	..	..	..	..
80 72	82 72	..	2 0	..	..	..
82 72	83 72	..	..	1 0	..	..
83 72	84 0	..	..	..	..	0 8
84 0	85 0	..	..	1 0	..	..
85 0	87 20	..	2 20	..	..	..
87 20	88 70	..	..	..	1 50	..
88 70	89 0	..	..	..	..	0 10
89 0	91 50	..	..	..	2 50	..
91 50	94 20	2 50	..	..	..	..
94 20	97 40	..	3 20	..	..	..
97 40	109 32	11 72	..	..	..	..
109 32	109 72	..	..	..	0 40	..
109 72	110 0	..	..	..	..	0 8
110 0	112 0	..	..	..	2 0	..
112 0	123 0	11 0	..	..	..	..
		70 68	22 0	19 20	10 0	0 72

APPROXIMATE ESTIMATE.

M.	c.								£
70	68	of easy work, at £2,500 per mile	..	..	..	..	..	..	177,125
22	0	of moderate work, at £4,000 per mile	..	..	..	..	..	..	88,000
19	20	of heavy work, at £5,000 per mile	..	..	..	..	..	..	96,250
10	0	of very heavy work, at £7,000 per mile	..	..	..	..	..	..	70,000
0	72	of tunnelling, at £900 per chain	..	..	..	..	..	..	64,800
123	0	formation, including bridges, culverts, tunnels, contractors' road, &c., at £4,034 per mile	..	..	..	..	..	..	496,175
123	miles	of permanent-way, rolling-stock, stations, &c., at £3,200 per mile	..	..	..	..	..	..	393,600
19	miles	of central route from junction to Te Awamutu, as per Mr. Rochfort's estimate	..	..	..	..	..	..	89,403
Total									£979,178

SATURDAY, 20TH SEPTEMBER, 1884.

Mr. Ross, Surveyor, examined.

851. *The Chairman.*] The Committee have been informed, Mr. Ross, that you have been employed to survey part of the line between Stratford and Te Awamutu: is that the case?—Yes.

852. Are you familiar with the distances on this map [produced]?—Yes.

853. Will you state to the Committee which part of the line you have surveyed?—I surveyed from Stratford up to about fifty-one miles up the line.

854. In what manner did you survey it? Was it a survey with theodolite, or a reconnaissance survey only?—It was a reconnaissance survey only, with levels taken with the barometer.

855. Is this line marked out in any way on the ground?—The actual line is not marked out on the ground, but there is a track.

856. What width of track did you cut?—A track two or three feet in width is cut through the bush.

857. Is that track anywhere near where this line is laid down?—Yes; it is close alongside.

858. Referring to the section on this map, may I ask whether you took the aneroid heights?—Yes.

859. How close did you take them? Did you take them any closer than is shown on this map?—Yes; there were some intermediate ones taken.

860. Have you taken any cross-sections?—No.

861. Do you feel sure, from what you know and from what you have seen during the survey, that you could get the inclines that are marked on here?—Yes.

862. Do you think they could be improved upon?—Yes; but at a greater cost.

863. Do you consider that you have selected and surveyed the cheapest line that can be got there?—Yes.

864. Did you make any estimate of the cost of these fifty miles?—Yes.

865. Where is that estimate?—It forms the first part of Mr. Holmes's estimate.

866. Did you calculate the quantities?—No.

867. Then, how is the estimate made?—From a general estimate, according to the roughness of the country.

868. What did you take as your average?—The average cost in other parts of the country of the same sort of work.

869. Is that average taken from railways in the Taranaki District?—In different parts of the Island where I have been.

870. In going through those fifty miles, did you see any signs of any ballast?—No.

871. Anything fit for ballast?—No; there was no sign whatever.

872. What sort of average, then, did you put on for that? Did you make any difference on account of that?—No.

873. Referring to this map (No. 6), how far from Stratford is the land held in private hands, so far as you know of your own knowledge?—I have seen the clearings about as far as seven miles.

874. It is in private ownership for about seven miles?—I have seen the clearings there.

875. Starting at that point, will you describe what sort of country this is that the line goes through: in fact, you had better take it from the beginning?—Up to twelve and a half miles the country is very good and flat.

876. Fit for agriculture?—Yes, I think so.

877. Is it bush land?—Yes.

878. Is it heavy bush land?—No, light bush.

879. And is it pretty flat?—Yes.

880. For what distance on either side of the line?—For several miles.

881. Well, continuing from 12½ miles?—Up to about thirty miles the country is good, and more hilly; good grazing land principally.

882. What is the width of the Mangaotuku Valley?—The bottom is only a quarter of a mile to half a mile wide.

883. And how do the hills rise out of that: are they steep?—No, not very steep; they rise to a height of about 500 feet.

884. How are they in comparison to the hills round Wellington: are they steeper?—They are not so steep as those.

885. And you think that would all make good grazing land?—Yes.

886. Is it covered with bush now?—Yes.

887. What sort?—Principally tawa.

888. That is not good for cutting?—Not for saw-mills.

889. Is there much timber fit for saw-mills?—Scarcely any. It is light bush principally.

890. *Mr. Fulton.*] Tawa generally grows on good land?—Yes, I think so.

891. *The Chairman.*] Continuing the route from 30 miles?—From 30 miles up to 40, the country is very rough; principally black birch, valleys good but narrow.

892. The country on both sides of the line is poor?—Yes; the watershed between the Patea and Wanganui Rivers on one side, and Waitara watershed on the other side.

893. And you practically go over the ridge between the two?—Yes.

894. Is the line much curved there?—No.

895. What curves would there be, do you think?—You could get 10 or 12 chains radius anywhere.

896. We have now got as far as 40 miles. Now, as to the other ten miles?—The other ten lie to the right of the line, and comprise good land; the hills are not very high.

897. That is to the eastward of the line?—Yes. To the westward it is rough.

898. You say you saw no ballast there. Did you see any signs of minerals on that part of the line?—No.

899. Any coal?—No.

900. No coal on the Tangarakau?—I only went one mile on the Tangarakau. The country in front looked very rough indeed. I afterwards walked through from 78 miles to the end.

901. Taking the line generally, how far on either side of the line have you been in respect to the 50 miles you have been describing?—I have been down to the coast on the west side, and from three to five miles on the eastern side.

902. *Mr. W. White.*] What price per mile do you reckon for the permanent-way?—About £3,000 per mile for permanent-way, rolling-stock, and stations.

903. About what price per yard would the ballast be reckoned in that £3,000 per mile?—I could not say exactly now; probably 3s. or 4s.

904. Do you think it could be done for that?—Yes.

905. Where do you expect to get the ballast from?—Probably it might be found along the line on going through with it. I have known that to be the case before in many places.

906. Could these grades be improved at all?—Yes.

907. To what extent?—They could be made a good deal better, but at a very much greater expense.

908. You think it would not pay to alter them, then?—I could not say; it would require a detailed survey through to enable one to speak definitely on that point.

909. What is the value of the land between 25 miles and 50 miles: is it of any good?—From 30 to 40 miles is very bad and rough; from 40 to 50 on the eastern side is pretty good—fair grazing land.

910. Would you call 30 to 40 very inferior?—Yes; rough.

911. Did you see any kind of timber, except black birch?—Yes; rimu in the valleys.

912. But any timber fit for bridging?—Not much.

913. So it would all have to be taken from some other place?—Yes.

914. Was that taken into consideration in the estimate, or have you taken the average according to lines similarly situated as to ballast and timber?—Yes; in similar places for timber.

915. But as to ballast?—Not as to ballast.

916. *Mr. Montgomery.*] You say you saw the land on each side of the line from 3 to 5 miles?—Yes.

917. Sufficiently well to enable you to form an estimate of its quality and value?—Yes.

918. You did not go beyond that?—On the western side I have been down to the coast, a distance of twenty or thirty miles, in two or three places.

919. Will this railway be of value to that land more to the westward?—Not a great portion of it; not so much between 30 and 50 miles.

920. Then, up to 30 miles it will serve land to the westward of the line that is of good value?—I think so.

921. Then, as to that portion between 12½ and 30 miles to the westward, is that capable of carrying population?—It is good grazing land.

922. Would it carry population?—Yes, I think so.

923. It is suitable for settlement?—Yes.

924. And the railway would benefit that land?—Yes.

925. Have you been over any part of the central line?—No.

926. You have no knowledge of the quantity of land there, so as to form a comparison?—None whatever.

927. Between 30 and 40 miles, which you spoke of as being black-birch hills, I suppose this is of comparatively little value on account of the quality of the soil?—The quality of the soil and the steepness of the hills.

928. And you say that the land from 40 to 50 miles is of very good quality?—Yes.

929. How far to the eastward?—About two or three miles.

930. And to the eastward of that again?—I could not speak as to that,

931. It may be good or it may be bad?—Yes.

932. In fact, you have only explored the country just along the line a bit?—To the westward I have been through as far as the coast.

933. Was your business to find the best line for the railway, or to ascertain the quality of the soil?—Principally to find the best line for the railway.

934. Irrespective of the quality of the soil?—I had nothing to do with that.

935. *Mr. Fulton.*] Can you tell the Committee what the geological formation is through the 50 miles you have described?—The first 12½ is volcanic; of the remainder the subsoil is papa rock, with clay in the valleys, and alluvial.

936. You said, in answer to the Chairman, that you took other barometrical readings beside those indicated on the sectional survey?—Yes,

937. Many?—Several.

938. For instance, I see there is one at $3\frac{1}{2}$ miles, and the next is taken at $7\frac{1}{2}$, then at $8\frac{3}{4}$, 10, and so on: is that where they were taken?—There were some intermediate ones taken, but they were not put down where they made no difference in the section.

939. Would you call the estimates based on this reconnaissance survey good or rough?—They are pretty good; they are approximately correct.

940. Have you any experience of how a survey based upon barometric readings, such as you have made in this case, works out afterwards when a proper detailed survey is made—I mean with regard to cost?—No.

941. Can you say whether the survey in this case is likely to tally with a detailed survey as regards cost?—Yes, I think so; very closely.

942. You think it will come very close?—Yes; approximately so.

943. *Mr. Larnach.*] What experience have you had in laying out railway lines?—Ten years.

944. In what part of the Island?—All through Hawke's Bay, Taranaki, Wanganui, and Wellington.

945. Any lines in the South Island?—No.

946. Then, your comparisons have been in respect to lines in the North Island?—Yes.

947. So that it is all pretty similar country?—Yes.

948. Have you been through any more of the line in question for any distance beyond the 51 miles?—I walked through hurriedly from the 78th to the end.

949. And as to the stretch between 50 and 78 miles?—I have not been through it.

950. Do you know anything of that country?—No.

951. Is there any country on that line that is particularly rough or rugged?—Between 78 and the end, you mean.

952. Yes?—From 85 miles to 90 it is pretty rough; the remainder is not.

953. *Mr. Fulton.*] Were you surveying through the Seventy-Mile Bush on the Napier extension line?—Yes.

954. How does this line compare with work that you were doing there?—I have seen nothing on this line so rough as at Takapau. No viaducts would be required, and the bridges would be low.

955. *The Chairman.*] That is on the Stratford line?—Yes.

956. *Mr. Fulton.*] And how would the quality of the land compare?—It would be scarcely so good, I think, on this line. The first twelve and a half miles, however, would be as good as any on that line; but after that it is more hilly.

957. *Mr. Larnach.*] Do you know anything of the central line?—No.

958. Nor the coast line?—I have been through the country there.

959. How does the Stratford line compare with the coast-line?—I consider there would be more good country opened up by the Stratford line.

960. *The Chairman.*] Is the country on the bad piece that you spoke of as much broken as the Rimutaka country?—The hills are not so high.

961. Is it broken country like that?—Not so broken as that.

Mr. P. SMITH, Assistant Surveyor-General, Auckland, examined.

962. *The Chairman.*] This Committee has been appointed, as you are aware, Mr. Smith, to inquire into the various routes proposed for the North Island Trunk Railway, and it has been suggested that you, in your official capacity, have traversed the country through which the proposed lines run, and have a large amount of knowledge of that country. The Committee will be very glad to know what part of the country you are acquainted with?—I have a knowledge of the country from Te Awamutu for twenty miles southwards. Then, again, I was at the head of the Mokau.

963. *Mr. Larnach.*] Personal knowledge, I presume?—Personal knowledge. I also know the country on the central line due west of Lake Taupo. Again, I have a knowledge of the country from Murionotu through to Marton. I have a slight knowledge of the country from Taranaki to the Mokau, and the country up the Mokau River itself to the head of the Mokau. I have also travelled over most of the Napier line.

964. *The Chairman.*] You say you know the country personally from Te Awamutu for twenty miles southwards: will you tell the Committee what class of country that is, whether it is good or what?—In Auckland we should call it first-class country. It is a mixed pastoral and agricultural, principally agricultural; that is, the portion I know myself.

965. How much of it is fit for settlement?—I made a rough estimate of the lands which are known to be suitable for settlement, agricultural and otherwise, in the Upper Waipa Valley, and there are something like 300,000 to 350,000 acres.

966. How far will that extend south?—To about Te Kuiti.

967. And is that the twenty miles that you speak of?—That is beyond the twenty miles.

968. How many miles south of Te Awamutu would that be?—It would be about thirty-five miles.

969. There is only one route passing through the piece of country you are describing now, coming southwards?—Just at the point I have mentioned; that is, close to the junction of the two proposed routes.

970. And do you consider the whole of that land fit for settlement?—Yes; the area that I have mentioned.

971. And what is the balance beyond the 350,000 acres?—It is a much rougher country, and the greater part of it forest. It is what we should call pastoral country after it is cleared.

972. Then, are the 350,000 acres all open land?—Nearly all open.

973. And the rest all bush?—The greater portion of it.

974. And only fit for pastoral purposes after being cleared?—Yes.

975. You say you are acquainted with the country to the westward of Lake Taupo. Will you tell us what the nature of that country is from a settlement point of view?—It consists of a series of valleys, not of any great width, and divided by high ranges, some of which have plateaus on top, the plateaus being generally very good soil. Some of the valleys are very fair soil, and some indifferent. The character of the soil changes very rapidly.

976. Would you kindly say for about what length north and south of the country you are now alluding to?—From the 145th mile on the map to the 160th; that is, on the central line.

977. And is that good soil, fit for settlement purposes?—Passably so. The character of the soil varies so rapidly, that it would not be right to say that the whole of it is suitable for settlement, but a very large proportion of it is.

978. Do you know of any minerals in that district?—Not immediately there, but I know that coal has been found in other parts.

979. In what other parts?—On the Tangarakau.

980. You say you know the southern portion of the central line?—Yes.

981. From Murimotu?—From Murimotu downwards to Marton.

982. Can you give us, generally, an idea of the class of that land?—The soil is good—I should say nearly the whole of the soil is good from Marton to Murimotu, but at the same time it is a very broken country. It could only be classed as pastoral after being cleared and set down in grass. There are, of course, one or two small valleys in it which are suitable for agriculture, but the agricultural land is limited as far as our knowledge goes.

983. In speaking of agricultural land here, are you speaking of it as fit for agriculture now, or when the bush is cleared?—When cleared.

984. Is it all bush?—As far as I know, with the exception of one place, it is all bush.

985. I think you said that the only portion you knew of the Stratford line was a short distance out of Stratford?—Yes.

986. What distance do you know?—Very little indeed. I have never been along the line there; it is more a general knowledge of the surrounding country that I mean.

987. You say you have been up to the Mokau?—I have.

988. You are aware that the upper portion of the Stratford line goes through the head-waters of the Mokau?—Yes.

989. What do you know of the northern thirty miles of the Stratford line?—I have been through the country and I do know something about it. I know that the character of the soil is very good indeed; that is, quite first class as to soil. There are some valleys in it which would be agricultural, and there is a further amount of good open and forest land too, which we should call pastoral land after being cleared.

990. Is the whole of that fit for settlement?—Yes, the whole of it.

991. What is the length of the land on this line that you are now describing?—Twenty-five miles of the northern end of the Stratford line.

992. The best way to describe that locality, then, is the country at the head of the Mokau?—Yes, that is it.

993. To the point that you have just named, I gather that the land from Te Awamutu is practically all good for settlement, and is all good land either before it is cleared or after it is cleared?—Yes.

994. And the greater portion of it is only pastoral land after it is cleared?—Quite so; that is, as far as my personal knowledge goes, the whole of the country from Te Awamutu to a little south of the head of the Mokau is good land, capable of settlement.

995. Is there any country on the coast-line fit for settlement?—From Waitara to the White Cliffs is a settled country. After getting towards the north you come into precipitous mountainous country up to the head of the Mokau.

996. Do you know the nature of the country at all between the coast and the Stratford lines?—No, I do not; my knowledge of that is simply from seeing it at a distance. I know that it is exceedingly broken.

997. Now, to go to the eastern line, what is the general nature of the country?—Leaving Te Awamutu until you come near to the Waikato River, you run through the same kind of country as I have described along the first northern portion of the central line. After that you get into the pumice country.

998. How far does the pumice country run?—It would run up to and across the Mohaka. Some parts of it are better than others.

999. From the Mohaka to Napier, what is the class of country?—Going down the Mohaka River, or the Ripia, the soil is good enough, but it is a terribly-broken country—a mass of gorges—until you come out on the Napier side; then there is probably fifteen or twenty miles of pumice country, and after that there is very good limestone country, a good deal of which is in grass at the present time.

1000. It is reported to the Committee by several witnesses that there is a considerable tract of pumice country on the central route?—I did not see any of that, but I know that there is some.

1001. You cannot speak of it from your own knowledge?—No.

1002. *Mr. Montgomery.* Between 140 and 160 miles west of Lake Taupo, it is fit for settlement in parts?—Yes.

1003. Is some of it pumice country?—Some of it is. That is why I say “in parts.” On some of the flats there is pumice.

1004. What parts are suitable for settlement?—The hilly country would be the better. At the same time some of the flats are quite good.

1005. Is it arable land?—It would be after the bush or fern which grows upon the open country was cleared.

1006. In speaking of arable land, do you mean bush land after being stumped, or fern land?—I refer to both.

1007. What is the nature of the soil?—It is a dark loam.

1008. What is the geological formation?—The geological formation there is slate.

1009. The land for twenty-five miles to the junction of the two proposed routes is very good?—Yes; very good.

1010. Is that after the land has been cleared?—Always. It “goes without saying,” in the Provincial District of Auckland, that the land requires to be cleared. Some of it is bush and some of it is open. The country I refer to—the twenty-five miles—is open.

1011. Is that on the Stratford route?—It is the Stratford route that I am referring to—that which crosses the head of the Mokau.

1012. *Mr. Larnach.*] Referring to the 350,000 acres of good country, either the central or western route would have the advantage of that?—Quite so.

1013. Do you know, of your own knowledge, whether any of the country is auriferous?—No; merely by hearsay. There is very good evidence of that being the case.

1014. To which part of the country do you refer?—The Tuhua country on the central line.

1015. It is rather westward of the central line?—The proposed line comes very close to the spot where the reported gold discovery is.

Major ROBERT PARRIS, examined.

1016. *The Chairman.*] You have been employed by the Government for several years?—For twenty-five years.

1017. In what capacity?—As Land Purchase Commissioner and Assistant Secretary.

1018. And during that time you have been more or less engaged in travelling about the central and westward part of the North Island?—I have travelled very little on what is now talked of as the line of railway, but I know the whole country from Waikato to Mokau and from Stratford to the Tahoraparoa Ranges. I know from Stratford up to 50 miles, in short.

1019. Do you know anything of the central line at all?—I do not.

1020. Can you tell us what is the general nature of the country from Stratford, as far as you know it?—A fine country for settlement; very fine.

1021. Is it bush land?—It is bush land, with spots of open land.

1022. Of what extent?—Not large ones.

1023. Can you give us any idea of the proportion of open land?—I should not like to commit myself to any specific quantity at all. It is not, however, a large quantity. The places were cleared by the Natives years ago, and are now grown over with ferns.

1024. What is generally the nature of the soil?—Very good indeed, dark alluvial soil.

1025. Is the land much broken?—Very little indeed in that part.

1026. You are speaking now of the whole fifty miles?—Yes.

1027. Is the timber fit for market?—There is red pine, kaikewakaro, and some totara, but pine is the principal.

1028. Are there any Maori settlements along that line now?—Not along there; they are nearer the Waitara River.

1029. Are there any minerals in that part of the country?—Not in that part; the reported mineral country is beyond.

1030. Can you give us a description of the land between the Stratford line and the coast?—That is all acquired by the Government now.

1031. How far east and west of the line, as laid down on the map, does your description of the land apply to?—Very little beyond the proposed line of railway to the east or south-east of it. I have never been across that part of it. That would be to the Wanganui River.

1032. Your remarks apply to the westward, then?—To the westward and north-west.

1033. And to what distance from the line?—All through to the coast.

1034. How is the bulk of that land held? On the map produced there are various patches of colours, and we understand that wherever a patch has been left white the land is absolutely in the hands of the Government. Outside that white is there any land under negotiation; in other words, are you aware of any land having passed through the Court, and the title cleared, to be dealt with by the Maoris?—The principal part outside the confiscation-line is in the hands of Maoris.

1035. But has any of the land outside the white passed through the Court, and in such a position that the Maoris can sell it to anybody?—Several small blocks have passed through the Court.

1036. How far does the line coming out of Stratford run through private property?—I could not tell you the exact distances. It runs through on one side of it.

1037. For how many miles?—I really could not say how many miles.

1038. Could you say within three or five miles? Are there ten miles of it?—I do not think there is so much.

1039. Less than ten miles then?—Yes, I think so.

1040. Do you know of any blocks of lands along that line that are in a position to be dealt with, and the title of which can be got from the Maoris?—Yes, with the usual difficulties, the land is open to be dealt with.

1041. But has any of it passed through the Court?—None beyond the few small blocks I have referred to.

1042. *Mr. Montgomery.*] You say you do not know much of the land to the east of that line,

but to the west you know it very well: what is the quality of the land that would be served by the line to the west?—I should think it is very good for settlement. Some of it is broken, also undulating, and some of it is level, but the greater part is occupied by settlers.

1043. For how far up the line from Stratford?—Well, the settlement is after crossing the Waitara River, just beyond Stratford.

1044. How far is that from Stratford? How far is the settlement from Stratford that would be served by the railway?—I believe that the whole of the land is taken up between Waitara River and Stratford.

1045. And settled upon?—I do not say it is all settled upon, but it is taken up.

1046. How far is that about, in miles, to the westward of the Stratford-Te Awamutu line? I understood you to say that the land is fit for settlement?—The land as far as the Tahoraparoa Ranges is very fair for settlement. That is about fifty-one miles.

1047. You would call it good land?—Yes; there is some of it broken as you get towards the River.

1048. *Mr. Fulton.*] Are you aware of any negotiations that have been begun for the purchase of the land from the Natives?—No further than those to which I have alluded.

1049. None recently?—No.

1050. I say "begun," I do not mean completed?—I do not know of any begun except what I have alluded to.

1051. *Mr. Larnach.*] Has any land passed through within the last year?—They were finished during the past year, but have been under negotiations for the past four or five years.

1052. What size of blocks?—One 16,000 acres, another 9,000 or 10,000 acres, and another 120,000 acres.

1053. Have these passed into the hands of Europeans?—Yes.

1054. Private individuals or companies?—Where it was a company it consisted of three or four Europeans.

1055. To the westward of the Stratford line is good land?—It is.

1056. Do you not know anything of the eastward of the Stratford line?—Only by repute.

1057. You have not been on it?—I have not.

MONDAY, 22ND SEPTEMBER, 1884.

Captain H. W. NORTHCROFT, Resident Magistrate, Waikato, examined.

1058. *The Chairman.*] It has been intimated to the Committee that you have traversed a good deal of the country to the south of Te Awamutu, in the direction in which it is proposed to construct a main trunk line of railway. Would you kindly tell the Committee what extent of that country you have traversed?—I have travelled from Te Awamutu to the Mokau on the coast, the portion near the Tuhua.

1059. When was it that you traversed that country?—In March, 1875. I lived in the Waikato district for some time, and went across to Taranaki. I crossed from Te Awamutu, and came down the Mokau River.

1060. Then, you are pretty well acquainted with all that country from Te Awamutu down to Mokau on the coast?—Yes.

1061. And from Te Awamutu through the Tuhua country?—I do not know it from the western side; I know it from the Taupo side. There is a piece between the two I do not know.

1062. Would you describe it as fit for settlement?—No; there are portions on some of the valleys that might be called agricultural, and portions that would do for pastoral, but the great quantity of land is very indifferent.

1063. What general description would you give to the land?—I suppose it might do in instances for large runs; but I do not think anybody could make anything of it under 2,000 or 3,000 acres.

1064. Would you call it pastoral country?—You might call it pastoral country, but some of it, I think, would not carry sheep. It is much of the same nature as the Taupo country, where I lived some considerable time; that was, only two or three inches of soil in some places. There is a crust, and if you break the crust you lose the whole of the soil. We lost it by ploughing it. I dare say if it were disc-harrowed you might get grass to grow.

1065. You have not seen any of that sort of country tried to be put down in grass?—I saw some in Taupo. I think it was in Sir Julius Vogel's time—1872. He sent a lot of grass to be tried there, but it was a failure.

1066. How does the surface-sowing answer?—It does not do. There is a moss comes up with the wi grass, and the English grass dies.

1067. Then, there is no other portion to the southward of mile 100 on the map that you know on that central route?—No. Of course there are valleys here and there, perhaps, where you could get a nice little farm.

1068. Is the bush land there good?—Yes; it would take grass.

1069. But is the bush itself good?—It is all the same formation of country. The trees do not make a tap in any of that country. Even the red and white pine trees, and many other sorts that usually make tap-roots, the roots run along the surface, and do not go into the pumice drift.

1070. But is the timber good marketable timber, that is what I mean?—Yes; some of it is very valuable timber.

1071. Is it heavy bush land?—Some of the timber is heavy.

1072. Now, with regard to the Stratford line?—So far as I have gone on that line, the land is all good country; that is, on the Mokau. It is similar to the Waikato country, only a little more broken. It is limestone country.

1073. Do you consider all the land you have described from the 90th mile to Te Awamutu on the Stratford line is fit for settlement?—Undoubtedly.

1074. Is it agricultural land?—Both agricultural and pastoral country.

1075. I understand that you have traversed this land backwards and forwards all over?—Yes.

1076. And that is a fair description of the whole of it?—Yes. Beyond the country I speak of, of course, I do not know: it may be very good, or bad. I am speaking, of course, only of what I know personally.

1077. Have you seen any minerals anywhere in that country?—On the Stratford line there is coal, undoubtedly.

1078. Is it good coal?—Yes. I have also heard that there is coal on the other line equally as good, but that is only hearsay.

1079. Have you seen any other minerals there—gold, for instance?—No.

1080. You have been through the Tuhua country?—I have crossed it. I have not been right up to Tuhua.

1081. Have you seen any indications of gold there?—I have seen quartz.

1082. I understand that the whole of this piece of country is fit for settlement, and, in fact, is very valuable country for settlement, on the Stratford line?—Yes.

1083. And you do not know anything personally of the country south of that?—Not between that and Stratford; only by what I could see from a distance, and it looked very bad.

1084. *Mr. W. White.*] You only know the country on the central route from mile 100 to 160?—That is all.

1085. How far east of the Stratford line have you been?—Of course I could not say that I passed actually down the line. I know the country pretty well, looking at it from the hills and ranges. I have not been on it since the line was explored. I am speaking of it now as a district.

1086. You did not go over as far as the central route?—I could not say that I have been; I might perhaps know the country; but I am only speaking of the country as it was when I passed over it. There was no railway-line thought of then. I went over it to look at the country from a military point of view. We thought at that time that we might have to fight in that country.

1087. *Mr. Montgomery.*] Your knowledge of the central line extends from mile 160 down to 100. That is close to Murimotu, is it not?—It is a little below Rotoaira, a good distance from Murimotu.

1088. Do I understand you to say that the land along the line would not be improved by turning up the soil?—I do not think it would. It seemed to be of the same nature as the Upper Taupo, and that country certainly did not do so. It is a light soil, with pumice drift underneath. As you go more in the direction of Marton the country gets a little better.

1089. Is it anything of the same nature as what it is to the north of Taupo, and running down the Napier line?—It is something of the same nature. I think it is rather an improvement on that running from Taupo down towards Napier. I think it is land more like the Runanga land—the lower end of Taupo.

1090. You do not know the land below mile 100?—No.

1091. *Mr. Larnach.*] You know all the Mokau line?—Yes.

1092. And how far down from the junction on the Stratford line?—I came down the Mokau Valley. I know from Te Awamutu south to Totio. I then followed the river to the sea.

1093. I understood you to say that the trees there do not make a tap root?—No; they do not.

1094. Do you mean that as an indication of poor soil?—I think so. The cabbage trees are the only trees that make a tap in the portion of the Tuhua country I speak of.

1095. And are there any trees in New Zealand that make a tap root?—Yes; the pine.

1096. In the South the cause of their not doing so is attributed to the rich soil. Pines do not make a tap root there?—In the country I am speaking of their roots grow to the pumice, and when blown down they throw up the earth for yards around, and higher than the side of a house in many instances, and if two of them get blown over they go down like nine pins, having no hold of the ground.

1097. When were you last in that country that you speak of?—I was on a portion of the Stratford line about a year ago. It is about four or five years since I was on the other.

1098. You have never been on the route since it was levelled?—Never on either portion of the country since the lines were explored.

1099. So that you speak of the general nature of the country, not exactly where the lines go?—Yes; I do not know exactly where the lines do go, further than as indicated by the maps now shown to me.

Mr. L. CUSSEN, District Surveyor, Auckland, examined.

1100. *The Chairman.*] We have summoned you here, Mr. Cussen, to give evidence in connection with the North Island Trunk Railway routes. The Committee wish to know first how much of the country which is contiguous to the proposed routes you know personally?—I know the line from Te Awamutu to Te Kuiti; thence down the Mokau River until it comes to Tautoro, about twenty miles farther. I also know the line from Te Kaiti to the south of Ruapehu, on the central line.

1101. All the way through?—Yes, from mile 210 to 90 as marked on the map produced (No. 1), or a distance of 120 miles southward from Te Awamutu.

1102. Starting from Te Awamutu, what is the nature of the country?—Well, it might be described as mixed agricultural and pastoral country. The quality of the soil, I should say, speaking generally, was second class for the first twenty-five or thirty miles. Some of it might be described as first class, some small patches of alluvial deposits, and some volcanic.

1103. Is all that twenty-five miles fit for settlement?—Yes.

1104. And it is partly agricultural and partly pastoral?—It is mostly agricultural.

1105. Is any of it heavily bushed?—A portion of it with kahikatea bush—white pine.

1106. And is the land that you have described as agricultural and pastoral covered with bush now?—No; the greater part of it is open.

1107. What is the nature of the country from the 25th mile southward?—It then becomes a little more broken, and would be more suited to pastoral purposes; but there would be a large proportion of it agricultural too.

1108. For how far?—[After looking over map No. 1] This map is very incorrect. What is here marked as the 25th mile is nearer 30. I have a more correct map in my pocket.

1109. You had better produce it, then.—[Tracing produced.] This is partly compiled from official surveys and partly from Dr. Hochstetter's map; but from Taupo to Te Awamutu it is compiled from my own observations, and I think is more correct than the maps before you. My map, however, does not show the course of the railway-line except in a very rough way—not sufficiently near to enable the mileage to be scaled on it.

1110. What we wish to get from you is a general description of this country, as you have had opportunities of observing it. For twenty-five miles south of Te Awamutu you say the country is very good—fit for settlement?—Yes; it is.

1111. And a large proportion of it is agricultural?—A very large proportion.

1112. And what you call agricultural is open country and not covered with bush?—Yes.

1113. Then, what distance did you come down the central line from 25 miles?—From Te Kuiti to the Ongarue River—to the 160th mile from Marton—it is very broken country.

1114. What is the geological formation?—It is an old volcanic formation.

1115. And is much of that fit for agricultural purposes?—Very little indeed. There might occasionally be got a small homestead in the valleys and on the table-lands.

1116. And the rest of it?—The rest of it is land that possibly might be suitable for pastoral purposes in the future, but I am afraid there is so very little organic matter in the soil now that the burning off would almost destroy it.

1117. And farther down?—The valley of the Ongarue, I believe, is useless. It is a poor pumice country.

1118. And that would be from mile 160 to 150—ten miles?—Yes.

1119. And does that poor land extend to the east and west of the route as marked here on the map?—Yes; to both east and west.

1120. For any distance?—To the westward it is about three or four miles of the bush, when the soil is a little bit better, but greatly broken.

1121. And to the eastward?—There are about eight or ten miles of pumice country to the eastward.

1122. Now, coming south from that?—Coming south from that to Tamaranui—I think the distance would be about fifteen miles—the land is also broken.

1123. That is, say from mile 150 to 140?—The land is very broken. On the slopes of the hills it is a little richer, but the valleys are poor.

1124. And is any of that fit for agriculture?—I do not think so. Perhaps you might find a small patch of alluvial deposit along the banks of the river of 10 or 15 acres; but, as a general rule, it is only pastoral land.

1125. How much farther south do you know?—I know to about mile 100.

1126. What is the nature of the country from mile 140 to 100?—It is bush country, most of it.

1127. Is it broken or fit for settlement?—No; I do not think there is any agricultural land on it at all. It is broken bush country.

1128. Is it the same to the east and west of the line?—Yes, I think it is.

1129. Did you come across any minerals on that route?—I have seen coal. There is a coal deposit near Tamaranui. I also saw some small coal deposits in the beds of the rivers.

1130. Did you come across any gold?—I have seen quartz, and the Natives told me they were confident there was gold in the neighbourhood about twenty miles to the eastward of Tamaranui.

1131. What do you know about the Stratford line?—I do not know the country below Totoro personally, but I have seen it from the hill-tops. It seems to be very broken country.

1132. Do you know any of the country between Te Kuiti and Mokau?—I have been along the river to its mouth, but I do not know the country that the line traverses.

1133. You have only been on the river itself?—Only on the river itself.

1134. *Mr. W. White.*] Is there any pumice from mile 100 to 140 on the central line?—Yes, there is.

1135. Much?—Not so much as in the Ongarue Valley.

1136. That is from mile 150 to 160?—Yes.

1137. It is not all pumice?—Not all.

1138. Half of it?—You can find it any where along the line, but it is in very small quantities in places, and in those particular places it seems to be more under the surface.

1139. Not very deep?—Not very deep in that portion of the country.

1140. What is the kind of bush?—Mixed bush: toara, tawa, and rimu, and so on.

1141. Is it very good?—There is some good totara timber.

1142. *Mr. Fergus.*] Have you been in various parts of New Zealand surveying lines, as well as this particular one?—Yes; I have been all over the country.

1143. North and South?—Yes.

1144. For how long?—For the last fifteen years.

1145. How long were you in this particular portion of the country?—For twelve months.

1146. Had you and Mr. Rochfort most to do with that particular portion of the line?—I was not on the survey of the railway. I am engaged in the trigonometrical survey of the country for Government. I have surveyed railways in the north and in the south of New Zealand.

1147. Have you been twelve months over this particular part of the country?—I have been in the King country exploring for twelve months.

1148. *Mr. Montgomery.*] You know the country so well by exploration that you are in a position to say that the evidence you have given is based on personal knowledge?—Yes; I have given evidence from personal experience, so far as my judgment goes.

1149. And that experience is sufficient to enable you to speak very positively on the matter?—I feel positive that my information is correct.

1150. *Mr. Fulton.*] How far south along the central line did you say you knew the country?—To Ruapehu, about 120 miles of the line from Te Awamutu southwards.

1151. *Mr. Larnach.*] And how far, on an average, do you know the country on each side along the route?—I know all the country from the East Coast to the West Coast.

1152. Have you discovered any auriferous country in your explorations?—Yes; I have seen gold-bearing quartz—a very small quantity of gold. I had the quartz tested in Auckland.

1153. On what line was that?—That would be near the central line.

1154. Was there much quartz?—A great deal of it.

1155. Do you think there were reefs there?—There is no doubt that there are reefs there, but whether there is gold in payable quantities I feel very doubtful.

1156. You spoke of a part of the country where the pumice is very shallow in places?—Yes, in places.

1157. What soil would there be underneath that?—I think it would be a loose sandy subsoil.

1158. Loam?—There would be a little loam mixed with the sand, especially in alluvial deposits.

1159. Then, grass would grow there?—I do not think it would take grass from surface-sowing. It would require ploughing.

1160. If the pumice were turned underneath, would it?—I would not like to say that.

1161. Judging from your own knowledge of that country, which line would, in your opinion, most benefit the country in relation to any possible future Native difficulty, if you have no objection to answer such a question?—What is known as the central line from Marton, I should think.

1162. *Mr. Montgomery.*] How far have you been down the Stratford line?—I have not been below the Mokau.

1163. Then, you do not know anything about that line?—Not personally. I may say, in explanation, however, that, when I say I think the central line would benefit the country most from the point of view mentioned, I know the country near the Stratford route sufficiently to be in a position to give an opinion on that point. I know the country from the tops of the hills, although I have not been over the line of railway, and not in a position to speak of the quality of the soil in its immediate neighbourhood.

1164. *The Chairman.*] You say you have been on the tops of the hills?—Yes; all through the country.

1165. Can you tell us the general nature of the country that is traversed by the line: is it very much broken?—It is very much broken from the Mokau, to Stratford.

1166. Is there any particular part of that more broken than another?—I think the land in the neighbourhood of Mokau is more broken.

1167. You cannot speak as to the quality of the soil, or the fitness of the country for settlement?—No, I could not, not having been over the particular portion that the railway traverses. I only know that it is much broken.

1168. Can you name any particular hills in that country that you have been on?—I have been on all the principal ones: Rangitoto, Tongariro, and so on.

1169. *Mr. Montgomery.*] But near the Stratford line?—The nearest hill to the Stratford line that I have been on would be at Tautoro, the Papakawai Range, that is near what is marked as the 100th mile on the map.

1170. And south of that?—I have not been on any of the hills close to the line south of that. I have not been on any of the hills within ten miles of the line south, where the line leaves the Mokau River.

1171. *Mr. Fergus.*] You know the South Island pretty well?—I know the portion traversed by the main trunk railway from Dunedin to Moeraki. I surveyed that portion of the line. That is the only portion in the South that I know very well.

1172. Do you consider there is any portion of this line from Te Awamutu to Marton as good as between Dunedin and Moeraki?—There may be a small portion, immediately south of Te Awamutu.

1173. But you think the general character of the country is not so good?—I do.

Mr. A. J. Rawson, Surveyor, of New Plymouth, examined.

1174. *The Chairman.*] You are not in the Government employ?—No. I should like to say a few words in explanation before I proceed to give evidence. It is only fair that the Committee should know, before asking me any questions, that I wrote the report for the Taranaki Vigilance Committee. That was after I left the Government employ.

1175. Were you employed to do that?—Yes.

1176. By whom?—By the Taranaki Vigilance Committee.

1177. Who is at the head of that Committee? Who was it really that employed you?—Mr. Standish, the Chairman.

1178. And who else are on the Committee?—Most of the leading gentlemen in Taranaki.

1179. Can you give the names of some of them?—I suppose it is not a breach of confidence on my part to mention their names. There is the Mayor (Mr. Bayly), the present member and past member (Mr. Samuel and Mr. Kelly), Mr. Weston, and Mr. Thomas King, and I forget the others. I mostly had to do with Mr. Standish himself.

1180. This plan [producing plan] was distributed with that report, was it not?—Yes.

1181. Where did it come from?—It was prepared by me in Taranaki, and brought down to Wellington, by the member, to be photo-lithographed.

1182. What member?—Mr. Samuel.

1183. And it was photo-lithographed at the Government Printing Office?—Yes.
1184. At whose cost was that done?—At the cost of the Vigilance Committee, I fancy.
1185. You do not know at whose cost it was?—No; I only know that I handed it to them.
1186. You are aware of the proposed railway routes?—Yes.
1187. Which line are you most acquainted with?—The Stratford line, and perhaps the coast line, too.
1188. And how much of the Marton line have you traversed yourself?—On the Marton line I have only been up the Rangitikei—not a very great distance, and at the upper end of the Marton line, on the Ongarue.
1189. How many miles up the Rangitikei have you been?—Some ten miles from Rangitikei, a few miles above the railway bridge.
1190. Have you been ten miles inland from Marton?—Not so much; I have been five miles inland from Marton.
1191. What portion of the northern end of that line have you seen?—I have overlooked about ten miles of it.
1192. Whereabouts is that?—Where the alternative route comes in. I came into the valley of the Ongarue, and got on to the hills to see the country generally.
1193. That is what you call a reconnaissance survey?—Yes; I had a general view from the top of the hills.
1194. Then, the piece you have seen about the Ongarue Valley would be between mile 170 and 180 on this map (No. 1)?—Yes.
1195. Have you been on any portion of the line from Te Awamutu southwards?—Yes; from the Mokauiti.
1196. How far from Te Awamutu do the ten miles to which you have referred begin?—It is from mile 170 to 180 on the map.
1197. That appears to be the only piece of land that you have overlooked?—Yes.
1198. What was the nature of the country there?—It was an open valley covered with pumice, with very short stunted ferns on it and moss—valueless country in the valley itself, with good land only on the tops of the hills, where the pumice has not stretched up.
1199. Is there any bush there?—Some clumps on the top of the hills.
1200. *Mr. Fulton.*] What sort of bush?—Rimu, tawa, and so forth.
1201. *The Chairman.*] Just tell us what you know of the Stratford line; what part of that line have you examined?—The part I saw lies between mile 50 and 95 as marked on this map.
1202. What sort of land is that?—The first five or six miles is broken.
1203. From which end is that?—From the spot marked 50 miles.
1204. Well, between 50 and 55, you say it is broken?—Yes; it is broken black-birch country.
1205. On both sides of the line?—Yes.
1206. What kind is it from 55 to 60 miles?—Before you get to 60—say, at the 57th mile—there is an end of the black birch.
1207. And from 57 miles?—Up to 70 there would be the same description of country.
1208. What is the description of the country there?—It is very good, light, bush land. I do not mean to say first-class land as compared with the first-class lands of the colony, but second-class as compared to some of the best land you will find.
1209. Is it broken country?—It consists of broad valleys, with low hills between.
1210. What is the width of the valleys?—The widest might be two and a half miles or even three miles.
1211. What is the average width of the valleys?—Two miles, I should think.
1212. From 70 miles up to the 95, which you say you know, of what character is it?—Perhaps half of the country there is fern instead of bush, and it would be all good only the fern part has been frequently burned by the Maoris, and it has been deteriorated on that account.
1213. Is it much broken?—No; it is much the same class of country as the tributaries of the Wanganui—open valleys, with low hills between.
1214. And what proportion of that land could you plough?—Two-thirds, I suppose.
1215. What sort of bush is it: is it of any good for railway purposes?—It has one peculiarity, that there are no supplejacks through it.
1216. But what sort of bush is it?—Tawa, with a good deal of rimu.
1217. Did you come across any minerals there?—Only coal. There is a seam on the Tangarokau that I measured; it was about 5 feet thick, with a very slight dip to the south.
1218. *Mr. W. White.*] You say there are two-thirds of the land ploughable. Is that ploughable now, or after the trees are taken off?—After the trees are taken off.
1219. You would require to remove the timber first?—Except the part that is fern or manuka.
1220. How much fern is there?—Very nearly half that land would be fern—between 70 and 95.
1221. Is there any ballast along the line?—Yes, in the Mangaroa. There is a stream coming out of the hills that has small shingle running out in the Mangaroa, and then it is lost again; the silt has covered it.
1222. *The Chairman.*] At what mile is that?—At mile 70 on the map.
1223. *Mr. W. White.*] What quantity of it is there?—A very large quantity if the stream were followed up.
1224. Then, you would get sufficient for the line close to it?—Yes.
1225. Is there any timber there suitable for bridges?—Yes; there is scattered totara and matai, but I am told by Mr. Holmes that the Public Works Department is giving matai up.
1226. Is there sufficient totara there that would be required for the line?—Possibly enough.
1227. Is that all along the line or in any particular part?—All about. I do not say it is very easy to get at, but it is there in clumps. You see four or five together.
1228. Would it be expensive to get?—No; it lies in the valley mostly.

1229. Is it difficult of access?—No; the valleys themselves are all quite level valleys. It would be easy to make roads down them.

1230. What width are the valleys?—In its widest place the Ohura would be three miles, and the Mangaroa would also be three miles, and then it narrows in parts to one mile. I do not think it would be any less than a mile in any place.

1231. What would be the size of the totara there?—The largest would run to about 2 feet through.

1232. Not beyond?—They were not large totara trees, but medium ones.

1233. What would be about the average?—Perhaps the average would be about 2 feet.

1234. At about what mileage is this totara timber?—I saw it all the way through from mile 60 to 80.

1235. *Mr. Montgomery.*] You say you do not know anything of the line south of mile 50?—Except from hearsay only.

1236. You could not describe the country from mile 50 on the map down to Stratford. Only from hearsay, and from having seen it from the high hills, which would be rather deceptive.

1237. You have merely looked at it from the high hills?—Yes.

1238. And you do not think that would be sufficient to give an opinion upon?—Except that it was far less broken than I had been led to imagine from the broken country that I saw on the coast. The impression that I got was that the whole country was far better than generally supposed.

1239. How far off the line were you when on the hills?—I went away five or six miles from the line in some places on either side. I saw a greater extent of country than one would imagine going along the line. I was spreading myself outwards a good deal.

1240. *Mr. Fulton.*] Do you submit the report that you wrote for the Taranaki Vigilance Committee as a reliable document, based on your own information?—I do not submit that report at all here.

1241. Do you wish to do so?—No. I was working in the interests of my employers at the time, and it would not be considered a breach of confidence to state that, in writing that report, I did so in the interests of Taranaki. I was out of Government employ at the time. The report has nothing to do with the previous report which I wrote when in the employ of the Government.

1242. Then, you do not say now before the Committee that you can indorse the statements made in the report supplied to the Taranaki Vigilance Committee?—I would not say that.

1243. From personal knowledge?—I have a considerable personal knowledge of it from having been up and down the coast, and I say that that plan [distributed with the report] would bear looking into far more than those who run it down think that it will. It has always been an interesting subject to me, and I have talked to a great many people on it. Of course, if a man is writing for his employers, he makes out the best case he can. At the same time, it was an attempt on my part to get as near the truth as possible, and yet not hide my employers' light under a bushel, as it were.

1244. *Mr. Larnach.*] How long have you been in that district, Mr. Rawson?—I have been moving up and down for the last fifteen years between Taranaki and Wellington. I have been in the Wellington District many years. As a surveyor I have been ten or twelve years up and down the coast.

1245. And this part of the country you have dealt with you have an absolute knowledge of?—Do you mean in this report?

1246. Yes?—I do not use my own knowledge there. I simply quote information from others, and draw inferences from it.

1247. You used the expression "run it down;" do I understand that other surveyors or experts run it down who have a knowledge of the country?—I do not think I know what you mean.

1248. You used the expression just now, and I gathered from it that the report is disapproved of by other experts?—No, not surveyors; I mean one or two people in Wellington, who said it was a shame to mention that there is no much bad country as indicated.

1249. But those gentlemen who "run it down," to use your own words, are they experts or practical men?—Well, Mr. Marchant is an expert. I may say that I am on very good terms with him; but he has objected to some part of it.

1250. Do I infer from the part you have taken in connection with that report that you have a preference for the Stratford line?—I have not such a preference in answering any of the Committee's questions, nor in writing my first report. I did my best to tell the truth.

1251. You have no preference for this line, then?—No.

1252. Having regard to a possible future Native difficulty, which line do you think would be the best in the interests of the country?—I should say they both (Marton and Stratford lines) affect the Native difficulty.

1253. Which line, in your opinion, would be the best?—They are about equal in that respect; they both go through troublesome Natives' country.

1254. Which goes through the most?—They are both about the same, I think, in regard to the total number of Natives.

1255. But there is a difference in the total length of the lines—one is 212 miles. Which goes through the greatest extent of land of the kind mentioned?—I could only use hearsay evidence again in answering that question.

1256. Did you accompany Mr. Mitchelson, the late Minister for Public Works, on his recent tour?—No; I left that part of the country just before he got into it.

1257. *The Chairman.*] The Committee, I may say, Mr. Rawson, were quite aware that you had written this report for the Taranaki Vigilance Committee; and, from the evidence you have given, I gather that you wish this Committee to understand that you were paid to write this report, and that you collected your information from various sources, and simply took what you considered of most value in the interests of the Stratford route?—No; that is not the impression I meant to impart.

1258. *Mr. Larnach.*] I gathered that your object was to make the report as favourable as possible in the interests of Taranaki?—Well, I suppose one would naturally have to do that, but I did not do it with that intention.

1259. But you were employed by the Vigilance Committee of Taranaki, and, as counsel tries to make the best of his case, your object was to make the best of your case?—It was hardly that. When they asked me to undertake this task I said I thought their interests would suffer for want of sufficient information. What I wanted to do was to bring out more information. I got all the information I could and simply quoted it. I am only saying that a man may be tinged with bias, but this was an attempt on my part to write fairly.

1260. But had the circumstances—the nature of the country—warranted you in making an unfavourable report to the Vigilance Committee?—I would not make a favourable report unless the circumstances were really favourable.

1261. *Mr. Gore.*] You say you found the country better than you expected?—The reason I say that is this: the part of the country where I went in, near the White Cliffs, is very broken. People have only been a little way in before, and they took it all to be of the same nature; but, as a matter of fact, a little distance up the country changes and becomes lower; you get out of the broken country into the better country. When I went inwards I thought I should have nothing but broken country, but to my astonishment I got into better country. I went on to where Mr. Carkeek said the line was impracticable. I found, on a farther exploration of the country northwards, that the line could be carried on, as the rough belt of country into which he had got suddenly ceased, though he naturally at the time thought there was a large extent of it. I got into this country and found it wholly different; the valleys are broad and the hills are low; in fact, in my opinion, it is particularly well suited for settlement. That is the impression I derived from it; it is just the country for settlement. All road work would be easy on it, the bush is light, the hills are easy and low, and the valleys are broad, and there is nothing to prevent its being settled.

1262. *The Chairman.*] What length of that country do you speak of as being open, with broad valleys?—Over the 60 to 95 miles.

1263. What is the nature of the formation: what sort of soil is it?—The valleys are silt deposits.

1264. And what are the hills?—The hills where the rock shows out are papa rock, and the hills themselves are just covered with vegetable deposit.

1265. And where the coal is, what is the formation?—It is the same silt deposit in the valley, but on each side it is black-birch ridges.

1266. But is it papa rock there?—It is sandstone.

1267. With coal underneath or overlaying the sandstone?—Overlaying it.

1268. *Mr. Larnach.*] Is it usual for good soil to be in the neighbourhood of papa rock?—Yes.

TUESDAY, 23RD SEPTEMBER, 1884.

Mr. J. F. SICELY, Authorized Surveyor, examined.

1269. *The Chairman.*] What are you?—I am an authorized surveyor, at present; but till quite recently I was a Government surveyor. I retired two months ago.

1270. Where do you come from?—From Marton.

1271. Have you been in any way or shape engaged in the Government survey for a main trunk railway line for the North Island?—Yes. In November, 1882, Mr. Marchant, Chief Surveyor, instructed me to explore for a line from Marton to Murimotu; that is, to follow up the Rangitikei and Hautapu Valleys, and I cut an exploring line right through there.

1272. What else?—I came back and reported. I met Mr. Rolleston and the Chief Surveyor at Marton, and I received instructions to grade out the line.

1273. Did you do it?—I sent out my party again, but owing to press of other work it was not completed. I opened further lines, which Mr. Marchant went over to see the nature of the country.

1274. How far did you go up from Marton—how many miles?—I have been right through and beyond the Karioi Station.

1275. How far up the Marton line have you been?—To Karioi, which is not marked on this map (No. 1), but it is on the western corner of the Murimotu Plains.

1276. *Mr. Larnach.*] What distance?—About ninety miles from Marton.

1277. *The Chairman.*] What is your opinion of that country: is it fit for settlement?—Starting from Marton it is settled country for about twenty miles.

1278. It is settled now?—Partially settled.

1279. How far does the settlement extend on either side of the proposed line?—It is an old settled district for about twelve miles, and then it enters into the Paraekaretu and Rangatira Blocks. The former has been settled now for about ten years.

1280. From twenty-three miles northward, what is the nature of the country: do you consider it agricultural country and fit for settlement?—There is a small proportion of agricultural country, but for the most part it is pastora country—hilly bush country.

1281. Is it all hilly bush country?—No; there are flats and terraces in the Rangitikei and Hautapu Valleys.

1282. And are they open, or timbered?—Partially open.

1283. In speaking of agricultural country, do you mean that it is fit for the plough now, or would you have to clear it?—You must clear it first.

1284. It is all more or less covered with timber?—Yes.

1285. Do those remarks apply to the whole of the ninety miles?—No; only about sixty miles.

1286. What is the nature of the country between miles 60 and 90?—You then enter into open country.

1287. Untimbered?—Partially untimbered.
1288. What do you mean by open country?—Open valleys, fern and light scrub. This applies only from 58 to 72 miles.
1289. Is that sufficiently good land for agricultural purposes?—Yes; in the valleys and slopes.
1290. What proportion do the valleys bear?—It is rather difficult to state.
1291. Just give us your general opinion?—Say, 30 to 40 per cent.
1292. And what sort of soil is it there?—The quality of the soil for the first ten miles is heavy clay.
1293. I am speaking of the part between miles 60 and 90?—It is very good soil up to, say, 72 miles; but it becomes light beyond that.
1294. Will it cost much to clear and make ready for ploughing?—It is clear now.
1295. It is fit for ploughing at once?—At about 70 miles you enter upon the Murimotu Plains.
1296. And from 70 to 90 miles it is the same country?—No.
1297. Are you sure that the track, as laid down on these maps and described in the different reports, is the same track that you cut?—The track I cut from 44 to 58 miles overlooks the present graded line.
1298. Have you been on the low part?—Not in the lower end of the Hautapu Valley, but I have been in the upper part.
1299. What portions of this line up to ninety miles have you actually been where the track goes?—I might state that I followed along this line for the first forty-four miles from Marton; then my exploring line struck the ridges, and I kept at the top of the ridge to the 58th mile.
1300. Were you speaking of these valleys and agricultural land from your own actual knowledge or simply from hearsay?—From my past four-and-a-half-years' experience of the country.
1301. You have been through that country before, then?—Yes; about the Murimotu Plains. I have repeatedly been over the first thirty-five miles, and from 58 to 86 miles.
1302. Then, I understand you to say you have a general knowledge of the country for the last four years?—Yes.
1303. Have you been on either of the other lines?—No.
1304. *Mr. Gore.*] What kind of land is it between miles 60 and 90: what is the geological formation?—I believe where the actual line goes it is rather light soil; but to the left you get into the bush, and it is very fair soil.
1305. Is there any pumice on the soil?—On the inland, or eastward, side there is volcanic sand; also on the actual line. But southward you get into the bush, and it is fairly good soil.
1306. *Mr. Fergus.*] I suppose you have had some experience of settlement, both agricultural and pastoral?—Yes.
1307. Supposing this land was opened up by railway, what would this agricultural land, as you call it, be most fit for: grazing, or raising crops?—There would be a fair proportion fit for cropping.
1308. Do you think it would be the wisest thing for a man who took up land there to crop it?—No; I should say a person would take up land there for pastoral purposes; but you could plough the valleys and slopes, and crop them both with wheat and oats.
1309. Do you think wheat and oats would grow there?—Yes, I think so; in fact, they do grow well up at Murimotu.
1310. What would be a fair-sized holding for a farmer there?—The holdings would vary according to the quality of the land—from 240 to 640 acres.
1311. Do you think 640 acres of purely pastoral country would be enough for a man there?—It depends on what his ideas are as to what would be sufficient.
1312. Do you think he could live on such an area?—I think so.
1313. Decently?—Yes.
1314. From the 23rd mile up to the 90th mile, how many people could be settled along the country, at a rough guess?—
1315. *The Chairman.*] Taking five miles along either side of the line?—You would have to take more than five miles, because it taps the Otamakapua Block of 140,000 acres.
1316. Well, take what distance you like?—I have not gone into such calculations at all.
1317. *Mr. Fergus.*] Six hundred and forty acres comprise a square mile, you know?—Of course, it is only a question of figures.
1318. In other words, could you settle as many people along that line, from 23 miles to 90, as there are at the present time between Marton and Foxton, in proportion?—Far more.
1319. Why?—On account of the size of the holdings.
1320. But you do not quite understand me: I am talking about the possibility of settlement. In other words, do you think this country is as good as between Marton and Foxton?—It is a different kind of country.
1321. Do you think it is as good all through?—I believe it is decidedly better in places.
1322. *The Chairman.*] But what is the country, on an average?—I scarcely think it so good.
1323. *Mr. Fergus.*] Why?—I believe the swampy land between Marton and Foxton is much richer, and would carry a far larger population. A small farm on the swampy lands between Marton and Foxton would be far more valuable than the same amount of country on the other part.
1324. Is it not a fact that between 60 and 90 miles it is all light pumice soil?—Inland it is, to the east.
1325. And covered with black birch?—I have not seen any black birch. I have seen red birch, especially between 80 and 90 miles, at the end of the Wanganui track.
1326. *Mr. Montgomery.*] You said there were open valleys between 60 and 90 miles: what size were the valleys?—I think some of those valleys would be 40 chains across.
1327. And what are those valleys—fern or timbre?—Light stunted fern about Ngaurohe.
1328. What are the hills?—Limestone.

1329 What are the heights of those hills?—From 200ft. to 400ft. high ; the tops covered with light bush.

1330. And what was growing on those hills?—Light bush.

1331. How far did you go from each side of the line between 60 and 90 miles. I have been through and through that country ; I have been over what is called Murray's track over the Otairi, along Hale's track between Wangaehu and Turakina, and along Field's track.

1332. *The Chairman.*] Will you say at what spot on the map those tracks are?—I have been all through the country between the Wangaehu and Turakina Rivers, between the 20th and 80th mile along the railway route, and also between that and the sea-coast.

1333. *Mr. Montgomery.*] Just going along the track I suppose it was where you made your observations : you did not get off the track?—In places I have been off the track.

1334. How far?—On the Wanganui line. I was surveying a block there some years ago.

1335. I ask the question because I want to know what was the extent of your observations : was it your object also to notice the quality of the soil?—We were travelling through the country at the time, and acquired a fair knowledge of the nature of the country by travelling along the tracks I have mentioned and going in at various points.

1336. You said there was some 30 or 40 per cent. of good land : do I understand you to mean that it is fit for agriculture for five miles along the line between 60 and 90 miles?—I think that statement had better not apply to the far end of the line.

1337. You said, I believe, that between 72 and 90 miles the soil became light?—Yes.

1338. How far on each side?—On the inland side for several miles, and on the seaward side to the edge of the bush.

1339. Do you mean east, or what?—South-west of the line.

1340. This description of the land, then, applies to the south-west of the line?—That description would apply to land more than five miles south-west of the line. Of course, in places there is a bit of black- or red-birch country ; in other parts, again, the red birch does not appear at all ; but probably it would average that amount.

1341. Are those hills fit to be ploughed?—No ; only in places. Of course, some of the hills are rather steep-sided and have narrow tops.

1342. Then, where is the agricultural land if the valleys are 40 chains wide?—I am informed that—

1343. But from your own observations?—From my own observations of the Hautapu Valley there is a fair amount of level land there, from what I could see from the surrounding hills.

1344. With regard to the geological formation, is there any pumice?—Between 72 miles and 90 miles it is volcanic sand.

1345. Is it pumice?—In the river beds ; yes.

1346. *Mr. Larnach.*] Have you been in any other part of New Zealand in connection with your profession?—Only on the west coast of this Island, between Rangitikei and New Plymouth.

1347. You have not been in the South Island?—No.

1348. I presume it is part of a surveyor's duty, in following his surveys, to judge of the land too, is it not?—We have to report on the quality of the land as well.

1349. You spoke of the country, I think, on the eastward of the line, which you say is of a volcanic nature?—Yes ; between 72 and 90 miles.

1350. I understand you to say that all the volcanic country is on the eastward?—There is a very small amount on the westward.

1351. There is a little on the westward?—Yes ; between the proposed line and the edge of the bush.

1352. But all on the eastward is volcanic?—Not all.

1353. But the chief portion of the volcanic country is on the east of the line?—Yes ; up to what they call the desert.

1354. What is the distance between the bush and the line?—In places it is only a few chains.

1355. Do you know of any blocks of land which have been recently acquired from the Natives?—Yes ; the Otamakapua.

1356. What is the size of that?—One hundred and forty thousand acres.

1357. By whom was it acquired?—By the Government.

1358. And what others : I want also to know what have been acquired by private individuals, if any?—There is the Rangatira Block, near Marton, acquired by Bennett, Hammond, and Dick.

1359. What is the size of that?—The size of the block is about nineteen thousand three hundred acres, but they only acquired twelve thousand acres.

1360. Do you know of any others?—A portion of the Otairi Block, three thousand acres odd, by Dalziel.

1361. Any others?—Other parts of the Otairi Block, by John Duncan, fourteen or fifteen thousand acres.

1362. Any others?—Otairi Block (No. 1), by Watt, and others, 9,000 acres.

1363. Any others?—I think those are all that have been acquired recently.

1364. Could you say, of your own knowledge, if any negotiations are now pending in respect to other lands with the Natives?—I have no knowledge of any.

1365. I should like you to be particular in giving your answer to this question. From your own knowledge of the country, is it of that nature that it would be likely to insure early settlement if facilities existed?—I am quite satisfied it is.

1366. You are perfectly satisfied of that?—Perfectly satisfied.

Dr. HECTOR, Government Geologist, examined.

1367. *The Chairman.*] We have asked you to come here, Dr. Hector, because we understand you have travelled over a great deal of the country proposed to be traversed by one or other of the lines of railway for the North Island Main Trunk Line, and we would like to hear from you in the first place whether you can give us a description of the country itself as to whether it is fit for settlement, and in the next place as to whether it is valuable as a mineral country; in short, any information you can give us. Would you kindly explain what part of the country you know?—I know the whole of it, excepting the upper bend of the Wanganui; and I have never been on what is known as the Tuhua country. I have been all about Ruapehu and Tongariro, and to the eastward from there, and between that and the coast, and through from Mokau up to the Waikato. The Upper Wanganui country, I may mention, has been very well reported on twenty years ago by the late Dr. von. Hochstetter, and also by Mr. J. Coutts Crawford; but since my time I have never been able to go there; there has always been some objection on the part of the Natives.

1368. Taking the central line, would you kindly describe the country?—The country up as far as Murimotu is clay and marls, steep, broken country, with flat-bottomed valleys. That is the general character. Murimotu land is very good quality, although it is somewhat high, and the winter is a little bleak. It was the only place in the North Island where, in its original state, I found grasses and pastures at all analogous to the South Island. The south slope to the Kaimanawa is schistose land. Round the west, south of Ruapehu, as far as I have seen, there is a high plateau of pumice and lava soil. It is very poor land all round Ruapehu, but I am not aware how far that poor land extends towards the Wanganui River—i.e., to the westward. As far as I know, it extends about ten or twelve miles from the base of Ruapehu, but I have only seen that country from the top of Tongariro. North of Tongariro, at Rotoaira, you have a small patch of very good country, consisting of alluvial deposit covering volcanic rock; but, as a rule in that district, the country all round Ruapehu is poor and arid, and the soil will never be profitable while there is better soil to be got. A large proportion of the soil is composed of pumice or fine quartz sand. Then, that tract of country that I have described forms a very extensive plateau, which occupies the bulk of the interior of the Island. The plateau maintains an average level of about 1,800 feet above the sea, and is poor soil. It abuts on the Mokau River and the junction of the Pauerau. The Pauerau joins the Mokau about twenty miles from the mouth at the elbow, and below that point to the sea the Mokau is cutting through moderately-rugged country, of sandstone, limestone, and clay marls, with very good coal seams at the base. These coal seams strike through from Kawhia, and strike through to the Ohura, on the Wanganui River. I have no doubt, from what I have seen, that these coal seams will be pretty extensive and the quality very good.

1369. *Mr. Larnach.*] Is it a brown coal?—It is rather better than Shag Point coal, and it is equal to Springfield coal, but it is not so good as the West Coast coal, for the reason that it does not cake or yield illuminating gas.

1370. But it would do for driving steamers?—Yes; I should say it was equal to the Bay of Islands coal for that purpose.

1371. Equal to ordinary Newcastle coal?—Well, no; hardly. It is not so valuable. It is not a gas coal.

1372. *The Chairman.*] Are those seams close to the central line?—Yes; this plateau of what I call the high land is continued to the north-west as the dividing range which connects Mount Egmont with the central volcanic system; that is to say, it turns the Wanganui River. That dividing ridge is crossed by the present Stratford railway, and the same dividing ridge may be crossed, in a depression of about 1,500 feet altitude, some distance above the Pauerau junction. Also on the spur leading up from the south side of the Mokauiti there is a saddle in the range having about the same altitude, through which the old track from Kawhia to Taupo passes. I have been along that track for a considerable distance, almost to the top of the range, but the range itself is about 2,000 feet in height, and overhangs, like the edge of a plateau, the valley of the Mokau. This same plateau has also been excavated by the Wanganui River, because at Tuhua we have the slates of the basement rocks that underlie the whole of the trachyte and tertiary series rocks exposed at moderate elevations, so that the excavation is below the bed of the plateau as it were. The plateau having been etched out in a half-circle left an area of comparatively low land; but still, between that low land and the low land which is met with on the northern side of the range, in which the valleys of the Waipa and Mokau lie, there is still the continuation of the Stratford Range to be crossed, and that range has to be crossed, whether you do it at Stratford or whether you do it at Mokauiti. In whichever direction you go in order to get the Waikato level you must cross this range. The broken country above the point that I described—above the junction of the Pauerau—opens out into a very considerable valley, averaging about five miles, and extending in a direct line to the Waipa Valley, the two valleys being almost continuous, although the main branch of the Waipa, and also the Mokau, take their rise in a slate range called the Rangitoto. But the head-waters of the Mokau and Waipa almost join, and are separated by a saddle about 400 feet above the level of the Mokau and 500 feet above the level of the Waipa, and composed of soft, friable, sandy rock. The Mokau Valley, from that saddle down to the Wairere Falls, is a very beautiful piece of country—slopes, limestone bluffs, and slight coating of volcanic rock on top. The spurs are very gentle, and slope down to a broad, grass valley, and the valley itself has very little fall—in fact, only some 70 or 80 feet from where you rise to the saddle down to the falls, where there is a total descent of 250 feet in a few miles, and the river there washes over old slate rocks that underlie the whole formation of the country, although they only appear at very rare intervals. Below the Wairere Falls the Mokau has an average of about 150 feet above the sea, and falls through a limestone country. The country is not really broken, but the limestone has slipped on the hill-sides so as to give it a rugged look. After you pass that you come down to from 30 to 40 feet above the sea-level, and from that point you can go in canoes. I went up in a canoe, and was three days in going up the river up to this point, which is well inside what may be called

the coast range. Altogether I was about four weeks in examining this country. I travelled through it with Rewi and Wetere in 1878, and spent a good deal of the time on the Lower Mokau, trying to trace these coal measures as far as I could. The Mokau River is navigable for nearly twenty miles for small steamers. I took the "Hannah Mokau" up to within two miles of the coal, and we got out about five tons of coal although we had only rough tools—axes and such like—and put it on board, and she steamed to Auckland with it. The coal crops out in several points, and I traced it up as far as 370 feet above the river-level into the hills. The only reason that the steamer could not get right up to the coal is that there are a couple of snag falls; but these could be removed with ease, and then a steam-barge could easily go up. Above the point where the coal is the river becomes very shallow, and the whole of the ascent was by poling and canoes until we got out at Motukarama, in the open country of the Upper Mokau. I have been up the Mokatina and Tongopurutu. I went up the Mokatina as far as is was possible to go in a canoe, and then walked along the ranges, accompanied by Apiha. That country is very heavily timbered—a fine quality of bush, especially on the bluffs along the rivers; and on the ranges it is very difficult to travel on account of the steepness of the slopes, and also on account of the bush. All this country, of course, is north of what is called the White Bluff, which is formed by an outcrop on the sea-coast of the clay marls of the middle tertiary formation. This formation again appears on the south coast, and, in fact, forms north and south a ridge through the country.

1373. Is that what they call the papa rock?—They use papa rock for three different formations.

1374. *Mr. Larnach.*] Is papa rock a bastard limestone?—It is a clay or clay marl, usually very tough, and full of cement stone.

1375. *Mr. Fergus.*] What do they call that at Patea?—That is papa rock. The Mokau limestone rock does not appear on the south coast. It will be a most interesting point to trace where it crosses the dividing range, because it is underneath this formation where we must expect the coal measures to crop up, its relation to the coal being the same as those of the Cobden limestone to the Grey River coal seams. I expect that the coal measures, which are of the age of the upper chalk, will be cut off somewhere near the great bend of the Wanganui River. They certainly have a considerable development from the Mokau to the Kawhia Harbour, and from Mokau, Parerau, through to near the junction of the Ohura and Wanganui Rivers.

1376. What underlies that fossiliferous marl?—The only place where you can see it is at the White Cliffs. As you go north to the Mokau you get brown sandstone and splendid limestone full of small fragments of volcanic rock.

1377. *The Chairman.*] I gather from you that you have traversed the country pretty much along the Stratford route?—I have never been an inland route between Mount Egnont and Mokau; I have been on the coast only. I have very little doubt what that will turn out to be though, because during the past year we have got the section at Kawhia, and on the same line of strike we get one of the most splendid developments of the lower secondary series here. Dr. Hochstetter has evidently observed them, but did not put it on record in an explicit manner. There is a section showing about 20,000 feet in thickness from Albatross Point.

1378. *Mr. Larnach.*] Would that be indicative of good country?—It would be exactly analogous to the Hokonui down south—these runs of conglomerate and runs of calcareous sandstone; but the fossils and successions of strata are almost identical with the Hokonui.

1379. *The Chairman.*] My object in putting my question to you was to follow it up with another, as to whether you considered the bulk of this country which you have been describing as really fit for settlement?—In the whole of the country there are spots where settlers would thrive well; certainly the whole of the Mokau Valley and to the saddle on the Upper Waipa. The Maoris have very extensive and capital cultivations there now. The hills are limestone, and the timber would require to be taken off them.

1380. Both the Marton and Stratford lines would accommodate all that good country?—Either of them would do so.

1381. Which line would open up that country best, as far as you can tell?—It is a mere matter of levels crossing this range.

1382. But I mean the direction?—I do not think there is any difference.

1383. One line is equal to the other in that respect?—Yes.

1384. Do you know anything about the auriferous discoveries that have been made there?—Only rumours. There is no reason why there should not be patches of the same auriferous rock that you have at the Thames.

1385. What is the thickness of the seams of coal that have been discovered?—I produce a map showing the thicknesses in the Mokau district.

1386. But I mean in the neighbourhood of the Ohura?—It is not known.

1387. *Mr. Larnach.*] We have had evidence of a seam having been discovered there 98 feet thick?—It must have been measured lengthwise then. A seam a foot thick might make an overlap and deceive a person. I think a good workable seam of 6 feet could be got. There is also very good coal on the Little Waipa.

1388. *The Chairman.*] We want to know, Dr. Hector, which line would be likely to open up the best country and be of the greatest service, and also what is the general nature of the soil through which the two lines pass?—I fancy there would be more good soil up the Wanganui River, if the trachyte plateau is avoided. Ten miles to the eastward, out from Ruapehu and southward, the land is certainly worthless. Whether it is so ten miles to the west I cannot say, but I should judge it to be indifferent country for some distance at least.

1389. *Mr. Larnach.*] Could you give the Committee your opinion as to which direction a line would be of the most service, irrespective of levels or the utilizing of portions of existing lines? What line, in your opinion, would conduce to early settlement, and the greatest amount of settlement?—Any practicable line following the great Valley of the Wanganui. By the Valley

of the Wanganui River I do not mean the immediate valley, or the water channel in which the river runs, but the low wide valley that has been scooped out of the plateau by the action of the river—in fact, the lower parts of its drainage area. At the same time, all unnecessary ascents on to the trachyte plateau should be avoided, as that trachyte and pumice country will never be reproductive—at any rate, not for a very long time.

1390. *Mr. Fergus.*] We have it in evidence that up in that district a considerable portion of the land consists of light soil on the top of pumice. It is not very deep to the pumice. And it is also a fact that a great deal of the land is covered with fern, which is burned. Suppose the fern is burned two or three times, would it absolutely destroy that soil?—It would be very difficult indeed to restore any nutritious matter in the soil. Then, again, all the rain that falls on such land as you refer to goes right down to an immense depth. Wherever you have pumice, the surface is full of large pot-holes, which go down to a very great depth, and the whole of the rain disappears, so that, although it may be really a wet country, it has all the appearance of being arid.

1391. Is it a very wet country?—My experience of it was that it is.

1392. Was it nearly as bad as Wellington?—I should think the rainfall, at equal altitudes, would be double that of Wellington. In Taranaki we know the rainfall is greater than that of Wellington (as 60 is to 45 inches).

1393. Do you think that in the valley of the Upper Wanganui the rainfall would be greater than what it is in Wellington?—I do not know that the rainfall would be greater, but the number of wet days would be more.

1394. And to the west of Taupo?—From what I have seen of the country, it has all the appearance of being a wet country, and even in summer a good deal of rain falls there.

1395. What would you indicate as the probably auriferous country there?—Between Tuhua and Rangitoto, if there is any, and from there to the Waikato; a line extending, you may say, from Tuhua to cut the Waikato at the gorge below Ngatemuri. It will be in that line of country, if any of those auriferous volcanic rocks occur, it is most likely to be. In the Waikato Valley itself there is some evidence of gold-bearing rocks.

1396. Schist rocks?—No; Thames rocks—volcanic rocks. Slate rocks are cut through by the Waikato River, just near Cambridge.

1397. Is there any schist there?—No; only one area of schist is known to me in the North Island—at the south-west end of the Kaimanawa range. It is a local patch of metamorphosed rock, just as we find such rocks at Terawhiti, and even on the road between here and the Hutt.

1398. Have you found any porphyries in that country?—At the Wairiri Falls on the Mokau. On the Kaimanawa Range there is undoubtedly gold, not in very large quantities, but still it is there. It occurs there in a line that extends from the Kaimanawa and strikes the Taupo Lake at the Tauranga-Taupo River (not the coast Tauranga). In the bed of the Tauranga there are very likely-looking rocks for gold, and among them porphyries.

1399. *Mr. Montgomery.*] Have you traversed the country between Marton and Murimotu?—Yes.

1400. Where it is proposed to run the railway-line?—I fancy I was one of the first to bring a horse over that way. I did it many years ago. I came down between the Rangitikei and Wangaehu. I think it was very nearly along the railway route that I came.

1401. Can you say, from your own observations, what the character of the soil is?—That it is all very good where the surface conformation is suitable.

1402. How far up from Marton is it good?—It is good, but not much of it, for half the distance.

1403. From Marton to Murimotu?—Yes. It is very good land in the valleys, but the ridges are very abrupt, and the hills are very steep; but after you get into the Murimotu country proper you have wide valleys, with low and flat limestone ranges. The first half from Marton and Murimotu is moderately-good country, but broken.

1404. And beyond that?—The valleys are wide and open, and I should say very good indeed—somewhat swampy—but that is all a matter of clearing out the watercourse; and the ridges are of a kind of marlstone rock—a clay marl. That brings you to the Murimotu country.

1405. What is it from there?—From there, as far as I know, it is low, good country.

1406. That in the Murimotu: you consider it good?—Yes; and from there I only know the line where you begin to ascend the spurs of Ruapehu and the central volcanic system, and that is worthless.

1407. You do not know how much that extends west?—No.

1408. From Ruapehu, then, along the line?—No; I know nothing of the Tuhua country.

1409. But from the dividing range?—It is heavily-timbered land.

1410. You spoke of a plateau reaching from the range downwards?—I do not think that that plateau above an altitude of, say, 1,800 would be worth much.

1411. But where it comes down to 685 feet?—That is off the poor trachyte plateau altogether.

1412. It is marked on the map at the plateau?—My idea of the plateau is the level of Opepe and all the surrounding country of Taupo Lake, averaging about 1,800 feet above the sea.

1413. Then, in point of fact, you do not know anything of the country south of the Mokau and Wanganui watershed?—No; until I come to Murimotu.

1414. Nor do you know it on the Stratford route?—No; I have only been up the rivers from the sea-coast.

1415. Is the geological map which you have produced drawn from your own observations?—No; I have incorporated everything on that. Mr. J. C. Crawford made a survey of all that country for the Provincial Government, and his reports give full information upon it. Dr. Hochstetter also made a traverse of that country.

1416. Do you think the map nearly indicates the quality of the soil—the geological formation?—It is not a soil map; that would be a separate affair. A map could be prepared showing the soil.

1417. *Mr. Larnach.*] How far have you been up the Stratford line?—Not at all.

1418. Coming southwards from the junction of the two routes?—I have been there.

1419. How far downwards?—Not at all.

1420. We have had evidence that a reef with gold had been found. Do you know anything about it?—No; the only thing I know of is a deposit of plumbago, which was found some years ago, though they have never got any more of it since. It was found in a loose boulder, and they do not seem to know where it came from.

1421. *The Chairman.*] Would you kindly look at these specimens of coal found near the Ongaruhe?—At a rough glance I should say the coal was about the same quality as on the Mokau. It is analogous, I should say, to 6·7 evaporating power found on the Mokau. But I will analyse these coals and let you know exactly.

Results of analysis of specimen Nos. 3858–61, forwarded by Select Committee on North Island Main Trunk Line; locality, Upper Wanganui District; collected by Mr. Mitchelson; received 23rd September, 1884; reported on 24th September, 1884:—

Five Coals for Analysis.—These are all compact hydrous non-caking coals. They are much superior to the ordinary brown coal, but are correspondingly inferior to the bituminous coals. They all represent valuable fields, and certainly could be used with good effect for locomotive boilers, and, in the absence of the true bituminous non-hydrous coal, I would recommend them for this purpose. No. 3860 gives a large quantity of gas of fair quality.

No.	Locality.	Results of Analysis, centesimally expressed.				Evaporative Power.
		Fixed Carbon.	Hydro-carbon.	Water.	Ash.	
3858 (1)	Ohura, on plan Koromikio, No. 1 Seam	37·79	25·87	16·18	20·16	4·9
" (2)	" " " " " 2 " "	46·17	37·74	9·91	6·18	6·0
3859	Tauaroa, up to Tangarakau " " "	48·78	33·28	13·97	3·97	6·3
3860	Maraekowai, near confluence of Tangarakau	34·18	48·24	13·59	3·99	4·4
3861	Mangoane, up Tangarakau " " "	48·00	33·66	14·16	4·18	6·2

Ash of 3858 (1) is white; that of the rest is red, of various shades. Colour of powder of 3858 (1) is brown; that of rest black.

I also give an analysis of the samples of coal I collected at the Mokau River, for comparison:—

No. 2425 is a pitch coal; the powder is black, and the fracture conchoidal, the colour of the ash being brown. The composition is as follows:—

Fixed carbon	...	...	...	...	51·6
Hydro-carbon	...	...	...	...	35·7
Water	...	...	...	...	10·2
Ash	...	...	...	...	2·5
					100·0

Evaporative power, 6·7.

No. 2427, further specimens from the same district, yield the following results:—

(1.) *Main Seam (Pitch Coal).*

Fixed carbon	...	...	...	...	52·6
Hydro-carbon	...	...	...	...	32·3
Water	...	...	...	...	12·3
Ash	...	...	...	...	2·8
					100·0

Evaporative power, 6·8.

The colour of the powder was black, and of the ash buff. It frits slightly at a slow heat, forming a very incoherent coke.

(2.) *Upper Seam (Pitch Coal).*

Fixed carbon	...	...	...	...	47·6
Hydro-carbon	...	...	...	...	36·3
Water	...	...	...	...	11·9
Ash	...	...	...	...	4·2
					100·0

The powder was black, and the ash light brown; and it frits slightly, but does not cake.

WEDNESDAY, 24TH SEPTEMBER, 1884.

Captain MAIR, Land Purchase Officer, Wellington, examined.

1422. *The Chairman.*] The Committee have been given to understand that you have traversed a great deal of the country into the nature of which we are inquiring. Will you kindly tell the Committee to what extent you are acquainted with the district through which the several proposed lines run?—I have been over the whole of the Te Awamutu–Napier line by the old Maori tracks, which cross and recross the line; also from Marton to Tamaranui on the central line, 120 miles from Marton, with the exception of a small portion of about five miles, about the 50th mile from Marton. I have only been on the Stratford line at different points to the west of the Ohura and

Tangarakau Rivers; I struck across from the central line. The two rivers I speak of are between the 40th and 70th miles marked on the map (No. 1). The coast-line I know nothing about.

1423. What is the general nature of the country on the Te Awamutu-Napier line?—The whole of it passes through pumice country, with the exception of the portion from mile 50, near the Mohaka River. From thence to Aotearoa, at 150 miles, the line passes through pumice country.

1424. Is that any good for cultivation?—No; the bulk of it, particularly about Runanga and Taupo, is extremely poor. When you get into the vicinity of Aotearoa and Tututawa, and on to Awamutu, the country improves, and from mile 150 on to Te Awamutu it is good.

1425. What is the nature of the country for the first forty miles out of Napier?—Of course in the vicinity of Napier the country is extremely good up to forty miles; some of it very good.

1426. And then you get into the pumice country?—Yes.

1427. *Mr. Larnach.*] Is any of the unsold portion on the Napier line good, either in the hands of the Natives or the Crown?—I should say that the Crown had very little remaining unsold that would be affected by this line. Some of the Native land is good, but there is not much of it.

1428. *The Chairman.*] Now, with regard to the central line?—In 1867 I travelled down over the Whakanae track.

1429. How far is that?—From the 60th mile I came down to Marton.

1430. Have you been on that since?—Yes. I returned by going up the Rangitikei River in a canoe to the mouth of the Hautapu, and then followed up the Hautapu, with the short exception of four or five miles that I have spoken of, to Turangarere, to the pa at fifty miles—Ngaurukehu; I then returned through the Otairi Block to Marton, having spent about three weeks on the several journeys that I have mentioned. With the exception of the Whakanae Ranges, the whole of that country is rich forest land. The whole of the country between mile 50 and the Rangitikei River to the eastward is very rich, consisting of undulating hills more or less covered with rich grasses and forest. The Natives have a sheep-run there. The Murimotu Block, through which this line passes, is only fit for grazing purposes. It is not fit for agricultural purposes, the portion nearest Ruapehu being gravel and pumice drift. The lower part near Ruanui and Raketapama is good land. In 1878, 1879, and 1880 I spent several months carrying on surveys and land purchases in the country lying to the south and west of Ruapehu. The land in the vicinity of Rangataua is rich, level, forest country. I should think there are at least 100,000 acres of level land in that neighbourhood. There are about 100,000 acres more lying towards the Wanganui River and down the Wangaehu and Mangawhero which is more broken but equally rich.

1431. Would that be tapped by the railway?—Yes; this land would all be opened by the central line. The Government have portion of Rangataua, Atuahae, and Tawhitoariki Blocks, and have paid money on various other adjoining blocks, the surveys of which have never been completed. For a considerable distance south and west of Ohekune there are large forests of black maire; the largest trees I ever saw of the kind are growing in that neighbourhood.

1432. *Mr. Larnach.*] What sort of timber is it?—It is magnificent timber for sleepers.

1433. Is it pine?—No; it is the ironwood of New Zealand. It is similar to the puriri in the north. It is from 2ft. to 5ft. through.

1434. And is there any quantity of it?—Any quantity. I have never seen it so large anywhere as it is there, and I have travelled through the whole of the North Island. Then, there is a large quantity of matai also, and small patches of totara as well. I think that by following up the Mangawhero, between Raetihi and Kaikawakaroa, the bend could be taken out of the line. The Natives told me that the country is quite level, and Mr. Rochfort told me that he had not been through there at all; he had not time. I may say that the whole of the country between Rangataua and Manganui-a-te-ao and down the Wanganui River as far as Ranana is heavy forest land, more or less broken, but rich as to quality of soil. On the spurs which run down from Ruapehu into the tributaries of the Manganui-a-te-ao the land is poor—a good deal of black birch. The plain, which extends northward on the western side of Ruapehu and Tongariro, is poor pumice country, with swamps. The land between Piopotea Stream and Kawautahi Block—between 110 and 120—is rather broken. About Makokomiko there is a great quantity of totara; that would be about the 130th mile. The land about the Kirikoa Block and Retaruke River is very rich, but broken. I have not been from Makokomiko to Tamaranui—between 120 and 130—but from Tamaranui I have been up the Ongarue a few miles in the direction of Waimeha, but I have not been over any portion between that and the junction with the Stratford line.

1435. Then, you have not been miles 140 and 180?—No. From Te Kuiti to Te Awamutu the land is very good.

1436. *Mr. Montgomery.*] You spoke of a forest of black pine and maire?—The line actually runs through eight or ten miles of it, but the bulk of it lies to the south and west of the line.

1437. How far south and west?—Within ten or fifteen miles.

1438. What is the nature of the country?—It is level country.

1439. *Mr. Larnach.*] Are you a surveyor?—Yes.

1440. You spoke of the Natives having run sheep on part of the country for many years?—Yes.

1441. For how many years do you remember their having done that?—For the last ten years at least.

1442. And they have continued to do so ever since?—Yes; I was there a short while ago, and found they had 12,000 or 14,000 sheep there.

1443. You say you know the line for 120 miles less five. Taking those 115 miles on the central line—that you are acquainted with, northwards from Marton, how far are you acquainted with east and west, on an average?—I know the whole of the country between the Turakina River and the line.

1444. That is on the west; now, what is on the east?—I have not been on the eastward side of the Rangitikei River.

1445. Are you acquainted with eight or ten miles to the eastward?—No; not to the eastward of Rangitikei River.

1446. Five miles?—No; I know the whole of it between the Hautapu and Rangitikei, up as far as Erewhon. I have been over that a dozen or twenty times.

1447. Could you tell us the extent of black maire or ironwood there is in the forest to which you have referred in your evidence?—It is scattered through at least 100,000 acres.

1448. Pretty thickly distributed?—In the vicinity of Rangataua, it is extraordinarily thick.

1449. Is not that black-maire wood the hardest and most durable wood in New Zealand?—I believe it is.

1450. Even harder than the Australian iron bark and red-gum?—It is.

1451. *The Chairman.*] How much of the Stratford line have you been over?—Between miles 40 from Stratford and 70 only. In carrying on surveys up the Wanganui River I went into the country through which the Stratford line passes, up as far as the junction of the Waikaka with the Ohura.

1452. That is from 40 to 70?—Yes.

1453. What is the nature of that country?—About the vicinity of mile 40 the country is extremely broken—sandstone peaks covered with black birch. I should say that that country extends for fifteen miles on either side of the Taumatamahoe track, which crosses at right angles.

1454. Northward of that track?—About ten miles northward the track passes along a high ridge commanding a good view. I think I am speaking within limits when I say that the broken country I saw is fifteen miles in length at least. It is extremely broken. I have not seen more broken country in the whole of the Wanganui District.

1455. Is there any of it fit for settlement?—None whatever. The land in the upper portion of the Wheao Valley is of good quality, but there is no great extent of it.

1456. There appears to be a great mountain ridge there?—There is.

1457. And would that be accessible to the railway?—Only the upper portion. The land between the Ohura and Wanganui Rivers, up as far as Tamaranui, is good land, about one-half being fern and scrub.

1458. That is the land eastward from mile 60 to 70 across to the central line?—Yes.

1459. Would that be tapped as well by one line as the other—by the central line as well as by the Stratford line, or would it be served better by the Stratford line?—I think it is immaterial; either route would tap that country. The Ohura for many miles above the fall is deep and navigable for boats.

1460. That is, from miles 65 to 75?—Yes.

1461. What is the land on both sides there?—There is very little good land on the west bank of the Ohura.

1462. What proportion of good land would you think there is on the last twenty miles you are talking about?—I should say about 40,000 acres.

1463. Of good land?—Yes.

1464. And what proportion does that bear to the broken country?—Very small indeed.

1465. Then, do you know anything of it beyond that?—I have never been over that portion. I may mention that I found coal in two or three places on the Ohura River and also on the Wheao.

1466. *Mr. Larnach.*] How far have you been east and west of the thirty miles of the Stratford line that you know?—Never more than two or three miles to the westward of it.

1467. Is that country broken?—Very broken.

1468. How far have you been eastward?—I know the whole of the country east between the two lines.

1469. And is that country broken?—It is very broken in places. I have already said there are about 40,000 acres of good land in the vicinity of the Ohura; the bulk of the land beyond is good.

Major ATKINSON, M.H.R., examined.

1470. *The Chairman.*] The Committee has asked you to come here, Major Atkinson, with a view to obtaining any information you can give them with regard to the nature of the land alongside either of the proposed lines for the North Island Trunk Railway?—I am sorry to say, then, that I cannot give the Committee any original information at all.

1471. The Committee were given to understand that you had travelled over, or were acquainted with, a piece of the Stratford line?—No; it is true that I have been a little way into the country there, but that is nothing much.

1472. Is there any statement, then, that you would like to make to the Committee?—Do you mean as to my opinion as to which line should be adopted?

1473. *Mr. Larnach.*] You could give that in the House, of course?—Yes; I could give it in the House, or I could give it to the Committee now.

1474. *The Chairman.*] I may say that the question has been asked two or three witnesses who have already been examined by the Committee as to which of the proposed lines, in view of a possible Native difficulty in the future, would be most useful to the colony, and perhaps you might like to give your opinion on that point; also in respect to opening up the country?—I may state, at once, that I am decidedly in favour of the Stratford route for every purpose, as far as I understand it.

1475. We will leave it to you to make any statement you would like to make to the Committee?—If the Committee desire my opinion, and the general grounds on which I have formed it, I shall be very glad to state it.

1476. If you would kindly do so?—Well, I should say I am decidedly in favour of the Stratford route, because, from all the information I have been able to collect—and I have carefully gone through all the information at the disposal of the Government—it appears to me that the Stratford route would open up quite as much, if not more, good land, in proportion to the money to be spent

upon it, than the other line would open up. Then, I think, looking at the general financial position of the colony, that if we can get a main trunk line for £1,000,000 we should get it, rather than spend £1,400,000 upon it. In regard to the opening-up of land, one line will, in proportion to the expenditure, open up as much as the other; but I consider that, other things being anything like equal, the settled population should always be considered in constructing a line. Now, practically, the Marton line will cut off the whole of the people north of Wanganui from a practicable market in Auckland. At present Auckland is the chief market of the Hawera District, and I understand, from inquiries that I have made, that we can send by rail everything that we now send under great disadvantages by sea if the Stratford route were adopted; whereas, if we sent it the other way, taking Hawera as the centre, we should have a distance of about one hundred and thirty miles more to go, which would practically render the line useless to us. Then again, the Stratford route would also enable the Government to make a much greater profit on the hundred miles of railway already open between Stratford and Marton. That seems to me very pertinent to the question. If the Marton line should be chosen, it would, as I have just said, practically cut off the whole of the people north of Patea from its natural market. And as for the thirty miles difference between Auckland and Wellington—or thirty-six miles I think the supposed distance is—I fancy that when the Stratford line comes to be properly surveyed it would be found to be shorter than that; but, to my mind, that has no weight whatever. What I want to do is to make our lines productive and open up the country with them, and give the present population an opportunity of convenient markets, and, as far as I can see, the argument is entirely in favour of the Stratford line in that respect. That is the substance of what I have to say, Mr. Chairman.

1477. *Mr. Larnach.*] Would you kindly supplement that statement by giving your opinion of the proposed lines in regard to the Native difficulty?—Well, I do not think either of the lines would do very much. They both run wide of the real Native difficulty, except where they both run practically together. Of course the upper Wanganui Natives have always been more or less troublesome, and the central line goes through or near settlements of some rather turbulent Natives. Then, on the other hand, so does the Stratford line; and it seems to me we should get at the troublesome Natives practically as well by one line as by the other. The real difficulty with the Natives has always been either in the Waikato or Taranaki Districts.

1478. *Mr. Fergus.*] You say that if the line were constructed from Marton to Auckland it would practically cut off the Hawera traffic?—Yes, all north of Patea. There is a difference of one hundred and thirty miles between the two routes.

1479. From Hawera?—Yes.

1480. Would not a similar objection apply to the construction of the Stratford line, inasmuch as it would very materially increase the distance to Auckland from the Foxton end?—That would not affect the Foxton District at all, because their natural market is Wellington, and never would be Auckland, no matter which line was constructed. But our outlet is naturally Auckland.

1481. There is another point to which I should like to refer. For instance, the Napier people wish to go through by rail to Auckland; the Stratford line would cut them off entirely, would it not?—If I thought that a line was practicable from Napier, that would cause me to alter my opinion. But, as far as I understand, no line will ever be made that way; Napier traffic will have to go where it does now—to Palmerston—or it will ultimately have to take a line of its own up the other coast.

1482. Do you mean to say that the trade which at present goes by steamer from Waitara and New Plymouth would, if the Stratford line were constructed, go by railway instead?—I think it would; nearly all of it.

1483. Do you think it would be cheaper to carry it by rail all the distance from Opunake and Stratford than to ship it?—They never ship cattle at Opunake; they ship at Wanganui or New Plymouth. All the cattle traffic is now driven up from Patea, but you would be able to send a beast at per head just as cheap from Stratford by rail—or rather cheaper I believe—than you could send it up to Waitara and then by sea to Auckland. Of course you would never send cattle by sea if you could send them by land.

1484. *Mr. Montgomery.*] You think that the Stratford line would be of great value to the country between Hawera and Wanganui right down to New Plymouth?—Yes; it opens up that country.

1485. Would you consider the Marton line of any value at all?—No; it would be of no value at all as a means of getting to market. Of course we could go to Auckland from our district that way, but it would be at a tremendous expense. I do not think you would get either passengers or cattle; these would go by steam.

1486. You value that line considerably for stock?—Yes.

1487. *Mr. Larnach.*] Do you know anything of the country through which the proposed lines pass of your own personal knowledge?—No; except the Taranaki District generally.

1488. *The Chairman.*] You stated just now that you took Hawera as a centre, and that if the Marton line were made it would practically cut off the Hawera people from their natural market of Auckland: are you aware that, supposing the line were made *via* Stratford to Te Awamutu, it would be sixty miles farther from Hawera to Auckland than from Hawera to Wellington by rail?—Yes; I do not know whether I understand your question to mean that when Wellington is joined with Taranaki it will be nearer by rail than to Auckland, and that circumstance will cause us to change our market.

1489. That is the drift of my question?—That is possible, of course; but it is difficult to change trade.

1490. Do you think the large difference will be overcome?—I think it would be. The demand for our produce in Auckland is greater than in Wellington.

1491. *Mr. Fergus.*] Do you believe that the Stratford line could be constructed for £1,000,000?—I can only go by the estimates. I should say it could.

1492. Have you looked into the Engineers' estimates?—I have carefully consulted the Engineers themselves, but I have not looked into their estimates; I am not competent. I do not think it will be an expensive line to make.

1493. But the Engineer who went over the line, Mr. Holmes, puts in an estimate for one thing alone—ballast—which he says can be got at 2s. per yard, and there is really no ballast along the line?—Do you know, according to the history of the New Zealand railways, whether it can be done for that price?—I have not the least doubt myself that there is plenty of ballast. We thought there was no ballast in the country for years, and went without metal roads in consequence. When the country at the back of Mount Egmont was opened by rail, it was found to be one of the easiest to make in the whole country.

1494. But the estimates of the Engineer, on which you have formed an opinion that the line could be constructed for £1,000,000, seem to be grossly under the mark?—I go upon the broad principle that one line is one-third less than the other in length. I do not believe, from my general knowledge of the country, and after talking with the officers, that there will be much difference in the cost per mile.

Mr. H. E. FIELD, Waikanae, examined.

1495. *The Chairman.*] Will you tell the Committee whether you have traversed or are acquainted with any portion of the country through which the proposed lines for the North Island main trunk railway run?—Yes; I know a great deal of it.

1496. What part of the country do you know?—In the first place, I know the country about the head of the Wanganui River very well.

1497. Have you travelled along the route from Marton northwards?—Yes.

1498. When did you travel over it?—About five or six years ago. On different occasions I have been over it. When I went over it six years ago there was no talk of the railway.

1499. Can you describe the country in details?—I think there is a report of mine respecting part of it in the Survey Office on the general character of it.

1500. Can you tell the Committee what is the nature of the country for the first twenty miles out of Marton?—That is settled?

1501. Is it good country?—Yes.

1502. Is it thickly settled?—For the first ten or fifteen miles out of Marton it is all farms, and I believe it has since been settled farther on.

1503. Going beyond the part that is settled, what is the nature of the country there, taking a strip of about five miles on either side of the line?—It is principally heavy bush, but good country; no steep abrupt hills.

1504. Do you consider it fit for settlement?—Yes, I do. It is quite as good as the country that has been settled about Manawatu.

1505. How far along the line does that good country extend?—All along the banks of the Rangitikei River. There is one portion of that that I have never been over myself, and that is the lower portion of the Hautapu.

1506. You are aware that the Rangitikei River leaves this line and runs out an average of something like ten or twelve miles from the proposed line of railway. Is all the land between that of good quality?—The proposed railway-line, after leaving Marton, goes up the Pourewa Valley, and then strikes across to the Rangitikei River higher up. I believe that was the line I sketched out myself to Mr. Marchant. I think the present line follows that pretty nearly. It follows up the Pourewa Valley, and then across to the Rangitikei, thence up the Rangitikei to the Hautapu. From the mouth of the Hautapu to a place called Tarangarere, which is about fifteen miles farther on, I do not know the country; there is a gap there that I do not know.

1507. That is, practically, between miles 40 and 50 on this map (No. 1) which you do not know?—Exactly.

1508. And northwards of that?—Northwards of that, to the 100th mile, I do know. I have been all over the ground.

1509. What sort of country is that?—From Murimōtu and Wangaehu to Manganui-a-te-ao it is principally level, rich country, beautifully timbered.

1510. What sort of timber is it, then?—Principally red pine, rimu, totara, and maire. The maire is very fine indeed.

1511. What proportion is there of maire?—In places it is two-thirds maire; it depends on the situation. The maire grows principally on the slopes of the hills where there are hills, and is scattered about on the flats.

1512. How far does that extend, north and south, and east and west?—I should say there is level good land of 100,000 to 150,000 acres.

1513. Interspersed with maire?—It has maire spread pretty nearly all over it. In one or two places there is a little birch fringe on the banks of the rivers, just a few trees deep.

1514. To the northward of that again, do you know anything about the route?—I know it along part of the western side of Ruapehu.

1515. What is the nature of that land?—It is an incline from the mountain. There are no spurs to speak of. The only spurs of any consequence are about Manganui-a-te-ao, and there they will be easily got through.

1516. I want to know more of the nature of that country for settlement purposes?—The whole of the country round the west of the mountain is good for settlement. There is not the same extent to the west of the mountain, however, as there is to the south-west.

1517. Travelling north from that, do you know that country?—I know the country about Tamaranui, and for a short distance up the Ongarue.

1518. That is, between miles 130 and 160?—Yes; there is some open country about the junction

of the two rivers. Part of it is good; part of it is pumice. The low bush land about there is good the heavy bush is good timber.

1519. Would you call it agricultural land, any of it?—Certainly; I think a great deal of that is agricultural land: ultimately it will be. It is level enough.

1520. Is there much bush on it?—The open land now is really the worst of it, and the bush is the best. The country about Ruapehu resembles very much the country about Parihaka.

1521. Do you know anything of the land to the north of mile 160?—No.

1522. You say there is a small portion of the Stratford line that you know?—I know the country about the Ohura River. Some of it is very good country.

1523. And you know the Tangarakau, too, do you not?—Yes.

1524. That is, between 40 and 70: what is the nature of that country?—I will describe it from Whangauromona; that is, about 25 miles from Stratford. From there to where the line strikes the Ohura at mile 70 it is exceedingly rough. I do not think there is rougher country in this Island: it is the roughest country I have seen, and I have seen most of this Island. All the streams there run in gorges; the Wanganui River at best runs in a gully.

1525. You know this line?—I have been along the river, which follows the line pretty nearly.

1526. How would you describe that land?—It is very broken.

1527. Take it for five miles on either side of the line?—Very broken, and covered principally with birch. The country is not exceedingly high, but is very broken indeed; in fact, it is not so high as some of the country between the Ohura and Mokau.

1528. Do you know any other part of the line?—No; that is the only portion that I do know.

1529. *Mr. W. White.*] Which line do you think opens up the best country?—The central line.

1530. In speaking of the maire, you did not tell us what size the trees were?—You could get it any size you like—from 2ft. to 5ft. They run very large indeed. It is the finest maire I know of.

1531. What height is it?—30ft. or 40ft. in the barrel.

1532. *Mr. Fergus.*] Have you been in conversation with any of the witnesses who have already given evidence before this Committee?—I have not. All the country I have been speaking about I have seen myself.

1533. *Mr. Montgomery.*] Is the land to the west of Ruapehu like that about Parihaka?—It resembles it somewhat; it is a brownish-black soil, underlaid by a red-clay subsoil.

1534. To the westward of where the line runs through?—Yes.

1535. *Mr. Larnach.*] Have you been in the South Island at all: do you know anything of the land there?—No.

1536. I understood you to say that between 25 and 70 miles on the Stratford line there is some rough country?—Yes; some of the roughest country I have seen in this Island.

1537. From your knowledge of the country, you think there is a very large amount of land fit for settlement on the central line?—Yes; I think the country almost all along it is fit for settlement.

1538. Is there much land in the hands of private individuals there, or is most of it in the hands of the Natives and the Crown?—I cannot say. There has been a lot of trafficking in Native lands since I was there, and I do not know what proportion there is in the hands of Europeans now.

1539. *The Chairman.*] With regard to that piece of the Stratford line which you know, is it available for settlement: could settlers make a living there?—I do not think they could, certainly; it might do in years to come for grazing purposes in large blocks.

1540. Supposing you were told that a railway would be opened there in two years from the present time, would you recommend anybody to buy that land and settle upon it?—Certainly I would not.

1541. Could you take out a block anywhere of the land that you know, of 500 acres, which you could advise anybody to settle upon?—For myself I would not take it if it were given to me.

1542. That is, speaking within a seasonable distance of the line?—Yes; I have intersected the line here; I have crossed the country through which this line runs.

1543. And you have not seen any land on the length that you have described fit for settlement?—No.

1544. *Mr. Larnach.*] What period of time has your acquaintance with that part of the country extended over?—I was born in this country. I have lived here all my life.

1545. Then, you have a thorough knowledge of the country you have spoken of?—Yes; I was one of the first Europeans who ever went there.

1546. *Mr. Montgomery.*] Are you in the employ of the Government?—No; I am a sheep-farmer now at Waikanae, between here and Foxton.

1547. *Mr. Fergus.*]—You have got the Kapiti, have you not?—Yes.

1548. On the land you have been describing, is there anything like you have got at Kapiti?—You mean on the Stratford line.

1549. Yes?—No there is not.

1550. And is it as broken as it is at Kapiti?—It is more broken than at Kapiti.

THURSDAY, 25TH SEPTEMBER, 1884.

Sir GEORGE GREY, K.C.B., M.H.R., examined.

1551. *The Chairman.*] ~~The~~ Committee are quite aware, Sir George, that you know a good deal of the part of the country proposed to be traversed by the North Island Trunk Railway, and would like you to give them any information you can as to the nature of that country—its fitness for settlement, and any other information you can give them which would lead them to a fair decision in this matter?—What are the points to which the Committee would wish me to direct my remarks?

1552. I think mainly the points which I have mentioned, namely, as to the country that would be opened up by the respective routes, and its fitness or otherwise for settlement. I understand that you have travelled through a great part of that country. You could therefore give us an idea as to what proportion, if any, is fit for agricultural or pastoral purposes, and so on?—I know the country all the way to Murimotu on the central line.

1553. From which end?—From Alexandra down to Murimotu. In coming down from there I have always turned off to the Wanganui River, and therefore cannot speak as to the southern portion of the central line. A great deal of the northern portion is very good country, but the Stratford line also traverses that country. Thence this latter line comes into the Mokau country, regarding which there is a report from Dr. Hector, whom I sent there to explore. I believe the line traversed by the Stratford route in that part of the country is most valuable, on account of the minerals. It is some of the richest mineral country in New Zealand. Then, I know part of the coast-line between Mokau and Taranaki—the Mokau line. The country there is good in places, and in other places it is not so good.

1554. Do you know the country from Mokau to Stratford?—I have travelled over it in places, but I do not know it well. There is a great deal of good country in places; in fact, part of it is very good indeed.

1555. Do you know absolutely the route as laid down on the map?—I am not sure that I have been on that. I have been on it, of course, in different places, but there was no good track there at the time. I do not know the Stratford line at all from the Mokau River.

1556. The question has been put to several witnesses who have had considerable experience in such matters—and you can answer it or not, as you like—as to which of these routes would, in the event of any future Maori difficulty, be of most service to the country. Would you like to give your opinion on that subject?—I have no hesitation in saying that, under all circumstances, the line from Stratford would, in my opinion, be the most serviceable. I thought the best line was to Waitara, and of course that was the line taken for the railroad when I was Native Minister. I believe that if that line were made Native disturbances could not take place; and I believe it would affect the Natives very largely. I think, if an arrangement were made by which the railroad would be left the property of the Natives, and managed by them on condition that sufficient land was given by them to pay the cost of constructing it, you would then have funds available from the million to be raised to pay for that line to construct lines from Gisborne and Napier, running into the common line leading to the north, and into the line from Napier to Wellington. I believe you would have funds to do that, so as to have two lines completed—one from Auckland to New Plymouth, and the other to a line which would connect with the main-trunk line from Tauranga, Gisborne, Napier, and Wellington. No arrangement of that kind could, I believe, be made until Tawhiao returns from England. A leading chief came to me the other day and asked me to try to get the matter delayed until Tawhiao returns. I think the Natives would give certain portions of the land to have a railway there, with power for the Government to purchase it at any time they pleased. When I chose the line by way of Taranaki, during my administration, I did so with the view of uniting the two great populations of Auckland and of the whole of the New Plymouth District. The result of adopting the Stratford line will be to bring Auckland into communication with that district. I believe that these two populations being united will result in benefit to both of them, and that the land opened up will be immediately occupied. In my mind, to take the central route would be to delay for years the advantages which would be instantly gained by adopting the Stratford line. A great trade would at once spring up between the Auckland and New Plymouth Districts. The greater part of the settlements from Waitara to Urenui are now progressing rapidly. The whole of the remaining part of that line between Alexandra and Mokau is the only piece which is uninhabited by Europeans, and would be available for immediate settlement. Thus, the whole line from Auckland to New Plymouth would shortly after its completion traverse an inhabited country, generally of a fertile character, and must soon prove remunerative.

1557. *Mr. Larnach.*] How long ago is it since you were in that country?—I have been there many times; but I think the last time I was there must have been about 1865. I first of all traversed it carefully about 1847 or 1848, looking for a road from Auckland to New Plymouth.

1558. You say that you travelled down southward from Te Awamutu as far as Murimotu, and then branched off to the Wanganui?—Yes.

1559. Do you remember what the country is like between there and the Wanganui?—It is an excessively broken, difficult country.

1560. But of what quality?—It is a forest land, with occasional rich, open plains, but the plains are of no great extent. It is a country capable of producing olives, oranges, and vines. It is more like the Azores than any other country, both in regard to climate and general appearance; and, for the purpose of growing oranges, olives, vines, and so on, I think it will, in those respects be one of the finest countries in the world—that is, the country between Murimotu and Wanganui. The heat is in summer great from radiation from the cliffs, and the temperature is very high; but moisture is abundant, irrigation practicable in many places, and the soil on the plains and many level places is of great fertility.

1561. Are there any good tracts of forest land between Wanganui, northward, and Murimotu?—It is generally forest land, with deep ravines, open plains, and glades. There some large forests of totara occur.

1562. Any maize?—I forget the timber. The timber which particularly struck me was the totara. It is a magnificent forest country, and I believe it will be one of the richest countries in the world for every sort of produce of the kind I have named. I have always believed it will ultimately yield a large export, and that Wanganui will be a very important town.

1563. Supposing the central line were made, would it be as useful in connection with any possible Native difficulty as any other proposed line?—I think the line by Stratford would be more useful: I do not believe a Native difficulty could occur after that was constructed. I feel tolerably certain

that, recognizing the value of their land, the fear of its being confiscated, in order to pay the expenses of a war which the Natives began, would effectually prevent a disturbance taking place after the railway was made. This state of peace is more likely to prevail, because they themselves now seek redress for injuries, real or supposed, by resort to our laws, or appeals to Parliament.

1564. I understand, then, that it would not matter which line the Parliament determined to construct in that respect; that either line would help to prevent any Native difficulty?—Everything which gives value to the land would have that effect; but I believe the Stratford line, in a military point of view, would be the most serviceable. That is the line I should prefer myself.

Mr. J. BRYCE, M.H.R., examined.

1565. *The Chairman.*] We all know, Mr. Bryce, that you have been concerned a great deal in connection with the transactions of the Government in reference to Native matters and the lands throughout the districts proposed to be traversed by the North Island Trunk Railway. Would you kindly tell the Committee, in the first place, how far you are acquainted with the districts from your own personal observation?—I have had occasion to be at Alexandra as a place of residence for a considerable time—off and on, some months—so that I know the country about Alexandra and between there and Kawhia very well indeed. I may say also that I have travelled the road between Cambridge and Lake Taupo repeatedly, and know the character of the country in that locality very well. I have also been several times—three times at least—between Lake Taupo and Wanganui by various routes. I have not been down the Wanganui River except, of course, near the Town of Wanganui itself; and I have also travelled from Alexandra to the Mokau River, about thirty miles from the sea, then down the Mokau River to its mouth, and from the river to Waitara, and so on to New Plymouth. I have been only a very short distance eastward of Stratford, so that I cannot speak from personal knowledge as to that part of the country, but the Committee will easily understand that I was so much concerned with the Natives that I had to pay very close attention indeed to the explorations that were being made from time to time. In fact, I have stayed at Alexandra and sent men to explore in various directions, and then come back and report to me how they got on, not only with the Maoris, but also as regards the country; consequently, I suppose, I have some knowledge of the country.

1566. The course we have taken in considering the various proposed routes for the railway is to begin with the central line: would you start from any point on that line and tell us what you know of the country?—I am acquainted with the junction of the proposed central line with the main line near Marton. I have also been some considerable distance up the Rangitikei River, but that was before the recent explorations were made. The formation of the banks of the river consists of terraces so far as I have been, and I understand that it is on those terraces that it is proposed to run the railway up the river. I may point out to the Committee that from the commencement of the terraces on the Rangitikei River to a point near Kawhia there is a very remarkable formation of country, varying in width from fifteen to twenty-five miles, and runs right through the country till it comes out at the White Cliffs and Kawhia. It is a remarkable country; I have been over it in many places. We call it papa country. It is underlaid with hard clay called papa rock, and a great deal of it is broken almost beyond conception to those who have not seen it; so that, though in many places streams of water are plentiful, yet one might be compelled to go without it owing to the difficulty of getting at it. For the most part the streams flow within perpendicular banks of various heights, and from those banks, as a rule—I am speaking of the most broken part now—there are very steep hills, covered with bush. When you get to the top of the hill, instead of finding a flat you find a ridge, and have to go down again to another stream similar to the one you have come up from. These banks in many places are so steep that if the bush were cleared I have no doubt that they would slip to a great extent. I merely wish to draw the attention of the Committee to the circumstance of there being this belt of country running through, commencing with the terraces of the Rangitikei River and being continuous till it comes out between the White Cliffs and near Kawhia. That belt of country, you will observe, has to be gone through by some of the proposed routes. The route up the Rangitikei River has upon its immediate left this kind of country, but, as far as I understand, the line itself runs along the terrace formations on the river. At the bend of the line, about the 80th mile, it emerges into open country. I am acquainted with that open country, but I have not been on it since the explorations, so that I cannot say exactly where the line goes. But that open country between Rangitikei and Turakina is of very excellent quality.

1567. That is about ten miles due south-west of Ruapehu?—A great deal of the open country lies behind this. However, what I mean to say is that, after going through a belt of papa country at the back of the Rangitikei District, you come upon open country of very excellent quality. As you go still farther to the eastward it becomes less and less valuable; in fact, as you approach the Rangipo it is a desert. The Rangipo desert is very bad indeed. That lies on the right of the railway. Out to the right of the desert country again there is a lot of very fine limestone country—fine pastoral country, and, I suppose, some of it good agricultural country, too—on the slopes of the Kaimanawa Ranges. That is a country that I think very highly of. But the whole country between the railway and that part is very flat and accessible; carts could be got over part of it, interrupted only by occasional streams. I may also say that a good deal of the Rangipo country is now under lease, nominally to the Government, but practically under lease to a company of private individuals, because the Government is under engagement to hand over a lease to the company; with, however, this reservation, that the Government may reserve to itself the right of taking for settlement purposes 25 per cent. of the land, whatever that may be worth. Well, from that open country the line goes into the bush westward of Ruapehu. That bush country I have not been very far into, though I have been a little into it, and I am aware from personal observation and from reports, that the soil is very rich and excellent. I would not, however, call it first-class country, for this reason: that the elevation above the sea is considerable, and for that reason—and

that reason only—I would not call it first-class country. My personal knowledge of the country then ceases until the Mokau River is reached. I understand, of course, from the reports, what kind of country it is, but the Committee will be as well in possession of that information as I am. With respect to the country at the other side of the Mokau River, I may say that both or all three of the proposed routes—all the lines with the exception of the Napier line—may be said to be equal; that is to say, the whole of the country opened would be about the same. There is a great deal of good country lying between that and Te Awamutu. I am not quite prepared to say that I think the land is of such super-excellent quality as some people think it is; but the whole of that block, which is a large open block, and very easily accessible (or could be made accessible by roads), is what I would call a valuable country, and the whole of the land there runs from fair to good; although, with the exception of certain alluvial tracts, I would scarcely be prepared to call it first-class. The whole of it, however, is good country. When you get to the watershed between the Waipa and Mokau Rivers, going towards the Mokau, the character of the country changes. It immediately becomes, near the Mokau, a limestone country, and you can see that in many places. For instance, grass-seed takes much more readily in limestone country, and you may often come across flats there which would almost lead you to believe they had been artificially sown, which is not the case. And that is one reason why I do not class the country in the direction of Alexandra as first class, because I observe grass has not taken so readily on the tracks as I expected in that direction. I am now going back in the direction of Mokau.

1568. That is on the Stratford line?—Yes. When you reach the Mokau River you presently get into what I have already described as that papa country, and it is broken to a degree that the Committee would find very difficult to consider without actually going upon it. I believe, as a matter of possibility, that the railway could be taken right down to the Mokau River, but it would be a very formidable undertaking; and, moreover, although you might open the country immediately alongside of the railway, the country is so excessively broken and difficult on both sides that the strip of country would in many places be scarcely wider than the railway itself.

1569. How far does that come down?—The whole distance from where you strike the Mokau, thirty miles from the sea, right down to the mouth. Indeed, the difficulty of getting down the Mokau River appears to have suggested itself so strongly to the Engineers that they considered it more feasible to take a line to the north of it—the Awakino. I was on that proposed route to a certain distance, but not very far. The character, however, is substantially the same as on the banks of the Mokau River. I should say there would be very great difficulty in getting a road to the coast there, and I am certain there would be very great difficulty in getting a line along the coast: that I know. After the White Cliffs are passed, and what is called the White Cliffs Constabulary Station is reached, the difficulties, so far as the construction of a line is concerned, would cease. It is the kind of country for making a line over, very much the same as Waitotara, north of Wanganui. For the first seven or eight miles southward of the White Cliffs it is only a question of a few thousand acres of good country. Behind that lies the broken country that I have described. As the line approaches Waitara the available land widens.

1570. Coming down from the Mokau, how far do you know the line through to Stratford?—I should not like to give any personal description of that. Coming from Te Awamutu until you reach the Mokau, all the lines, as I have said, are very much alike till you reach the Mokau. From Stratford, going east, there is undoubtedly a considerable extent of good country. I have had a bird's-eye view of that country and feel quite certain of that.

1571. How far in from Stratford would that remark apply, roughly speaking?—As far as I could judge I should think it would apply to twelve or fifteen miles, and then you would begin to get into the country I have referred to as papa country.

1572. Do you know how far up on that line the papa country covers?—To a point not very far from the Mokau River. The belt of papa country seems to bend inland there: I do not know whether that is to be accounted for geologically by the volcanic formation near Mount Egmont. About Rotorua, on the eastern route, I may say that is country I have very little admiration for. The country between Lake Taupo and Rotorua is not a good country. I hesitate to go so far as to say that it is country which never will be of any good, because we may find some scientific means of dealing with it. I understand that, for the most part, it takes a flock of sheep about three years to die out upon it. I do not know whether you wish me to say anything on the subject in connection with the Native aspect.

The Chairman: I think so. We have asked other expert witnesses.

Mr. Larnach: Also in reference to any timber that you know of on the land.

1575. *The Chairman.*] Have you paid particular attention to the forests between Murimotu and Wanganui?—I have not been down the Wanganui River, but there is a large quantity of rimu everywhere about there.

1576. Have you come across any particular forest of maire?—Maire never grows in exclusive groves of forests. I may state, however, that I have seen there the finest maire trees I ever saw. But I do not know that any particular importance can be attached to the maire. There are forests there of rimu and kahikatea and a considerable amount of totara. Totara invariably grows upon land which is sweet upon the surface and with open subsoil. I omitted to say, in reference to the papa country, that, although it is so broken as I have described it to be, nevertheless wherever there is soil the soil is sweet. Generally it is very thin, but it is sweet, and would take grass readily.

1577. Now, what is your opinion on the subject, Mr. Bryce, from any other point of view: which of these routes would you think best in case of any future Native troubles?—I should like to say, in reference to that, Mr. Chairman, that I do not contemplate another Native outbreak. I think we have passed beyond that stage, and, if I might venture to say so to the Committee, I should recommend the Committee not to attach too much weight to that point. I do not mean to say there may not be a difficulty in isolated places—that may occur with either Maoris or Europeans; but anything resembling a general Maori outbreak will never, now, in my opinion, take

place. As to which route is the best from a military point of view, I may say that I have not the slightest doubt, as I think I can satisfy the Committee that what I call the central line is incomparably the best, and for this reason: that either of the other lines, as soon as they enter on a broken country, would become absolutely useless from such a point of view; whereas the Marton route, which goes through the middle of the Island, goes through a very flat, open, country, which would afford numerous opportunities of putting roads, for military purposes if you like, on either side. I think, if you examine the reports from that point of view, there can be no possible doubt on the question. If, for instance, you put a railway along the bottom of a series of gullies of steep banks, it must be obvious that that line can scarcely be of as much value as a military line; but if you put a line over flat country, where roads can spread off from the railway on both sides, then, from a military point of view, that would be the best, undoubtedly: although I hope the Committee will not attach too much weight to this aspect of the question, because I believe it will be of comparative insignificance. In respect to settlement, I think that I have already said that all the routes are about the same between Te Awamutu and the Mokau River; I do not see any difference between them in that respect up to that point, and I do not believe there is any.

1578. To the south of the Mokau, what is it?—In my opinion, the land I have described as being of excellent quality at the back of Marton is a most valuable country for settlement. That is eastward of the papa country, where the line gets out into the open country, or rather, I take it—for I do not know exactly where it gets out—at the back where the country opens up between Murimotu and Marton. That would be highly suitable for settlement. It is good land and would be well opened by this railway, where the railway emerges, because it would be easily accessible to that part of the country. Then, another place suitable for settlement would be the limestone country, near the Kaimanawa Ranges.

1579. *Mr. Larnach.*] How far is that up?—It is from twelve to fifteen miles eastward and north-eastward of the great bend in the line. Well, then, the country under the Ruapehu Mountain traversed by the proposed central route is bush country, but the land is of exceedingly rich quality. Of course the bush would have to be cleared before the land could be used. As I have said, the only drawback there is the altitude of the country, which makes it rather cold.

1580. Is there a great extent of that bush land?—Yes; there is a good deal of it.

1581. Could you state how much?—Hundreds of thousands of acres. The flat land really available for settlement there lies very close to the mountain. As you go down to the Wanganui river westward of the line you have to make a great drop, and get into this papa country. In some places there it would be suitable for settlement, but I am not really able to describe that country well from personal observation, because I have not been actually on the Wanganui River at that place. Then, I do not think I had better go further with my description, because, although I have a knowledge of the country in my own mind, I have gathered it from the same sources as those at the disposal of the Committee.

1582. We have had the Rangipo Block described to us?—That is good land.

1583. Do you know it?—Only from hearsay; but I have necessarily been connected with the purchase of it.

1584. There is a great deal of maire timber there?—I have no doubt there is. I may point out to you that, as far as my observation goes, the existence of maire indicates cold or a considerable altitude; and, although maire may be valuable wood, yet, in my opinion, something is detracted from the value of the soil on account of its presence: it always indicates a cold country. Then, as to the probabilities of getting land from the Maoris, that is a matter that has really given me a great deal of thought and concern; and it is a matter, moreover, which, in my opinion, will have to be gone about very carefully if the results are to be satisfactory. For myself, I should not like to ask the Maoris to allow themselves to be exceptionally treated. If you could show them that they were being treated in the same way as Europeans are treated, they would acquiesce in any just proposal. I may say that I think, if the value of the land is added to enormously, as it will be by public expenditure, it is a reasonable thing to expect that that land should contribute something towards the cost of the construction of those works, and I was quite prepared to put that view of the case before the Maoris, as indeed I have done. Well, the position of a great deal of that country at the present time is this: that at last surveyors have been permitted to go over it for the purpose of investigating the title of the land. Those surveys are now completed, and an application for the investigation of title has been placed before the Land Court; and the Court, for anything I know, may sell at any time. I think we are on very delicate ground here. As you are aware, an Act was passed in 1883 which prevented private dealings with land before the investigation of the title, and goes so far as to render invalid a title preceded by negotiations before the title is ascertained, which is a very strong measure of prohibition indeed.

1585. Is that retrospective?—Yes, in one sense; that is to say, when the conveyance is carried before the Frauds Commissioner, he has to inquire whether this is the result of negotiations with the Natives previous to the ascertainment of the title, and subsequent to the passing of the Act, and, unless he is satisfied that there is no such fault, his duty is to invalidate that title. So that up to the present time, I take it, that country is entirely free from those complications and speculations which might embarrass the position; but as soon as the list of names of the owners is prepared then speculators could begin their operations, and the thing would have to be looked to. I understand from the Maoris that they go this length: they say rightly enough, "We will give you whatever land you want for a railway site, and we may add whatever you want for the stations;" but I do not think they have yet come to the point of contemplating the reasonableness of contributing towards the construction of the railway. Nevertheless, I think it is quite just that the land should contribute in that way; and I may say I have always found the Maoris willing to yield to an argument of justice, always provided that other people were treated exactly as they were. I make this statement in general terms. As to the purchase of the land by Government, there is an unwillingness on the part of the Maoris at the present moment to sell the land, and I suppose that, when

the route is determined, the unwillingness will for a time be increased. I do not apprehend, however, that it will last, because, I am rather sorry to say it, the Maoris, in my opinion, are too much disposed to sell their land. I think they can be induced to sell the last inch they have got in places almost as readily as the first inch; and although at present they profess to be unwilling to sell, but prefer leasing, yet I think that will pass away and they will be disposed to sell. I should not like to say that the Government could acquire these lands at once by purchase. Moreover, there is this difficulty: I do not see how they are to go about it until the title has been ascertained. They could not get the title under the present condition of the law, and if the Government treated before that it would be waste of money, and cause future difficulty in the acquirement of the land. I am pointing out these things because I wish that those who may have to deal with the matter may understand the difficulties that surround it, and pay attention accordingly. I do think that precautionary measures ought to be taken to prevent speculators getting hold of the land alongside the railway, and moreover the Government ought to make every effort to acquire the land on the neighbourhood of the railway before the works actually commence; I do not say, however, before the route is determined.

1586. *The Chairman.*] Your remarks apply generally to either of the lines?—To all lands generally, on either route, with one exception, the Rangipo-Murimotu Block. As I have said, that has been leased to the Government nominally, but really to private individuals with certain reservations. I think that that large block of land could very easily be acquired at once. I see no objection to its being done at once. The title of that has been ascertained, and I have knowledge, which I am not quite prepared to specify, that, if the Government do not get that pretty soon, private individuals will.

1587. *Mr. Larnach.*] What is the extent of that block?—It is 140,000 acres. But these remarks may apply to double that quantity. It includes, I may say, some very bad land—some of the worst land in New Zealand, the Rangipo desert—but it also includes those excellent limestone slopes I have referred to.

1588. And has the company of private individuals got this land on a purchasing clause?—No; the company has got the land practically for twenty-one years; it is a question for the determination of the Government as to when those twenty-one years shall date from. There is a reservation on the part of the Government that 25 per cent. or a quarter of the land may be taken for settlement purposes. I do not attach any value to that in respect to the lease, but it becomes of importance when required by the Government.

1589. That is still Maori land?—Yes; and uncomplicated by any private transactions.

1590. Then, apart from those 140,000 acres, your remarks would also apply to further blocks of the same amount?—Yes; adjoining this block.

1591. *Mr. W. White.*] Which of these lines passes through the greatest extent of the papa country?—I think the Marton line can scarcely be said to pass through it at all.

1592. Why?—Because it goes upon the terraces of the Rangitikei River, and the papa country lies to the west of it.

1593. Does it not come close to the line?—It is on the west of the line. The nearest part may be there or under Ruapehu. The line under Ruapehu goes along an easy plateau of rich land. But on the west of that is the Wanganui River and the papa country.

1594. And there is no papa country to the east of the line?—No; I do not think there is any, unless it is on the East Coast.

1595. Then, there would be more of the papa close to or run through by the Stratford line?—I think the most papa country would be run through by the Mokau line. Next to that would be the Stratford line, and next, in that respect, would be the central line.

1596. What was the size of the maire trees you saw?—I saw some maire trees when I last went through that country about twice the size I have ever seen before. Some of them must have been five feet in diameter.

1597. Was there any great number of them?—Yes; there was a considerable number. But, as I have already said, they never grow in groves or forests; you may see a cluster of them here and there.

1598. But still there would be a great number in the different clusters altogether?—Yes; a great number.

1599. Would you say which line you think the best in the interests of the colony?—Yes; if the Committee wish it. I will give a qualified answer. I think, if the object of the line is to connect two trading centres, the Stratford line is the best, because that would connect the Auckland and New Plymouth country. If, however, the object of the line is to open up country, and do ultimate good to those centres by the opening of country, I have no doubt that, both as regards Auckland and other places, the Marton or central line would be best; it would be better for Auckland as well as for other towns. And I may add, if you please, that I think the only qualification for borrowing money for the construction of railways is the opening of country.

1600. *Mr. Larnach.*] You say you have been three times between Lake Taupo and Wanganui: could you tell us what that country is, generally?—The first time I went I learned more about that country between the Rangitikei and Turakina Rivers than I have ever done since, and at that time the exploration was not made, so that I do not know exactly where the line comes out on that country: but in my opinion the country lying immediately eastward of the papa country situated in the Rangitikei District is the best land on the route; that is, I think a good deal of that will lie behind the point at which the line emerges from the Rangitikei into the open country: that I consider the best land on the route.

1601. Is there any good timber on that peculiar belt of the country called papa country?—No; the timber is generally light and easily cleared, and where the slopes of the hills are sufficiently moderate it is very good country in that respect for clearing and taking the grass, owing to the sweetness of the soil. Generally it is a very thin soil, but it is very sweet.

1602. Then, referring to your remarks as to the excessively broken nature of a portion of the country on the Stratford and Mokau lines, would that entail a greater cost than usual in keeping the railroad in, if made: would it be more apt to slip or be affected by the weather if the bush were cleared off?—I think if the bush were cleared off many slips would occur, owing to the steepness of some of the hills; but, as a matter of fact, I do not think papa clay would slip more readily than other clay—in fact, I think less so.

Mr. R. DONKIN, Civil Engineer, examined.

1603. *The Chairman*] Have you been engaged by the Government in connection with any surveys of the North Island Trunk Railway routes?—No.

1604. Then, have you traversed any of the country which any of these routes would run through?—I have been over a considerable portion of it.

1605. Which part?—From Stratford right up to the Mokau, and for along the whole of the line. I have also been along the coast from Waitara to Kawhia, and right up the Mokau River, and up the Awakino.

1606. Did you traverse that country from a professional point of view?—No.

1607. You were looking for minerals?—I was only looking for minerals.

1608. You say you traversed the Stratford line?—Yes.

1609. What is the nature of the country through which that passes?—For about fourteen or fifteen miles from Stratford there is very good country: it is the incline from the mountain range. When you get farther up it becomes rather more broken and ridgy, in consequence of its running between the Waitara and Wanganui Rivers, which run parallel here for some distance. The Waitara runs much farther northward than is represented on the map now before me; it goes towards the Mokau. Then, there is a high range which divides the two. The Tangarakau takes its rise from the same range.

1610. Is there any part of that line between the 15th mile and the junction with the central line at the head of the Mokau, that is more broken than the rest?—It is pretty broken between miles 20 and 60.

1611. What proportion of that land is fit for settlement?—Only some valleys.

1612. Of what width are those valleys?—They are of no great width.

1613. *Mr. Larnach*.] Fall valleys?—Mostly.

1614. *The Chairman*.] Is there any place along that part that you have mentioned where you would care to pick a good farm?—There is only one place—I do not see the creek shown on the map produced—it runs into the Waitara, and it is pretty fair country there.

1615. What extent?—There is no great extent of it.

1616. Say generally what you think of that country?—The country when you get past the Tangarakau into the Ohura Valley is good country and fit for settlement. I have been all over that from the top to the bottom of it, and there is good country towards the central line up to Tamaranui. There is very good country in the upper Mokau district. It is a limestone district near the Awakino; there is very good country indeed up there.

1617. Did you succeed in finding any minerals in your travels?—Only coal and iron deposits.

1618. *Mr. Larnach*.] No gold?—Not down here. The gold country lies between Taupo and the central line. Wangaponga is where the gold is said to be.

1619. Did you find gold there?—I did not get so far as that; the Natives would not permit me.

1620. Why do you think there is gold there, then?—From specimens of quartz that I saw.

1621. Then, you saw specimens of quartz?—Yes; but there was no gold in them. The best country is in the Ohura Valley, with some creeks running out of the river. At Mangaroa it is very good country.

1622. *The Chairman*.] What proportion do you consider fit for settlement?—All round the Ohura is fit for settlement, and to the north of the Mokau. I have been there since Mr. Rochfort visited it, and my impression was that, if ever the central line was adopted, to get to the New Plymouth Harbour a line could be taken across from Tamaranui.

1623. *Mr. Larnach*.] How far is that from Te Awamutu?—It is about one hundred and sixty miles from Marton; the line would come in to about the Urunui on the coast.

1624. *The Chairman*.] Would it not cross this great dividing range?—There is easy country to be got from Tamaranui, nearly due west to Urunui, on the coast, within ten miles of Waitara.

1625. *Mr. Larnach*.] What distance would that be?—About fifty miles. The timber upon any of the lines in the district is chiefly tawa, mixed with some pines; but at Tamaranui there is very good totara, very large fine trees indeed.

1626. *The Chairman*.] Which of the two lines would open up the most country for settlement—the central route or the Stratford route?—I have not been down the central route south of Tamaranui. Towards Te Awamutu there is very good country, though there is a little difficult country about the 190th mile on the central line.

1627. *Mr. W. White*.] Did you notice any ballast along the Stratford line?—Yes.

1628. At what point?—Both on the Tangarakau and creeks leading from it there are masses of it. But it is more like concrete; it is not loose; it is all set together like concrete.

1629. It is not the ordinary ballast, then?—No; it is not.

1630. Is it a kind of rock?—No; it is completely massed together.

1631. *The Chairman*.] Would you have to break it?—It would take a great deal of knocking to pieces.

1632. *Mr. W. White*.] More like ordinary stone-breaking?—Fully as much, if not more.

1633. Would you require blasting?—Yes, certainly. Picks would not stand it at all.

1634. You have not seen any ordinary ballast along that line?—I have seen some rotten rock which might do for ballast.

1635. Is that the papa rock?—Yes; that is the only stuff that I saw that would be of any good.

1636. Would that be of any good?—Yes; that would do very well for ballast.
1637. Railway ballast?—Yes
1638. Is the concrete of which you have spoken anywhere near the railway-line?—The line goes very close past it.
1639. Within a few chains?—Within one chain of it it crops out in several places
1640. *Mr. Larnach.*] Do you come from New Plymouth?—I came through there lately.
1641. But you do not reside there, I mean?—Within about thirty miles of it.
1642. You reside in that district, then?—Yes.
1643. Have you been many years there?—The first time I was there was in 1867, when I was there for only a few months. Lately, I have been there for several years.
1644. You have had experience, I believe, in surveys in the other Island?—Yes, and also in New South Wales. I may say I have had considerable experience.
1645. Taking what is usually considered fair country for settlement in the South Island, is there much country equally good adjacent to either of the lines you have been speaking about?—There is nothing like the Canterbury Plains. It is all broken; but I should say it was fair, average New Zealand country, and the soil is good soil, even to the tops of the ridges.
1646. Are you aware that a great deal of the Canterbury Plains is very indifferent country?—Yes, I am aware that gravel comes very close to the surface.
1647. That is, the country adjoining the main trunk line in the other Island?—Yes.
1648. Do you mean to say that the country here is not so good as that country on the Canterbury Plains?—It is better soil, but it is not level; that is what I mean to convey.
1649. Then, although some of this country is very broken, may I infer that it is good?—Yes.
1650. Good soil?—Good soil.
1651. Does the country that is very broken extend more on the Stratford line, or to the central line?—More to the Stratford line.
1652. What extent on the Stratford line, in length, is there of that broken country?—There is broken country from the 20th to the 70th mile, and then it gets better; and then it is broken again till you get to the Mokau watershed.
1653. That would be about fifty miles?—Yes. The coast-line, I may say, would open up little or no good land.
1654. You know a great deal of the country where the central line lies?—Only from Tamaranui northwards.
1655. That is, about 100 miles south of Te Awamutu?—Yes; it would be quite that. There are some pumice flats up the Ongarue River I may state.
1656. Is that good for settlement?—It is very good soil on the tops. The Natives have clearings on the tops of some of the hills, and very rich soil indeed it is; but the pumice country, I think, is not of any good; it would never do to cultivate.
1657. Which line, in your opinion, would open up the best country for settlement, and most of it?—Of course I could not give an opinion about the quality of the land on the southern part of the central line from Tamaranui.
1658. I understand you to say that, if the central line were made, the interests of the country would be better served by making a branch from Tamaranui to the west: would that be better than making the Stratford line?—Looking to the future I believe it would.

FRIDAY, 26TH SEPTEMBER, 1884.

MR. T. HUMPHRIES, Chief Surveyor, Taranaki Provincial District, examined.

1659. *The Chairman.*] We have asked you to come down here to give us any information that you can in connection with the district of which you are Chief Surveyor, in reference to the question of a route for the North Island Main Trunk Railway. You are, of course, fully aware that there are four routes proposed, three of which run to the westward of Lake Taupo. I should like you, in the first place, to kindly state what part of the country you are personally acquainted with?—The country directly affected by the proposed lines with which I am personally acquainted is not very much, on account of the district along the Stratford route not having been dealt with until lately. It is only within the last year or two that we have had opportunity to go into it. But I have seen the reports of Messrs. Skeet, Rawson, and others who have reported to me on it, and also conversed with them about it. As far as the Mokau line is concerned, I am personally acquainted with the portion between Waitara and Mokau, and a short distance beyond that river—in all, about forty miles; and I have overlooked some of the country traversed by the Stratford line from the trig. stations that I have been on in its vicinity.

1660. Have you been on any of the country traversed by the central route?—No.

1661. Have you been on the upper part of the Stratford route, towards the head of the Mokau?—No, not at all. I know, however, the country fifteen or twenty miles parallel to the coast. Beyond the fifteen miles parallel to the coast I have been able to overlook the country from the trig. stations, but that, of course, would give me no idea of the detail of the country. I produce a map showing the trig. stations, with their heights, and topographical features of the country, copied from office records.

1662. Coming out from Stratford, after you have crossed the confiscation boundary, what do you know of the nature of the country traversed by the Stratford line?—I have not been actually on it, so that it is simply from the official reports that have come into my hands that I know it. I have with me a report on it from Mr. Carkeek to myself, which was made in July last.

1663. Is that report of Mr. Carkeek's in print?—No, in manuscript.

1664. Looking from the trig. stations across the route traversed by the Stratford line, what opinion did you form of it: was the country fit for settlement, or was it bush, or what?—It is all

bush, with a few patches of open country in it of sometimes 1,000 acres or so, and a very large area of it fit for settlement.

1665. Is the country about here all of the same formation—you say you have been on the land close to the Stratford line to the westward?—The country to the westward is hilly.

1666. Do you know what the geological formation is of that part you speak of to the westward of the route?—There is limestone, which seems to go right through from Onairo. There are outcrops of it running due south of Onairo to the Wanganui.

1667. Where does the papa rock commence—where does it strike the line of railway?—I am not aware.

1668. *Mr. Montgomery.*] Have you been on all the trig. stations that are marked on the map you have produced?—Not all of them.

1669. Within ten or fifteen miles along the line?—I have been on several of them; you could see all the surrounding country from those.

1670. What you personally know respecting the line of railway and the country through which it passes is from looking at it from those trig. stations?—Yes.

1671. How many miles are they off the line?—Some of them are fifteen or sixteen miles off.

1672. You say the country is all forest except a few acres?—Yes.

1673. *The Chairman.*] Coming out from Stratford, how far is the land in the hands of Europeans—in lawful occupation by the Europeans, of course?—With the exception of about ten miles, the first thirty miles of the line goes through private holdings.

1674. When was the last large block got possession of by the Europeans?—It was about two years ago. The survey is now being completed.

1675. Who are the people?—Thomas Bayly, of Waitara, and others.

1676. *Mr. Montgomery.*] What is the size of the block?—30,000 acres.

1677. *The Chairman.*] And the railway runs right through it?—Yes.

1678. Are you aware of any negotiations going on for any land besides that?—Only with the Crown.

1679. But I mean with private individuals?—No, not now. There are blocks of 12,000, 8,000, and 30,000 acres which are in the hands of private individuals.

1680. *Mr. Fergus.*] Do you know what they paid for the land comprising the block of 30,000 acres?—No. They were paying about half-a-crown for the other lands about there at the time.

1681. Is it good land, this private land?—Yes, some of it is very good; it is bush land. The 8,000-acre block is a good block.

1682. To whom does this belong?—To Mr. Bayly.

1683. Has he got the lot?—Yes.

1684. That is, 50,000 acres?—Yes.

1685. *The Chairman.*] What occupation does Bayly follow?—He deals a great deal in cattle, and goes in for land speculations; little else.

1686. Are you aware that there was a Vigilance Committee appointed in connection with this railway matter in Taranaki?—Yes.

1687. Was Bayly one of its members?—I could not say; I never heard of his being on it. He belongs to Waitara. Mr. Charles Brown is, I believe, part owner of the blocks alluded to.

1688. Is Mr. Brown an officer of the Government now?—No.

1689. How long is it since he was?—Some three or four years. These blocks were under offer to the Government at the time that he was Civil Commissioner, and the Government instructed him to drop them all.

1690. And then he resumed negotiations on his own account?—Mr. Bayly took them over. I think he paid the deposit that the Government had paid on them.

1691. How long has Mr. Bayly been in that district?—He has been there for thirty or forty years.

1692. Then, he came out as one of the old settlers?—Yes.

1693. *Mr. Larnach.*] You know nothing of the central line at all from your own knowledge?—No.

1694. How many miles are there of that particular portion of the Stratford line to which you have referred as having no knowledge of it?—You might almost say the whole of it, excepting close to Stratford—that is, direct personal knowledge.

1695. Then, you spoke of the country judging from what you saw by overlooking it?—Yes.

1696. When you speak of “overlooking the country” from a certain standpoint, how can you judge of the quality of the land or its suitability for settlement?—I said I could tell nothing of the detail of the country, but what I stated was from information gathered from official reports supplied to me.

1697. You said you had formed an opinion of the country by overlooking it?—Yes.

1698. But if it is hilly and forest you could not judge of it?—One could not judge of the detail, of course, but would see that there were no high ranges in the way, and get a general idea of it.

1698A. How long is it since the title of the 30,000 acres to which you have referred was acquired?—An interlocutory order was issued some two years ago, but the final order will not be given until survey is completed, which will likely be done in a few months.

TUESDAY, 30TH SEPTEMBER, 1884.

Mr. C. W. HURSTHOUSE, Surveyor, New Plymouth, examined.

1699. *The Chairman.*] Are you in the Government service?—Yes.

1700. In what department?—I am in the Public Works Department, but at present I am working for the Survey Department.

1701. Are you acquainted with the country through which the proposed Napier line runs?—I know part of it.

1702. Do you know it from Cambridge to Taupo?—I know it from Cambridge to the crossing at the Waikato.

1703. What sort of country is that?—It is open country, but of a poor nature.

1704. Pumice?—A great deal of pumice.

1705. Do you know anything more about that route?—No. The only other part I have been on is on the north-eastern side of Lake Taupo.

1706. Now, coming to the central line, what length of that have you travelled over?—I am acquainted with the Marton line from Te Awamutu to where it parts from the Stratford line—as far as Te Kuiti.

1707. You have traversed that line right and left there?—Yes; I know that country well.

1708. What is the nature of that country?—It is principally open—fern; and it is all fit for settlement.

1709. From your knowledge of that country, do you think it matters at all where the line goes for the purpose of opening it up—would a few miles one way or the other make any difference?—It would be objectionable to throw the line much to the west, because it would run into the broken country; but anywhere in what you might term the Waipa Valley, within a mile or two, would make no difference.

1710. Leaving the junction, and coming down on the central line, how much of the country do you know?—I do not know any of that, not along the line, therefore I could not give you any information about that which would be worth having. My knowledge of the country is a general knowledge through having crossed it many years ago.

1711. Take the next twenty miles south of the junction: would either of these two lines open up the country as well as the other?—I think so; I think there is no difference between them in regard to that part.

1712. Do you know anything of the southern part of the line?—I have never been there since the line has been surveyed. My knowledge was gained a long while ago, and I can see that this line follows somewhat the line of country that I walked over.

1713. At the time you walked over, was there much land in cultivation by the Maoris?—No; very little. There was no Maori cultivation on the track from leaving Rotoaira.

1714. Then, you can only just give a general idea of that country I suppose?—That is all.

1715. And what would you describe it as?—I should say there are about thirty or forty miles of very good land from Marton.

1716. Is that all bush, or with openings?—It is about equally divided, as far as my recollection goes; all open towards Marton.

1717. And good land?—Very good land I think, and the bush at the back is very good for another ten or fifteen miles.

1718. Do you know the native timber?—Yes.

1719. Did you see much of that?—I do not remember having seen much of that.

1720. And that is practically all the information you can give on that route?—Yes; all the information that would be worth having.

1721. Then, in regard to the Stratford route, how far down from the junction do you know the country?—I know that country from the junction down to about the spot where the 90th mile is marked on the map (No. 1.)—ninety miles from Stratford. That is all good land.

1722. That is practically where the line leaves the Mokau, is it not?—Yes.

1723. You have described it as all good country down to the junction: what is your opinion about the country between the junction and where you left it?—I call it good country; but it is of a different nature to that farther north on the line.

1724. Is it broken?—It is more broken than the Waipa, but the soil is very much better.

1725. What formation is it?—Limestone.

1726. What proportion of that do you consider is fit for agriculture?—For agriculture—not with big reaping machines—about 80 per cent. of it.

1727. And the rest?—The rest would be swamps and cliffs, and places too steep for ploughing.

1728. Does that description hold good for the whole strip right across between the two lines?—Yes.

1729. If that is the case, in your opinion, supposing it is a question of these two routes, will either of these lines, as far as you know the country, open it up as well as the other?—Certainly.

1730. Do you know anything more of the country, from your own personal observation, in regard to the Stratford route, ninety miles from Stratford?—No; I only know a short length at the Stratford end. I have not been between the 90th mile and about four or five miles from the Stratford end. I may mention that I went inland from the coast to a point on the line about sixty miles from Stratford, across from the mouth of the Tongaparatu.

1731. What is the nature of the country round about there?—That is very broken. I would not like you, of course, to fix me positively to the sixty miles from Stratford; it was about there.

1732. But round about where you struck the proposed route?—Yes; that is very broken country. It is the Tangarakau country, about which the Committee has no doubt heard a great deal.

1733. What proportion of that would be fit for agriculture?—Not more than 10 per cent.

1734. And what is the balance of it?—The balance comprises steep woody ridges, which when cleared would perhaps carry sheep, and many of the ravines would grow fruit, and so forth; but New Zealand at the present day would not benefit by opening that part of the country.

1735. Taking the average width of ravines, what would be a fair width at the bottom?—From almost nothing up to three-quarters of a mile, or perhaps a mile in some places; the larger the streams the larger the flats.

1736. What is the timber, mostly, on the ridges?—On the highest ridges there are birch, rimu,

matai (though not very much matai), a good deal of kahikatea, and a great deal of maire on the flats and lower hills.

1737. Are the maire trees of any size?—The largest are about 2ft. 6in. in diameter.

1738. And of what height—About 15ft. or 20ft. would be a good barrel; some would run up higher.

1739. Now, do you know the coast-line pretty well?—Yes.

1740. What sort of country does that run through?—From the junction—which is about the 100th mile on the Stratford line—it runs into the valley of the Awakino; and the country is good for about ten miles from the junction—a good broad valley, of open and bush country in about equal proportions, and the soil appears to be very good. The width of the valleys is from a quarter of a mile to one mile and a half. Below this point the valley narrows in, and is very little better than a ravine for four or five miles.

1741. Then along the coast?—Then it emerges to the coast, and along the coast the level land is very narrow, and intersected by deep gullies.

1742. Is there any large proportion of land that is fit for settlement, and could be utilized by settlers to the eastward of that line?—No; it is a rough country.

1743. You have crossed from the coast-line to the Stratford line in two or three places?—No; only in one place.

1744. All across that distance, what is the nature of the land?—It is all broken. The 10 per cent. that I said I thought was agricultural would apply to all that triangular piece beginning at the White Cliffs and running up to the junction of the two lines—in other words, the land across from the White Cliffs to, say, fifty miles on the Stratford line, as marked on the map, and northwards, to the junction of the coast-line, is all more or less broken, excepting what I have described in the Awakino Valley and the Mokau Valley.

1745. And of the whole of that block you think 10 per cent. would be all that is fit for agricultural land at the outside?—For ploughable, agricultural land.

1746. Is that wooded—covered with bush?—Yes.

1747. It is not ploughable, then, till it is stripped of bush?—It is light bush—at any rate, not very heavy.

1748. In your travels across that land, have you come across any minerals?—No.

1749. No coal?—I have not seen any coal myself, but I know there is some in that country.

1750. *Mr. W. White.*] What is the size of the timber along the line that you speak of?—It is of all sizes, up to 5ft. or 6ft. in diameter.

1751. Good marketable timber?—Some is; but it is not at all a good timber bush that the line goes through.

1752. And it would not pay to work by saw-milling?—Not as a rule. There are places where saw-mills would pay, but it would not develop a very great timber industry.

1753. And, in speaking of the agricultural land, you imply all through that the timber would require to be removed first before it would be available as agricultural land?—It would require felling and burning.

1754. *Mr. Fergus.*] You know the country pretty well between Hawera and New Plymouth?—Yes.

1755. Is the country from Stratford inwards for that distance of sixty miles, or any portion of it, as good as the land between New Plymouth and Hawera—that is, where the line goes through?—I have only been four or five miles from the Stratford end, and that is as good.

1756. But, at the 60th mile, is that good?—No; that is very broken.

1757. Well, downwards from Te Awamutu to the junction of the coastal and Stratford lines—you know all that country?—Yes; I do.

1758. Would you say that was as good as the land between Hawera and New Plymouth?—No.

1759. Even on the coast-line?—Even on any of the lines.

1760. Is it bushed?—No; it is open.

1761. And it is not so good as the land between New Plymouth and Hawera?—It is not as good as the land at the New Plymouth end.

1762. Take it all through?—If you take the average it is not nearly so good.

1763. Approximately, what area of land do you think the Stratford line would open up: what is the acreage of the agricultural land that would be opened up from Te Awamutu down as far as the King country extends, say?—I do not know the line down to the boundary of the King country.

1764. You only know it as far as where?—The Mokau.

1765. Then, what is the approximate acreage, from Te Awamutu down to the Mokau that would be fit for agricultural land?—Do you mean the percentage?

1766. I mean the acreage you could give?—I would like, before answering that question, to know how far you mean on each side of the line.

1767. Practically, what I want to know is this: what quantity of land would be benefited by the railway?

The Chairman: We have had it described to us that there is a range of hills which come between the proposed route of railway and the coast; and perhaps Mr. Fergus would limit the witness up to that.

Mr. Fergus: That is the limit.

1768. *The Chairman.*] Then, say within fourteen or fifteen miles of the line?—I think it would open up a tract of country equal to forty miles by fifteen, which is six hundred square miles.

1769. *Mr. Fergus.*] Do I understand you to mean that all that country is agricultural?—No.

1770. That is the point. What proportion is agricultural?—I should say that half of that is agricultural. It would be equal to an area of three hundred square miles.

1771. Then, you do not know anything of the country from the Mokau down to Stratford except a little bit in the middle which you crossed to from the coast?—Exactly.

1772. Do you think it would pay to establish saw-mills anywhere along this proposed line of railway for the timber?—No; I do not think it would. I should not like to venture to put any capital into such an undertaking.

1773. Why would it not pay?—The timber is too sparse; it is not dense enough. There are plenty of trees there, it is true; but there is a very small percentage that would be useful for sawing. You could not compete with places where there are good bushes.

1774. What is the principal kind of timber?—Tawa, which is not used for sawing.

1775. There is no great quantity, I suppose, of either black pine or totara?—No.

1776. And you saw no maire?—I saw a lot of maire.

1777. Is it in any quantity here?—Yes, there is a very considerable quantity on the rough country.

1778. Scattered?—Not very much scattered. It is scattered, however, in the sense that it is in patches. In one valley I walked through two or three miles of bush, the trees in which were nearly all maire.

1779. It is reported that there is gold to be got in this country: have you seen any that was got there?—No.

1780. Have you come across any one who has seen the gold?—Yes. Perhaps I ought to have said I have seen gold, but I do not believe it was got there. I saw a man who said he had got it there.

1781. Are you acquainted with mining?—A little. I was digging in Otago in the early days.

1782. And you know auriferous country when you see it?—Yes.

1783. And you say, from your own knowledge, that it is not an auriferous country?—I should say it is not, decidedly; that is, the part I have been speaking of.

1784. The country is principally limestone formation, I believe?—It is limestone.

1785. And papa rock?—There is no papa rock in the country that I have been talking about; it is sandstone; it has not got that slipperiness that papa rock has.

1786. *Mr. Montgomery.*] I do not understand you quite clearly in reference to the 90 miles marked on the map?—I say I know the country between the 90 miles marked on the map (No. 1) and Te Awamutu; that is, part of the red line on this map.

1787. You do not know south of the 90 miles?—No, not on that line; but I know the country generally.

1788. When you said 80 per cent. of it was fit for agriculture, do you mean land that can be ploughed?—Yes.

1789. And is there 80 per cent. of that land that is fit for the plough?—Fifty per cent. I think I said.

1790. I am speaking with regard to the 90 miles, as marked on the map, northwards to Te Awamutu?—There is 80 per cent. of that.

1791. By agricultural land, do you mean arable land?—It is ploughable land.

1792. Could the plough be put into it now?—The timber has never been cut off. It is raw land.

1793. And before you could plough it, you would require to clear and stump it?—Some people would do that; but others chop the trees down, and nature clears it for them. They sow it in grass, and in the course of a few years the stumps are sufficiently rotten to be pulled out, or a spark catches them, and they are burned. In the meantime, the owner makes a living in milk and butter out of the grass.

1794. But before you could plough it you would have to pull the stumps out?—You cannot plough it before the stumps are out; that, of course, is self-evident.

1795. Is the timber thick on the forest land that requires to be cleared before laying down in grass?—Yes.

1796. What would be the cost of felling and burning?—Felling and burning is worth from £1 17s. 6d. to £2 10s. per acre, according to the class of bush. It is very seldom as high as £2 10s. From £2 to £2 5s. is a fair thing; and grass and sowing would cost about 10s.

1797. And the other part that is open—the fern land: how much of that is fern that is not bush from the 90-mile mark to Te Awamutu?—That is all open land.

1798. How much of it is fern land, and how much forest?—There is no forest land there.

1799. No bush land?—No.

1800. Between the 90-mile mark and Te Awamutu there is no bush or forest land?—No.

1801. Along the line?—There are some clumps of white-pine trees down in the valleys, but there is no extent of country that I should call forest land.

1802. But bush land?—Nor bush land.

1803. At the 60-mile mark on the Stratford line you say it is very broken: did you go up and down the line at that broken part, or just cross it?—I went there with the intention of exploring the country for locating a line of railway, and I was occupied three weeks from the time I left the coast to the time I came out again at the coast. I walked nearly to the Ohura River. If this map (No. 1) is correct, I was just about the 60-mile mark.

1804. Did you go between the 60-mile mark and the 70-mile mark?—No. I was over the land between the 50 and 60.

1805. What is the nature of that part?—That is the broken country I have already described. It is called the Tangarakau country.

1806. *Mr. Larnach.*] For what length of time have you been acquainted with the nature of the country of which you have spoken?—I have been living in the colony, about New Plymouth, ever since I was an infant, for about forty years.

1807. And you say that for thirty to forty miles northward of Marton is very good country?—Yes,

1808. What distance east and west would you say was good country?—That I could not say. When I was there, which was in 1858, I walked along the Native track, and you see very little on each side; and I have never been there since.

1809. You spoke of swamps being there: are these large?—The swamps I referred to were at the Te Awamutu end.

1810. Are those large?—There is a good-size one there.

1811. Would they be expensive or difficult to drain?—That one would; but the majority of them would be easy.

1812. Are there many swamps in that district?—No; in fact, there is only one patch of country of about nine or ten thousand acres that is really swampy.

1813. And that patch would not be difficult to drain?—I think the greater portion of it would be easy to drain; but there is one swamp that the river floods, and that would be difficult to drain.

1814. What is the size of that one?—I have only seen it from a distance, and I should guess it to be from one thousand to fifteen hundred acres.

1815. *Mr. Fergus.*] I would like you to be very particular in returning to a question put by Mr. Montgomery, and be very certain about it. You say from Te Awamutu down to the 90-mile mark the land is open, and there is no timber on it, and you would call it bush land?—I certainly should not call it bush land. There is a place called Pukearuhe where there is the only bush worth mentioning.

1816. From Te Awamutu, say, for thirteen miles southward, is that all open country?—Certainly—most decidedly; there is not a tree there.

Mr. F. Hicks, Butcher, Auckland, examined.

1817. *The Chairman.*] It has been represented to the Committee that you have travelled over a good deal of the country southward of Te Awamutu, and between that and the country traversed by the proposed trunk railway coming down to Marton. Would you state what part of the country you have travelled over?—Principally my travelling has been between Cambridge and Napier.

1818. What part have you travelled over on the western side?—I made short excursions inland, though never very far; but during twelve years' experience I have come across people who are familiar with the country.

1819. Do I understand that you have not been to the westward of Lake Taupo at all?—I have come from Lake Taupo past Tongariro and Murimotu.

1820. How far south of Murimotu have you come?—I just took the track to Napier back again.

1821. Do you know anything of the Stratford line?—No.

1822. How would you describe the land between Cambridge and the Waikato crossing?—It is pumice country. This does not, of course, include the country around Cambridge.

1823. All pumice country?—All pumice country.

1824. Does it come as far the Mohaka?—Yes; that is practically the boundary of it, but it even extends beyond that.

1825. Coming across from Taupo to Tongariro, what country is that?—It is of a similar character.

1826. Still pumice?—Yes.

1827. And is there any change as you come southward down to Murimotu?—The Murimotu itself I consider very inferior; the plain is very inferior.

1828. Could you tell how far to the westward you came of the Murimotu Block?—I took the ordinary track, and I came partly down the Wangaehu River.

1829. You crossed the pumice country at Tongariro?—Yes.

1830. And then struck the Wangaehu River?—Yes; and then followed the Napier track along by Patea.

1831. Did you go no farther south than that?—Neither south nor west.

1832. Then, practically, you only just touched what we know as the Murimotu country?—I practically saw the whole of the Murimotu Plain.

1833. *Mr. W. White.*] You know very little of the interior line at all?—The line just skirts where I was at Murimotu.

1834. Only at Murimotu?—Yes.

1835. You do not know anything about the Mokau line?—Nothing.

1836. Nor of the Stratford line?—No; I have been, however, on the West Coast country.

1837. What do you mean by the West Coast country?—I know from Wanganui to Waitara.

1838. That line is constructed now?—Yes, I am aware of that.

1839. Then, you only know the Marton line in a little bit of the Murimotu country?—Yes.

1840. Your principal knowledge is of the line from Alexandra to Napier?—Yes.

1841. Who suggested you as a witness, Mr. Hicks?—Mr. Thomson, I believe; I am not sure.

1842. It seems you do not know anything of the country at all?—My knowledge of the country generally is simply this: my impression is, that for 100 miles the country along the central route is no use at all for settlement; it is absolutely useless.

1843. *Mr. Montgomery.*] Did you say you had been over the Murimotu Block?—I have ridden through it.

1844. What is the extent of that block?—I could only give a rough estimate. The plain that I rode through would be about fifty to sixty thousand acres.

1845. You say the land is not good?—Certainly it is not; it is very inferior.

1846. Was it carrying stock?—I saw no stock when I was riding through it. The stock had been taken off some considerable time. There was no feed on it.

1847. What stock were they?—Sheep, principally.

1848. Your business as a butcher would lead you to look out for stock?—Not necessarily; I only looked at the country.

1849. What did you think of the Murimotu land as compared with that north of Lake Taupo : did you see the land to the north of Lake Taupo?—I should say it is very similar indeed to that.

1850. Not better land than that?—The Patea end would be better, but going down the Wangaehu River it certainly would not be a bit superior.

1851. *Mr. Larnach.*] What would be your estimate of the extent of land fitted for settlement in the country you have been speaking of?—You mean the east of the line?

1852. Exactly?—I do not think there is an acre until you reach the Rangitikei.

1853. That is to the eastward of the central line?—Yes.

1854. That is, on the country you are acquainted with?—Yes.

1855. But there is a large quantity of stock now on the Murimotu?—There is supposed to be ; but they run over the limestone ranges.

1856. Do you know the number of cattle running up there?—I have heard it estimated at four or five thousand on Haselden's run, but that would be practically in the bush.

1857. Have you seen any of the cattle there?—No.

1858. Do you know how many sheep there were on the Murimotu Block at one time?—It is estimated to carry 40,000 ; but when I saw it there was scarcely a sheep on it, nor was there any feed. I mean, of course, Moorhouse's run which is estimated or is said to be carrying 40,000 sheep. The plain is only part of it which I have said had no stock on it when I went through it, except, apparently, a few stray sheep. The run, independent of the plain, is of immense size.

1859. Why had the sheep decreased : had they died?—I do not know.

1860. Have you no idea how many sheep there are now?—I am told about forty thousand.

1861. Now?—Yes.

1862. Have you seen the quality of the sheep?—I saw a few ; they were merino sheep ; nothing but merinos in that country.

1863. Where they in good condition?—Fairish.

1864. In what part of the year was this?—In the spring.

1865. *The Chairman.*] I would like you to be quite positive as to where you struck this line. You say when you came south from Lake Taupo you struck the Wangaehu River?—Yes

1866. Then, you cut only the upper end of the Murimotu Plain?—Yes ; I followed Wangaehu down about eight miles, which is not far from the nearest hills on the western side of the Murimotu Plain. The distance would not be more than two miles.

1867. *Mr. W. White.*] What kind of land does the Napier line pass through?—You mean from Murimotu to Napier?

1868. Yes?—It is low-lying hills.

1869. Would you call it good land?—Good merino sheep land, but not good for settlement.

1870. Not any of it?—Not any of it.

1871. Is it bush or open land?—Open land, nearly all.

Mr. G. L. R. SCOTT, Surveyor, Palmerston North, examined.

1872. *The Chairman.*] Have you had any practice as a railway engineer, or only as a surveyor?—Only as a surveyor.

1873. Will you tell the Committee what part of the country you have travelled over contiguous to the proposed routes for the North Island Trunk Railway?—I surveyed a block of about twenty-five or thirty miles inland from Stratford.

1874. Have you travelled over any of the country between Te Awamutu and Stratford?—From Stratford about thirty miles inland, and along the track.

1875. Which track?—There is a horse-track over about eighteen or nineteen miles.

1876. From Stratford?—Yes.

1877. And you have only travelled about thirty miles from Stratford inland?—Yes.

1878. Do you know anything of the Marton line?—I was upon the Otairi Block three years ago.

1879. How far is that?—About twenty-five miles from Marton, but I do not know very much of that country.

1880. Then, the Committee are to understand that the only portion of this country you know is the piece within about thirty miles from Stratford?—Yes ; there is a 30,000-acre block there that I surveyed.

1881. Do you know the confiscation boundary, coming away from Stratford?—The boundary of the block that I surveyed was on the confiscated land. The confiscated line formed the north-west boundary of the block.

1882. Do you know where the projected line of railway is?—Yes.

1883. Was that marked out when you were there?—Mr. Carkeek went up about a couple of weeks before I started, and I followed his tracks up.

1884. Could you tell from this map (No. 1), approximately, how far along that line your survey commenced?—At about the 25th mile.

1885. From Stratford?—Yes.

1886. And how far up the line did it extend?—In a direct line through the block it would be five miles in width, but it would be more by the railway, perhaps a mile more.

1887. How far on either side of the line would that be?—On the north-west side it would be about a couple of miles.

1888. That is, between the railway and the confiscated boundary?—Yes.

1889. And what on the east side?—On the east side it would be about seven miles.

1890. What is the nature of that land?—About half on the north-west side is second-class land.

1891. Second class compared with what?—It is broken country.

1892. What proportion of that to the north-west of the railway track is fit for agriculture?—None, I should say.

1893. Is there any of it that would plough?—No ; none of it.

1894. Is it timbered land?—Yes.

1895. What sort?—Pines, and birch on the hills.

1896. Are there any valleys there?—Not of any extent. There are some gullies running up, but they are very narrow.

1897. Now, passing along that track, or anywhere during your surveys, did you see any stock there?—No.

1898. What is the description of the land to the eastward of the line?—There is a very fair valley going up between three and four miles eastward of the line, and in that there is an old Maori fern-clearing of about four hundred acres; and the rest of the land is very broken—very rough, especially to the south-east.

1899. Is the Committee to understand that out of the 30,000 acres the only piece of clear land is this one Maori clearing?—Yes; that is all.

1900. As you have surveyed that land, may I ask whether, if you wanted to buy a block of land either to farm or for some one else, you could pick out a block of 500 acres that would yield a man a living?—In that one particular spot I have referred to a man could get a living.

1901. But excluding that?—Hardly so; not 500 acres.

1902. There is not a block of 500 acres on that which would give a man a living?—No.

1903. *Mr. Larnach.*] For whom did you survey the 30,000-acre block?—For the Government.

1904. *Mr. Fergus.*] Is it one of Mr. Bayly's blocks?—I believe it is.

WEDNESDAY, 1ST OCTOBER, 1884.

Mr. A. KOCH, Draughtsman, Public Works Department, examined.

1905. *The Chairman.*] I understand you have travelled over some of the middle part of this island with Dr. Hochstetter some years ago?—Yes.

1906. Would you tell the Committee all the information you are prepared to give them about this country. In the first place, perhaps, you would tell them what part of the country you have been over?—I have a little sketch in my pocket which I will show you. It shows the track we went over. I really only know about seventy-five miles of the country south of Te Awamutu.

1907. *Mr. Larnach.*] On which line?—From Te Awamutu south; part of it Mr. Holmes's route and part of it Mr. Rochfort's.

1908. *The Chairman.*] And this is the track (on map produced) over which you travelled?—Yes; a portion of that track is exactly the same as the western route.

1909. *Mr. Larnach.*] How many years ago was this?—Twenty-five years ago; it was about 1858 or 1859.

1910. Have you a perfect recollection of the countries?—I have a perfect recollection; and not only that, but I have also a lot of notes of my own, made at the time, which I have studied since receiving the summons to attend this Committee.

1911. *The Chairman.*] Taking that seventy-five miles over which you travelled south of Te Awamutu—that would be practically to Lake Taupo—is that country all open and fit for settlement?—The first fifteen or sixteen miles from Te Awamutu south is really fine country, after which it gets rough and broken, and pumice-stone country commences.

1912. Did you see anything in the way of minerals when you were travelling with Dr. Hochstetter?—We saw some coal at Tuhua, and a good deal of limestone beds.

1913. Did you see any trace of gold?—The Natives told us there was some quartz, but we saw no indication of it.

1914. Generally, what do you wish to convey to the Committee as to that part of the country you travelled: is it fit for settlement—fit for agricultural purposes—or what sort of country do you consider it?—I consider that all the way down as far as there are very fine flats for settlement. The range crosses the watershed of the Mokau.

1915. Do I understand you to say that down to where it crosses the watershed of the Mokau and Wanganui the land is all more or less fit for settlement, and is good land?—I would not call it very good land compared to some land that I have seen in New Zealand. It is fit for settlement, but I do not think the settlers would make much money out of it. It is not what I would consider first-class land.

1916. What sort of land do you call that about Te Kuiti?—It is fair alluvial soil; it is not, however, what I would call very good land.

Mr. KNORPP, Inspecting Engineer, further examined.

1917. *The Chairman.*] The Committee wish some further evidence in connection with the estimates of the Stratford and Marton lines. I hold in my hand the estimates submitted by Mr. Rochfort in connection with the Marton line, and I believe you have been over those estimates. Would you tell us what the prices are on which they have been run out?—I have only just had a look at them; I have not studied them.

1918. I understand you have made an estimate yourself?—I have made an estimate myself.

1919. Well, do yours and Mr. Rochfort's practically agree in regard to prices?—He has taken earthwork at 1s. 6d. per yard right through.

1920. To bring up the £3,000 for the permanent-way, what price do you take the ballast at?—We have taken the ballast at £200 per mile—that is, about 2s. 3d. per yard.

1921. *Mr. Larnach.*] That is, for laying the ballast about twelve feet wide?—The usual width of railway. And we have taken the platelaying at £100 per mile—that is, a little less than 1s. 6d.

1922. *The Chairman.*] What have you taken for the average price for sleepers?—£350 per mile; 2,020 to the mile, at 3s. 6d. each. The rails and fastenings we have taken at £750 per mile.

1923. At what rate per ton is that?—That is about ninety tons per mile, and about £8 5s. per ton. And the rolling-stock we have taken at £700 per mile.

1924. And stations?—Stations at £600, and £300 for contingencies, such as the carting of rails, materials, and so forth.

1925. You told us that you thought the estimate for Mr. Rochfort's line was a fair one?—Yes; I think it is. I would undertake to do the work for that if I had the chance.

1926. Would you undertake to do it for a good deal less?—No.

1927. Referring to Mr. Holmes's estimate: have you checked this at all?—I have just looked at the figures.

1928. I think you stated before that you had not been through the Stratford line?—I have only been through part of it. From Te Awamutu to Mokauti, that is open country; I have not been through the bush.

1929. I suppose you have had conversations with Mr. Holmes and other engineers who have been there?—Yes.

1930. And you would probably gather from them their idea of the nature of the country?—Yes.

1931. Mr. Holmes, who has been through that, has submitted this estimate; and, as you will see, he has estimated the cost of permanent-way and rolling-stock on that line at the same rate as he has on the other?—Yes.

1932. What the Committee wish to ascertain is this: seeing the description Mr. Rochfort and you yourself have given of part of the other line, are the prices in the two estimates now before us the same in regard to permanent-way and stations?—They appear to be the same. I have heard that the Stratford line passes through country where there is no ballast; and I think there ought to be something additional for ballast on that line; it would make a substantial difference. The country is reported to be mostly papa rock, and there is no stone or gravel to be found; so that it would have to be transported from either end. Then, it is possible that this being an inaccessible country there should be an allowance made for gaining access to it.

1933. In the estimate which Mr. Rochfort has sent in, and which we have here for comparison, it is estimated that roading will be required equal to the whole length of the line, to give access to the Marton line?—Yes.

1934. There is no such provision made in the estimates for the other line?—No; I believe not.

1935. And do you consider it ought to be made?—It would certainly affect the price of the work. If Mr. Rochfort has made a fair allowance (1s. 6d.) for the earthwork, and added to it the cost of the road, that would also lower the price of bringing the material for bridges and culverts and so on; but, if he has not added it to the other one, it should be done.

1936. Are you prepared to submit an estimate of the Stratford line for comparison with the Marton line, as to the total cost?—Yes.

1937. *Mr. Larnach.*] Can you say whether the Stratford line or the central line would require the greater number of viaducts and bridges?—No; I could not answer that question off-hand.

1938. But, if there should be an excess of viaducts and bridges on one line over the other, would that add greatly to the cost of that line?—It would depend very much on the kind of bridge, whether it is large or not, and whether the viaducts are high or not.

1939. *Mr. W. White.*] Do you take the price of timber for sleepers and bridges as the same on both lines?—I can only speak of the central line from knowledge.

1940. *The Chairman.*] The Committee want an estimate of the Stratford line, which they may be able to compare with that of the central line, as fairly as possible, with regard to the relative cost of the two lines. Will you have such an estimate prepared?—I will.

THURSDAY, 2ND OCTOBER, 1884.

Mr. HOLMES further examined.

1941. *The Chairman.*] The Committee want to get some further information from you in regard to this estimate of yours. It does not bear your name anywhere upon it. Is the Committee to understand that this is your own estimate of the cost of this line, or is it one that has been prepared in the department, availing themselves of the knowledge you have given them?—The formation is my own estimate, the permanent-way was prepared in the department, and the latter portion is Mr. Rochfort's estimate.

1942. Now, in regard to the permanent-way, it has been stated in evidence that the ballast on this line—the Stratford line—is very scarce; in fact, there is very little of it: have you informed the department—who, I presume, from what you say, are responsible for this estimate of the permanent-way—that the ballast is so difficult to be got at?—Yes; and they have doubled the price allowed for the ballast.

1943. I see, in one part of the estimate—the formation—you wind up, “including bridges, tunnels, culverts, and contractors' roads:” what have you allowed for contractors' roads?—I have not allowed any specific amount at all; but I consider that that estimate will provide the ordinary roads that contractors generally make to get to their works.

1944. But have you got an estimate of the length of roads that contractors would like?—A length equal to the section.

1945. You consider you have provided for a road the whole length of the line?—Yes; a rough contractors' road.

1946. What do you estimate the cost of that road per mile—a road sufficiently good to draw contractors' materials on?—About £400 per mile.

1947. And you added that £400 per mile to each of these estimates?—Yes.

1948. In working out the rate of “easy work” at £2,500 per mile, you have taken £400 off that for contractors' roads, leaving £2,100 per mile: what rate per cubic yard have you allowed for earthworks on that?—I did not go into details like that at all. I merely took the rate per mile on

comparing it with other contracts that I know have been completed I took a certain length of line, that I know of, through certain country, the price of which per mile I know, and I compared the country on this line with that, and put down about the same rates per mile.

1949. Bearing in mind the nature of the country, I would further ask you whether you still consider that the allowance you have made here is a fair one?—Yes, I do.

1950. *Mr. W. White.*] What price did you put on for the ballast?—The price allowed is 4s. 6d.

1951. At what price have you reckoned the timber?—I did not reckon any price; I did not go into details at all.

1952. Then, at what price was the timber taken in the contract you are referring to as a guide?—It varies so. I have known it as low as £1 5s. per 100 b.m., fixed in position, and I have known it as high as £2.

1953. Then, are we to take the average of that as being allowed on this estimate?—About £1 10s., I should say, would be about the average price.

1954. On this contract?—That depends on the class of timber that is used in the contract. I could not say exactly, because I have no details before me to price from.

1955. But you must have some information to go upon. I understood you have taken it from other contracts. Then, I wish to know at what price the timber was charged or allowed for in these other contracts?—About £1 10s. per hundred b.m.

1956. And you think the timber can be got for this railway at £1 10s. per hundred, fixed?—Yes, I think so, taking the average right through.

1957. That would include ironbark?—No; it would hardly include ironbark.

1958. Is there no ironbark used in these bridges?—I anticipate black birch being used in place of ironbark.

1959. What are you allowing for piling?—I have not gone into details like that at all. I can get you some prices on contracts from the department if you wish it. I cannot speak from memory on this point.

1960. Is there sufficient timber along this line for the purpose of bridges and so forth?—I think so.

1961. Totara or matai?—Matai and black birch; very little totara.

1962. Will the contractors' roads be more expensive on one line than the other, in consequence of the roughness of the country?—I could not say. I do not know anything about the central line.

1963. Then, the work, or rather what you call here "easy, moderate, heavy, and very heavy work," you have taken your estimate from contracts for similar country to the Stratford line?—Yes.

1964. And you think that the estimate is a reliable one, so far as you can make it?—Yes.

1965. I see there is an increase in the rate per mile on the permanent-way: what has that been put on to cover?—To cover ballast.

1966. Do you know what rates are reckoned for sleepers on this line?—3s. 6d. each.

1967. For what kind of sleeper: is it reckoned to be birch?—Birch and matai. That is the average price of sleepers, I believe.

1968. Do you think that £900 per chain for tunnelling will do the work?—Yes.

1969. *Mr. Fergus.*] I see there is nothing put in for bridges here. Can you tell us, approximately, what number of bridges there would be on the whole length of the line?—I could not do that.

1970. There is a good deal of bridging?—There would be a good many small bridges, but nothing long; nothing larger than 80ft. span.

1971. All timber bridges I suppose. What length of bridging would there be approximately? In asking this question my object is to see what would be the cost of keeping those bridges in repair?—I cannot say.

The Chairman: You will bear in mind, in answering that question, that you have intimated to the Committee that there is a considerable length of this country you have not been over at all.

1972. *Mr. Fergus.*] Still the witness has got the reports of his subordinates?—I think I mentioned, in my report of the line, the number of times we crossed the rivers.

1973. But you could not state the length of bridging approximately?—No.

1974. Do I understand that you have included bridges in your estimate?—Yes.

1975. You must have had some idea of what the bridging was?—It will be nothing above the average.

1976. What would the timber be principally that you propose to use?—Black birch.

1977. Is there any quantity of it along the line, so far as you saw?—Yes.

1978. Is it of sufficient lengths?—Yes.

1979. Do you prefer black birch to totara or matai for bridging-work?—I prefer totara in certain parts of the bridging. It depends where it is to be used in the bridge. I prefer black birch for strength and totara for lasting.

1980. For upper work you would prefer totara?—Yes; in certain places.

1981. Do you propose to have all black birch for this line?—I should use all black birch where we could get it easily.

1982. And you could get it more easily than totara, I think?—Yes, I think so.

1983. You know maire?—Yes.

1984. What is your opinion of that for bridging-work?—You cannot get it in sufficient length.

1985. *Mr. Larnach.*] On that line?—Anywhere in New Zealand.

1986. *Mr. Fergus.*] Do you think that maire can be worked up for bridging-work cheaply?—No.

1987. Why?—It is hard, and there is too little of it.

1988. It is too hard to be manipulated by a carpenter?—Yes.

1989. It is suitable for some portions of railway work though?—Yes.

1990. What is that?—For straining-blocks and scarf-pieces.

1991. And nothing else?—And joggles.
1992. Would it not make sleepers?—I should not prefer it for sleepers.
1993. Why?—It is too hard.
1994. What effect would putting in hard sleepers have on the line?—I do not think a man would be able to bore a hole to put a spoke in.
1995. Suppose you could bore holes?—It would do very well then.
1996. It would not shake the rolling-stock to pieces, I suppose?—Perhaps it would; I have never seen any used.
1997. What character of country is this tunnelling referred to for £900 per chain?—Papa-country.
1998. *Mr. Larnach.*] How far do you think the ballast would have to be conveyed in making the line?—I do not know.
1999. Would it have to be conveyed from either end, or could you get it anywhere in the middle of the line?—I think we could get some in the Tangarakau—about the 60th mile from Stratford.
2000. You say that, in your estimate, you have doubled the usual estimate for ballast?—Yes.
2001. On what principle have you doubled it?—On account of the apparent difficulty of getting it.
2002. Then, why not take three times the usual amount?—I do not think that would be a fair estimate.
2003. Are there any parts of the line that would cost a great deal more than double?—Yes; I dare say a few miles.
2004. Well, would it not make a very great difference if the ballast had to be conveyed fifty miles instead of ten?—Yes.
2005. If it would cost so much for ten miles, it would cost more than double for fifty miles, would it not?—Yes; I should say it would.
2006. So that your estimate is chiefly guesswork?—Yes; guided by experience.
2007. The whole of it?—Yes.
2008. If the radius of your curves was enlarged, would not that make a difference in the cost?—Yes; it would increase the cost of the work.
2009. Might it not double the cost of going round some of the hills if the radius was much enlarged?—Of course it would add greatly to the cost.
2010. Is it possible, or rather is it probable, that in many parts of the line the radius of the curves would have to be enlarged?—I do not exactly understand the question.
2011. In taking levels and finishing the survey, is it probable that the radius of many of the curves would be extended?—No; I do not think so.
2012. *Mr. W. White.*] In reply to Mr. Fergus, I understood you to say that you preferred totara for the superstructure of the bridges?—You would have to go into the whole question of the construction of bridges to discuss such points.
2013. But you say that for the superstructure you prefer totara?—I prefer totara, except for the running beams and stringers.
2014. But are not those part of the superstructure?—Yes.
2015. *The Chairman.*] Which timber would you prefer for running beams and joists?—Black birch.
2016. And what do you prefer for the rest of the work?—Totara.
2017. *Mr. W. White.*] In reference to the maire: do you think the maire would last any longer than the black birch?—I have not seen maire employed much in the ground at all.
2018. Supposing you can get maire from 2ft. to 5ft. through, and from 30ft. to 40ft. long, do you think it would be preferable to use maire instead of black birch?—I must say that I have never seen or heard of maire as large as you mention; and I know that when maire timber is dry you cannot bore an auger-hole through it. I have tried that myself.
2019. Then, you would lead the Committee to believe that maire is useless for bridging-work and sleepers?—Yes; except in certain places.
- 2019A. But for braces and piles and sleepers?—Yes; it is useless.

Mr. J. ROCHFORD, further examined.

2020. *The Chairman.*] In reference to this estimate of yours, Mr. Rochford, have you seen any reason since you gave evidence here before, and put this in, to make any alterations in it, or are you still satisfied it is fairly correct?—I think it is a fairly-correct estimate.
2021. Can you state at what price you have taken the ballast on the rate of £,3000 per mile which you have allowed for the permanent-way and stations?—2s.
2022. And for sleepers?—I took the general price of £700 for platelaying.
2023. Does that include ballast as well?—Yes.
2024. *Mr. W. White.*] What price have you allowed for bridge-timber?—About £2 per cwt., taking it all through; that would be fixed.
2025. What kind of timber are you providing for?—The timber that would occur along the line.
2026. Is that totara or matai?—Totara, matai, black birch, and maire.
2027. Do you propose using any maire in any portion of the bridge?—Yes; I think it would be often advisable to use it for stringers. There are some very fine spars of it.
2028. Do you think maire is preferable to other kinds of timber for that purpose?—I think it would be preferable in an economical point of view when it is most handy to be got, and I believe it is a very good bridge-timber.
2029. Would it be too hard to work?—No; I think not. It has been used a good deal.

2030. And, taking into consideration that the timber is all along the line where you require it, do you think 40s. is a fair price?—I do.

2031. Could it be done for 30s.?—I think 40s. would be a fairer price, because, of course, it is not as if it was beside the market; you have to provide for the men at a distance from civilization.

2032. Is the timber close to the bridges?—It is close to the bridges, and could be got within a very short distance almost anywhere. Of course, at the Te Awamutu end the timber is farther off, but the bridges are very few and small there; there is hardly anything in the way of bridging.

2033. And you think that black maire is preferable to birch in the way of stringers?—I think, perhaps, the birch is the better timber, because it is rather lighter.

2034. But for strength and durability?—I think I should give the preference to birch for durability. I do not know about strength.

2035. Is the ballast anywhere handy along the line?—Yes; there are a great many places where it could be got within reasonable distance all through.

2036. You provide for the length of roads the same length as the railway?—I do.

2037. Would you require that length?—I think it is quite possible something like that length would be required, but the roads would almost entirely be in open country where they would be wanted; of course leading to the places where stores and contractors' plant, and so on, could be got.

2038. Do you know what the average cost of the line would be from Marton to New Plymouth?—I do not know.

2039. *Mr. Fergus.* You said, Mr. Rochfort, that maire would do for bridging-work. Did you ever see a bridge in which there was any maire, except for straining-blocks or joggles; or did you, in fact, ever see it used anywhere?—No, I have not seen it; but I have heard in the department that it has been used.

2040. Could you say where it has been used except as joggles and straining-blocks?—No, I could not. I think this line is an exception, as it goes through a country where there is a great deal of it.

2041. Did you ever try to manipulate a piece of dry maire?—Yes; but the green maire is very different.

2042. Afterwards it gets very hard?—Very hard indeed.

2043. So that an axe would not go into it?—Exactly.

2044. Do you mean to say you are going to take black maire for the bridging on this line?—Only in places where it was more accessible.

2045. You say that you reckon the ballast at 2s. per yard: is that so?—Yes.

2046. Do you know of any piece of line in New Zealand that has been ballasted for 2s. per yard?—Yes, I do.

2047. Where?—The Point line, from Washback to Opawa.

2048. There is gravel all the way along there?—I suppose, as a rule, it is pretty nearly everywhere in New Zealand.

2049. Not by any means?—In a great many parts.

2050. There is no ballast on the line from Stratford, and I know there is none from Patea right down to Wanganui. What is the average length that you would leave to bring the ballast on this line?—I do not think the greatest lead would exceed two miles.

2051. And you think you could get it done for 2s.?—On looking over my papers I find the cost allowed for ballast was 2s. 3d. and a fraction per cubic yard; completion, after grading, was calculated at £3,000 per mile, made up thus:—

Permanent-way, 56lb. rails and fastenings	£750 per mile.
Sleepers	350 "
Platelaying	100 "
Ballasting	200 "
Rolling-stock	700 "
Stations, assuming one wayside station (including sidings and buildings) to every five miles	600 "
Contingencies to provide for varying price of iron, &c.	300 "
Total	£3,000 "

2052. For an average lead of two miles?—I think so, after the line is laid. I do not say there would be an average lead of two miles; what I mean is, that it could be got almost always within two miles.

2053. *Mr. Montgomery.* Is there any ballast to the westward of Ruapehu and Tongariro, and going north?—There is ballast in nearly every stream.

2054. What kind of ballast is it?—Shingle and small gravel, also good-sized gravel, mixed.

2055. And how are you off for ballast to the north of the dividing range between that and Te Awamutu?—A good deal of ballast shows in the creeks and in the places where the terraces show a cliff.

2056. Gravel?—Gravel and small boulders.

2057. Then, south of Ruapehu, how are you for ballast down to Marton?—There is ballast all down the Hautapu, and plenty of ballast in the Wangaehu.

2058. All gravel?—Yes.

2059. And farther down?—There is ballast in several creeks that come through the line. In fact, I do not think there is any place more than four miles distant where you cannot see ballast all along the line, and I believe when the ground is opened up a great deal more will be found; indeed I am sure of it, because it can be seen in the cliffs, even to the Rangitikei River.

2060. *Mr. Larnach.* Do I understand you to say you had seen black-maire wood used for bridges?—No; I said I had heard of its being used for stringers.

2061. Supposing there was no ballast along the central line, and it had to be conveyed from either end, what estimate would you then have to make for ballasting the line?—That is a very difficult question.

2062. My reason for asking it is to make a comparison with the Stratford line. Supposing you had ballast in the middle and ballast at both ends of the line, would that make a great difference in your estimate?—It would.

2063. Would it more than double it?—I should think it would; it would double the ballast and add an enormous amount to the cost of the work.

2064. Supposing the Stratford line, of which you know the length, has no ballast upon it, what would be a fair estimate for ballasting the line?—I think it would cost at least 10s. or 12s. per yard, supposing the only points at which ballast could be got were one hundred miles apart—that was, as I understood, the question.

2065. Is that an average all through?—Yes.

2066. *Mr. Montgomery.*] That is, if there was ballast to be got at each end, and none to be got anywhere else, the average would be 10s?—Yes; the greatest length of carriage would be fifty miles.

2067. The ballast would be taken along the line if the line were made?—Yes; the rails would be laid down first and then lifted through the ballast.

2068. Then the ballast would not be taken in carts?—That would be impossible.

2069. *The Chairman.*] You put it down at 10s. per cubic yard on the presumption that there is an average of twenty-five miles to carry?—Yes.

2070. *Mr. W. White.*] Would much stripping be required to get the ballast on the central line?—There would be in some places, of course, a great deal. On the Murimotu Plains you could get a great quantity very easily.

2071. Taking the line right through, do you think it would require much stripping on the average, taking into consideration also the river-beds, the Murimotu Plains, and so forth?—I should think there would probably be an average of 3ft.

2072. After you have taken the stripping off 3ft. what depth of ballast would there be remaining?—That I could hardly say. In some places it would be a good deal.

2073. Would there be an average of 10ft.?—I should think there would be, fully.

2074. In reckoning the 2s. per yard, I presume you are allowing the contractor to run over the line with his ballast?—Yes; that is the only way to do it, in a case of this sort.

MEMORANDUM by Mr. J. ROCHFORD.

SIR,—

Wellington, 2nd October, 1884.

I ask permission to make the following correction in my evidence to-day as to the price of ballast on which my estimate was founded. The actual price was 2s. 3d. and a small fraction. The £3,000 adopted for completion after grading was made up as follows:—

Permanent-way, 56lb. rails and fastenings	...	...	£750 per mile
Sleepers	...	...	350 "
Platelaying	...	...	100 "
Ballasting	...	...	200 "
Rolling-stock	...	...	700 "
Stations (assuming one to every five miles), including buildings and sidings, complete	...	...	600 "
Contingencies to provide for varying price of iron	...	...	300 "
Total	...	...	£3,000 "

Since I have examined a number of contract prices for ballasting actually done, I find the prices vary from 1s. 5d. to 3s. 6d. per yard, the latter being for a lead of eighteen miles.

I have, &c.,

JOHN ROCHFORD.

The Chairman, Main Trunk Railway Committee, North Island.

FRIDAY, 3RD OCTOBER, 1884.

Mr. R. J. GILL, Under-Secretary, Native Land Purchase Department, further examined.

2075. *The Chairman.*] Are the schedules contained in your former evidence correct schedules of all the blocks shown on this map?—Yes; but there is more land shown on the map as under purchase than in the schedule.

2076. *Mr. Larnach.*] The schedules are more defined?—Yes. The blocks are shown in a printed return laid before Parliament last session (C.—2, p. 18).

2077. Do any other lands appear in that return besides those that appear in the schedule?—Yes.

2078. It would be useful if the extent of land not mentioned in the schedule, and contiguous to each line, were given. Could you give the extent of such lands?—On the central line there are nearly two hundred thousand acres not mentioned in the schedule as under purchase. I may explain an instance which may make it simple. Originally the Government negotiated for three hundred thousand acres of the Murimotu Block. Now that the lands are surveyed, a portion of it has passed under a lease by deed into the hands of Government. This portion is about one hundred and twenty-nine thousand acres. Mr. Bryce, having completed this, it was his intention to abandon further dealings with the balance.

2079. Are these two hundred thousand acres Native land or Crown land?—Native land.

2080. Can you tell us what amount of land is near the Stratford line?—No other land under negotiation besides that mentioned in the schedule.

2081. *Mr. Montgomery.*] What is the condition of the three hundred thousand acres that is marked to the west of Ruapehu?—The land as yet has not been surveyed; the title has not been investigated by the Native Land Court.

2082. Have the Government negotiated for it?—The Government proclamation stands over it at present, but Mr. Bryce intended to abandon the purchase.

2083. *The Chairman.*] This effectually deters the Europeans from coming there?—Yes.

2084. Did we pay any money on this at all?—Yes.

2085. Is the amount we have paid scheduled?—The money that has been paid is shown in the Return C.

2086. Is the price per acre that was to be paid shown?—No; it was to have been a lease, not a purchase, for a term of twenty-one years from the passing through the Court.

2087. For how long was this Murimotu Block leased?—One hundred and twenty-nine thousand acres were leased for twenty-one years.

2088. How many years of that time have expired?—About eighteen months.

2089. And do we then re-lease to the present occupiers?—That is the intention, and the purport of the Murimotu-Rangipo Validation Act. The agreement was entered into by Sir Donald McLean and Mr. Sefton Moorhouse. The Government have the right to retain 25 per cent. of the land for special purposes.

2090. *The Chairman.*] Had we any difficulty in obtaining the land?—None at all.

2091. *Mr. Montgomery.*] Does the block to the south-west of Ruapehu and Rangitaua contain 122,000 acres?—Yes.

2092. Does the schedule show the date on which we acquired this land?—No.

2093. Where are these 220,000 acres near the central line that are under treaty?—On the lower part of the line there are 59,000 acres and 50,000 acres at Otairi; a little to the left, Maungakaretu, 63,000; and, above that, Okehu, Parikawau, Te Wharau, and Papahaua. These are the blocks which make up the 220,000 acres.

2094. Is the price that we are to pay marked on the schedule?—The payments to date are marked, not the cost per acre. The average cost of these lands is from 7s. 6d. to 9s. per acre.

2095. *Mr. Larnach.*] That is the price to be paid to the Natives by Government?—Yes.

2096. They must be pretty fair blocks, then, as the price is high?—Yes; they are.

2097. *Mr. Montgomery.*] Have we any description of the quality of the country from surveyors?—I think so. It is one of the regulations of the Survey Department that surveyors, on completing the survey of a block of land, should report on the quality of the land to the department.

2098. Have we a description of the quality of land in the block of 300,000 acres near Owango? No; that land is not yet surveyed.

2099. It has not been examined?—I think not; if it has, only in a very cursory way.

2100. Is any money paid upon this land?—Yes; there has been money paid on it. It is one of the blocks I have not included in the schedule, because it was the intention of the Government to abandon the purchase.

2101. They intended, then, to abandon both this Owango Block and the other 300,000 acres mentioned before?—Not the whole of the latter; that includes the 129,000 acres which have been leased.

2102. Is the land south of Tangarakau under negotiation by the Government?—No; it is not yet surveyed.

Mr. WILLIAM WILKINSON, examined.

2103. *The Chairman.*] What is your profession?—I am a journalist.

2104. Are you not also a surveyor?—No.

2105. Are you the writer of this letter?—No.

2106. Do you know any one named J. S. Wilkinson, in Auckland?—No. I know no one in Auckland named Wilkinson. I live at 117, Queen Street. I have paid frequent visits to the King country, and I thought it was in consequence of information which you might have received to that effect that I was summoned to attend the Committee.

2107. What part of the King country have you visited?—Te Kopua, the Te Wharau Ranges, and the Mokau River.

2108. You know Te Awamutu?—Yes; I started from Alexandra and travelled south of Kuiti, where I stayed for two nights. I had with me a gold prospector, who said he had been in the district and had discovered gold. The object of my visit, which was made ten years ago, was to find if this was correct. From Kuiti I went into the ranges between Te Kopua and Taranaki and the Mokau. My journey was confined to the part of the King country I have mentioned.

2109. You do not know anything of the country near Taupo?—Very little.

2110. What sort of country, from a settlement point of view, is the country you saw?—My visit was chiefly for the purpose of inspecting the minerals. The Maoris were unwilling that I should advance into the district; and the digger I had with me made surreptitious visits to the ranges, and brought back pieces of quartz which were gold-bearing, and convinced me that there was gold in the district. I can say very little besides, except that from the summits of the hills I could inspect a good range of country; and it struck me that it was a pity that it should be left in the hands of the Natives; and that it would be vastly useful if cultivated.

2111. *Mr. Larnach.*] Have you seen any auriferous indications in that part of the country?—Yes; I have not seen the reefs themselves, but I have seen unmistakable evidence that there is gold there. I was deterred from making a visit myself because some Maori women discovered traces of gold in one of our tin dishes, and made a row amongst the Natives, who would not allow me to go. I have, however, no doubt, from the quartz that I saw, that it is a gold-bearing country.

2112. Could you indicate the exact locality?—It was in the Tuhua ranges.

2113. You know where the Stratford line runs?—Yes.

2114. You are satisfied that there is gold in that country?—Quite satisfied.¹

2115. Have you seen any indications of silver or other metals?—No. It appeared to me to be a limestone formation with quartz veins. There is an abundance of coal in the Mokau District.

2116. *The Chairman.*] Was the quartz of a similar nature to that of the Thames District?—Yes; but a little more friable.

2117. Was the gold of the same sort?—Yes; but it seemed to be rather richer than the Thames gold.

WEDNESDAY, 17TH SEPTEMBER, 1884.

Mr. MATHEW BARRY, Miner, examined.

2118. *The Chairman.*] This Committee has been appointed to inquire as to the best route for the North Island Main Trunk Railway, and we have been informed that you have had some experience in travelling through this country, and will be able to give us some idea of the nature of the country. Would you kindly tell us what part of the country you have travelled over?—I have travelled from Waitara and Urenui up the Mokau to Te Awamutu; also from Wanganui eastward through to Murimotu and between Tongariro and Ruapehu till I met the Wanganui River, and from the Wanganui River through the Tuhua country to Alexandra.

2119. What was your object in travelling through that country?—I was prospecting for gold.

2120. You say you went through the Tuhua country. What is the nature of the land traversed by the central and western routes?—From Alexandra to Taumaranui is very rich and level land, on the central route. I followed the central route through from Taumaranui to Te Awamutu.

2121. What is the nature of the land?—It is volcanic.

2122. Is the land fit for cultivation or is it pumice?—There is no pumice from mile 140 on the map to Alexandra.

2123. Have you any knowledge of the Stratford route?—Yes.

2124. What is the nature of the land there?—Very broken country at the head of the Mokau, and for thirty miles southward.

2125. Are there good indications of gold in that country?—You must please excuse me from answering that question.

2126. Our object in asking you to appear before the Committee was to obtain information of this kind. I only ask you the question in a general shape.—Well, the western line passes through auriferous country. After the central line leaves Taumaranui it goes through valueless broken country. From Taumaranui southwards for a few miles it goes through very heavy bush, and then, passing Tongariro and Ruapehu, it goes through volcanic and pumice country, valueless till it strikes heavy bush land again; and that heavy bush country is very much broken, as broken as the Stratford route. That is on the central line. Looking at it from a mineral point of view, I would not take 1,000 acres of the central line south of Ruapehu for the value of the fencing, but on the Stratford route I would take 100 acres if I could get it.

2127. *Mr. Larnach.*] From an agricultural point of view, what is your opinion of the two lines?—I did not see any land on the central line from Ruapehu down till you get near Marton. I do not consider any of that land fit for agriculture.

2128. Is there any on the Stratford line?—There are very large blocks on the Stratford line fit for agriculture that have been used in the olden times as Native settlements.

2129. *Mr. Fulton.*] What do you mean by "large blocks"?—There is one block estimated to comprise 200,000 acres, called Tongarake.

2130. *The Chairman.*] Do you mean to say that is all clear?—No.

2131. Give us an average size of these clearings?—About 600 acres.

2132. What do they run down to?—As low as 20 acres. I may mention there is a very valuable seam of coal of about 98 feet in width which the line cuts through on the Stratford route, at about forty-five miles from Stratford.

2133. *Mr. Montgomery.*] What is the character of the land from Ruapehu northward for twenty or thirty miles?—Up to Taumaranui it is very heavily timbered; where clear, it is pumice.

2134. And north of that?—It is all passable land. The farther you go north the better the land gets.

2135. *Mr. Larnach.*] You say the western line would run through auriferous country?—Yes.

2136. It will not be asking you too much to tell the Committee whether, in your opinion, it is likely to be richly auriferous, or is there merely the show of gold?—With all due respect to the Committee I must decline to answer that question. You see I am in a delicate position. There are thousands following my occupation who know me, and you must remember that this evidence will be printed, so that the slightest movement I make my footsteps will be dogged.

2137. You said it was auriferous?—But I did not say there was gold. I would like to keep that silent, if I can.

2138. But it is rich in minerals?—There is coal.

2139. And metals?—Very likely.

2140. In your opinion the Stratford route, both from an agricultural and mineral point of view, is a superior route to the others?—From an agricultural point of view I would not give much preference to either, because the country is much broken on either side. There is less of the bad country to go through on the Stratford line.

2141. I certainly understood you to say that both from an agricultural and mineral point of view you favoured the western route?—Certainly.

2142. Have you any idea of the quality of the seam of coal to which you have referred: is it lignite?—It is real coal, but I did not use any of it.

APPENDIX.

REPORTS ON MAIN TRUNK LINE, AUCKLAND TO WELLINGTON.

CENTRAL ROUTE.

No. 1.

Mr. J. ROCHFORD to the ENGINEER-IN-CHARGE, North Island, Wellington.

SIR,—

Nelson, 5th February, 1884.

Having completed the exploration for a line of railway between Marton and Te Awamutu, I have the honour to report as follows:—

Starting from Marton the country over which the line runs is principally open, and presents no difficulty, the Pourewa being reached by a side-cutting from the terrace of the Rangitikei almost on a level. The line then follows up the Pourewa Valley to about three miles beyond Hunterville, and thence crosses to the Rangitikei. The Pourewa is all flat bush of good sawing quality, and the land is good; the river is about 20ft. wide, and, winding much about the flat, will have to be bridged several times in order to run the line straight; ballast can be got near.

The Rangitikei Valley lies about 150ft. below the level of the Pourewa where the most favourable place for leaving the latter occurs. The Rangitikei River is generally confined between marl (*papa*) cliffs 150ft. to 200ft. high, but there are occasionally lower terraces, a large one occurring at Otairi, where there is a Native settlement. It is free from side gullies of any importance, and the hills which bound the terraces are generally of very easy slopes. The Makohine, at 30 miles, a detail of which is shown on the section, forms a break in the line of considerable difficulty, owing to its great depth below the terrace levels; but, as the creek itself is only 30ft. wide, and the opening V-shaped, the deep part of the viaduct would be confined to a short distance, pier foundations easily obtained, and any work done built on dry land. On careful survey considerable modifications might be effected. Near the confluence of the Hautapu (44 miles) the bluffs are rather higher, and several spurs run down to the bluffs: through one a tunnel of perhaps two chains will be necessary, and the grading will then run nearly level into the Hautapu. About three miles of the Rangitikei is open grass and fern, the remainder bush of good mill timber—pines, rimu, totara, tawa, and maire-totara. The soil is very good, as the soil usually is overlying marl formations.

The Hautapu Valley as far as 66 miles is similar in character, with high marl cliffs and terraces above, occasionally a spur coming down and ending in a higher bluff on the river, which will cause side-cutting; at 53 miles there is a limestone outcrop. These spurs almost invariably widen out into a terrace more or less long near the river, with high bluffs, but narrow into a razor-back ridge behind, often actually of a lower level. The timber and soil are both excellent. There is one old Native clearing, overgrown with scrub, of about twenty acres at the lower end of the river. There are no side gullies of importance, and no large creeks; as at the Rangitikei, culverts will generally carry the drainage. The north-east side of the Hautapu appears to be very considerably rougher. Ballast can be got in creeks near the Hautapu confluence, but I did not see any between there and the 66 miles.

From 66 miles to 79 miles will be side-cuttings and flats about half open; the side-slopes are easy, and the land very good. I believe that, on survey, the grades will work out much flatter, as it is a matter of impossibility to judge distances accurately, and to the eye the river appears much flatter than the section shows. All the country towards Ruanui and Raketapauma, lying west and north-west of this, is very good up to the edge of the Murimotu Plain. Turangarere and the highest point of the Waihora will both be places of importance, the former as the nearest point to Patea, the latter as the probable connection with Tokaano and Taupo; and a few miles lower the Murimotu Plains will connect with Wanganui.

From 79 miles to 84 miles the river has open grass and fern flats nearly all along, and limestone outcrops occur along the hill-sides about 50ft. above the valley. Above, on the hill-tops, which are generally table-lands, there are considerable totara forests. Near this point (84th mile) the line follows a small branch of the Hautapu called Waiouru, which penetrates clear through the hills on to the Murimotu Plains. The Waiouru takes its rise near 86 miles in an extensive swamp of several thousand acres, which is good land. The land may also be considered good three or four miles below this point. The Makiokio and Waitangi have limestone outcrops on the flats. From 88 miles down past Karioi to the beginning of the forest the land is very poor, made so from the large admixture of pumice-sand. It is found that one burning of tussock grass completely takes the life from the soil by destroying the little organic matter there is in it.

In two miles from the entrance to the bush, 98 miles, the timber is birch, and the soil, although richer than the open land, is poor; but after that the timber is large and fit for sawing, and the land flat and good for about eighteen or twenty miles. The flat is five to ten miles wide, and all country lying between it and the Wanganui River (some twenty miles in breadth) is formed of low marl hills, the land good, the timber principally tawa. On the side of the flat next the

mountain Ruapehu there is a table-terrace land some fourteen miles long, from Raitihi to Manganui-a-te-Ao. This table-land is generally poor, but heavily timbered with rimu and kaikawakaroa, and some white pine, maire, and totara; but the country and timber below it are good to the Wanganui River. A part of this table-land would be traversed by the railway, and the crossings of two of the affluents of the Manganui-a-te-Ao, called the Manganui-a-te-Ao and Mangatote, are bad, being wide, deep depressions, one 100ft. and the latter 200ft. deep; but I ascertained, by going up these rivers a short distance, that they could be crossed without any extraordinary engineering work.

From Mangatote, 119 miles, to 121 miles, where the forest ends, the soil is good; and from there to about 124 miles are the Waimarino Plains. These are not better than the Murimotu: the growth is tussock-grass. The Natives have a number of horses and cattle, but they are generally poor. This is a central point from whence branch lines could be taken eastwards to Rotoaira, Tokaano, and Tapuaeharuru in Taupo, all of which are large hot-spring areas, the nearest (Rotoaira) being only fifteen miles, and Tokaano about thirty miles, distant from this railway route. It is also a good place for a branch line on the west side to the Wanganui River about Retaruka and Ohura, and from thence to Lower Mokau and the west coast. This is the highest part of the line, being about 2,600ft.

From 126 miles to the Matakerepuru Falls the line is through forest, and follows down the Piopioea River (which is a branch of the Wanganui), on terrace land varying from 40ft. to 100ft. above the river. There are a few side gullies coming in, with very small watercourses, only requiring culverts; but the gullies die out and can be avoided by going back a little. I do not feel sure this is the best line, although it appeared to me to be so from the Hahungatahi, which I ascended for the purpose of choosing a direction. The country all falls towards Taumaranui, and it would be advisable to try another line skirting the rear of Kirikau Block before finally locating the line. (I may here again refer to the grades, which on the section in several places show as heavy, while on the ground they appear the reverse, and can only ascribe it to the difficulty of judging the distances. I am sure very satisfactory grades can be got all through.) The land and timber are both of good quality, and the land generally marl; the timber tawa, rimu, pines, maire, and totara—trees very fine for sawing purposes; in fact (excepting, of course, the open land) saw-mills might be profitably located nearly all through.

At 138 miles, on the Piopioea River, occurs the Matakerepuru Fall, probably not previously seen by any European, and by very few Natives. It is an object of great interest: the whole river, some 90ft. wide, shoots over a precipice 60ft. deep, springing clear from its bed in an unbroken transparent arch, through which the ferns and growth beneath can be seen as through a window; on one side there is a sort of cave hollowed in the *papa* rock, which is coloured red and yellow with iron oxide; the banks of the river above and below are lined with trees, which overhang the river cliffs, and add to its beauty. Below the fall the river falls rapidly, and swirls and eddies in heavy rapids for about 10 chains; while above it for a long distance the water is still, deep, and lake-like. Below this fall for ten miles the country is almost a dead flat, covered with timber (except a natural clearing called Ohongo, which is grass and scrub)—totara, tawa, rimu, maire, matai, and kahikatea; most of the bush is good: in some parts pumice shows, but even there the timber and soil appear good.

From 148 miles to within four miles of Taumaranui the line would be sometimes graded and sometimes on terraces till it reached the level of the Wanganui River; no rock would be met with, and the side slopes are light.

From 155 to 159 miles the line would run along the flat of the Wanganui River, crossing the latter about a mile and a half above Taumaranui. This bridge would be about 300ft. long, but the bottom is small shingle, and pile-driving would be easy: the river is fordable on horseback. The land about Taumaranui is good, though some pumice shows in it, and it is good for ten miles above. There are many Native settlements in the neighbourhood. Below Taumaranui, on the east side of the Wanganui River, there is an extensive flat called Makokomiko, some fifteen miles long, extending to Kirikau, said by the Natives to be of good quality. There is other good land towards Tuhua: in this direction, if anywhere, gold will be found.

From Taumaranui (159 miles) nearly to its confluence with the Maramataha the country is open fern, good in the valleys, poor on the hillsides, and good again on the higher lands, which are generally bush. The line follows up the River Ongaruhe, crossing, about seven miles up, at 165 miles, with a bridge about 150ft. long; the banks are level and low, and the bottom shingle. There are seven Native cultivations and five occupied pas, and the Natives possess and use ploughs and horses.

From 179 miles to Waimika (184 miles) the country is poor, and the river passes through a short gorge. At the Waimika there is an extensive plain lying between the Ongaruhe and Waimika, but the land is exceedingly poor. I followed a considerable distance up each of these rivers with a view of finding a better route, but each has formidable gorges a few miles up, and leads off in an unfavourable direction.

At 184 miles there is an extensive Native pa, with large cultivations of good land up on the hills some 300ft. or 400ft. From the Waimika the line goes up a small creek called Ohinemoa: fern for about two miles up, and good land. At the head of this creek, which is bush, there is a watershed, which will have to be pierced with a tunnel some 20 chains long. There are two ways of overcoming the hill: one by grading up from 179 miles, mostly over open hill land and terraces, in which some of the cutting would be rather heavy, and soft sandstone rock would be met with occasionally; the other, to which I give the preference, would be to follow up the Ohinemoa at a lower level, and pierce the hill with a tunnel into a branch of the Mokau called Te Mangapihi. The work on this line would be much lighter, but two bridges over the Ongaruhe would be necessary, one of 70ft. and the other of 120ft.

From this point to Te Awamutu (some seventy miles) the country may be called all good, and, with the exception of about four miles, is all open.

The Mangapihi, a branch of the Mokau, contains limestone, and the line follows it down for about three and a half miles. It is a flat grass valley, with its stream flowing without rapids, and has open hills with occasional bush patches on either side. The land is of good quality.

At 194½ miles the line crosses a low place in the watershed into the Paritikonā, which is followed down about three and a half miles, and from thence, at 198 miles, crosses another low place in a watershed to the main stream of the Mokau, which is followed down seven or eight miles. Each of these valleys is similar to the Mangapihi. Another low watershed is now crossed into the Waititi, which is nearly all open fern and grass, with perhaps a mile of bush. The land in this valley is also very good, but the valley falls rather quicker, and about six miles down it joins the Mangaokewa, which is at this point a rocky limestone gorge. Just beyond a low place occurs in the hills very suitable for the railway, which leads direct to Te Kuiti. It is remarkable that all these watersheds are mere razor-backs one to two chains wide, consequently the earthwork will be inconsiderable.

Te Kuiti, the former residence of King Tawhiao, contains a number of whares. Above Te Kuiti the Mangaokewa runs through limestone gorges, and does not offer inducement to seek the other route of the Ongaruhe or Waimika. From Te Kuiti to Maraehine is splendid grass and fern country, following down the Mangaokewa, Mangapu, and Waipa, which have flats of considerable width, and some large patches of timber, chiefly white-pine and pukatea.

Brown coal is visible in a creek which I visited near the Mangawhero, some five miles off the railway-line.

A low watershed occurs at Maraehine, another across the Mangaorongo, and another near Puniu, all of which are inconsiderable. This latter place is all open country, and presents no difficult feature.

The length of the line shown on my section is 244 miles, which corresponds with my field-book, but which I could by no means find room for on the map. The difficulty of judging distances is very great, and can only be a rough approximation, especially as the only marks I could make use of were the larger mountains, which are themselves not yet correctly placed on the maps. I consider the line will not exceed 200 or 210 miles in length at the outside, and I am also of opinion that, on survey, the grades will work out more favourably, probably nowhere steeper than 1 in 80. The probable cost per mile, including everything except land, may be estimated at from £6,000 to £6,500.

In conclusion, I may say that I made notes all through my trip of whatever seemed to be of value in the way of information; but, the time being so short in which my plans and report have to be prepared, I have not attempted to mention anything beyond what is required in a report of an exploratory survey.

I have, &c.,

The Engineer-in-Charge, North Island, Wellington.

JOHN ROCHFORD.

Appendix to Mr. John Rochfort's Report.

FINDING my report as to the line of railway would become complicated by attempting to introduce any particulars as to the Natives encountered along the route, I do so in the form of an appendix.

Before commencing work I obtained letters from Mr. Woon and the Rev. T. Grace to the following Natives along my route: Hoani Mete, Wiari Turoa Ma (Porewa), Nika Waiata, Teata Pikirau, Ropana (Ngahuruhehu), Meriana, Patihapa (Raketepauma), Porokoro Patapu (Murimotu), Meiha Keepa, Aropeta Haeretu, Paora Patapu (Murimotu and Ranana), Hirika te Raupe, Ihakara, Meiha Topia Turoa, Te Heuheu, Matuahū, Kingi te Harakeke, Kingi Topia, &c. (Murimotu, Taupo, and Tokaano), Ngārupiki, Tukimata, Ngatai (Tuhua).

26th June.—I commenced work at Marton, and after about a fortnight, during which it rained almost incessantly, arrived at Ngahuruhehu. At Turangarere, where I first met any Natives, they were unwilling to let me pass until a general meeting took place; but, as the opposition was feeble, I went on, and have since had a letter from the same people, requesting me to come again and see the advantages they had to offer for the railway coming there.

On arriving at Kerioi I was stopped by the Natives (said to be twenty armed men, but found afterwards to be only six) occupying part of the Rangataua Block (Government land), who allege that Adamson (employed by me on the work) had sold land on the part of Nika Waiata—the woman who is living with him, and who, by the way, is a great warrior—to the extent of three thousand acres more than belonged to her. Pita te Rahui and others were said to be placed in possession of the Rangataua Block by Major Kemp and his council until satisfaction was had for the lost land; and I was informed that if I went on I should be shot. I soon found out that Adamson's presence only added fuel to the fire, and discharged him. Finding Major Kemp was the head, and that he was at Upokongaro, I went down *via* Hales's Track, but was somewhat delayed by snow on the road down. I found Major Kemp at Upokongaro. He said the stopping me was done without his authority. This is doubtful; but he at once said, "I will support you and help you with five hundred men, if necessary, for I consider a railway will be for the good of my people." I returned to my work armed with letters from Kemp to Pita te Rahui, and also to some of the principal chiefs of Manganui-a-te-Ao. I returned, and met the stopping party at Rangataua. Pita te Rahui and Remona still held out, as owners of the part in dispute. However, I told them I had nothing to do with the land question, my work concerned the railway only, and that they would be lunatics to stop the railway, which would be a benefit to them. After a long *korero* they, obtaining the consent of a daughter of Pita te Rahui, allowed me to proceed, and eventually came to work for me, cutting the line through their own district. This may by-and-by be a troublesome question, as they are still planting and occupying part of the block, which, according to Mr. Thorpe's survey, is part of the Government block (Rangataua). These same people are now very anxious for the line to be made, and asked me to get the fact of the Government approval of this line inserted in the Maori newspaper.

From the Mangawhero (Ohakune) my course lay through Waimarino, near the Hahungatahi, and the country was said to be flat, with but some twenty miles of bush to get through, but there was a Native track which led to Ruakaka, a Native village some twelve miles below Hahungatahi, on the Manganui-a-te-Ao. To save swagging I took the horses through this track to Ruakaka, intending to follow up the River Manganui-a-te-Ao to Waimarino, and cut back to Ohakune. On arriving at Ruakaka I was compelled to pitch my camp within the Native village, and found that the Native, Paora Patapu, whom Kemp had promised to send up before me, had not arrived, and the Natives received my letters from Kemp and Woon with suspicion, alleging, after three days' *korero*, that if Kemp desired their concurrence he should have sent word up to them before now: I had arrived among them without any notice, and they should take me back to Kemp. Accordingly I was marched back to Papatupu, some two miles above the confluence of the Manganui-a-te-Ao with the Wanganui, and there found about eighty Natives assembled. I was kept there another two or three days. The principal men present were: Taumata, Te Kuru Kaanga, Te Peehi, Winiata te Kakai, Manurewa, Turehu, Raukawa, Rangihuatau, Te Aurere, Huriwaka, Te Whaiti, Eniko, Kaiatua.

Rangihuatau spoke in a vacillating way, but said he was a Government man; Taumata was decidedly averse to the railway, and also to any Europeans coming on their land, and said if I had been taken on his land he should have cut up all my belongings in small pieces, and made slaves of myself and party; Te Kuru spoke against any violence, but was decidedly in favour of keeping Europeans away. All spoke, but Winiata and Te Aurere (who were at heart in favour of the railway) were afraid to speak out: and eventually letters were written to Kemp, and Mr. Woon, and myself, saying if I returned a second time I should be turned back, and any Maoris who were with me would be killed, and if I returned a third time I should be killed. Taumata would agree to nothing, and strongly advised keeping us prisoners here; but several others (including Te Aurere, Te Peehi, Te Kuru, Turehu, and Taurere) were more moderate, and said if I could bring letters from Wahanui or Tawhiao they would not obstruct me. Taumata then came over to me and asked if I understood their ultimatum, at the same time observing, "If you come again, remember you will go to the ground." Then he asked me what I thought of his letter to Mr. Woon. I replied I had not thought anything about it, but I should take care that a copy of it found its way to the Government, and they could think what they liked about it. After this seven chiefs were appointed to paddle us down to Wanganui. The following men were fixed on, so that they might have influence to talk to Major Kemp: Winiata te Kakai, Te Kuru Kaanga, Potatau, Te Aurere, Te Peehi, Iko, Patena. Going down the river we called at Pipiriki, Herurarema, Koriniti, Parikino, and Kaiwhaiki, at all of which places the usual speeches were made, and most of the lower-river Natives were in favour of the railway. We were two and a half days coming down. Some of the Native villages on the Wanganui River are thickly peopled; for instance, at Herurarema and Koriniti there are about 130 to 150 at each place. At Herurarema there is a Catholic mission, consisting of the Rev. Fathers Soulas and Marot, two nuns, and a lay sister, Maria Joseph, long known in Napier by the old residents: they very hospitably entertained me. There is a school here with sixty-four scholars, and average attendance fifty-nine. The Natives possess 2,500 sheep, horses, and cattle, besides ploughs, &c. At Ranana, the site of the celebrated fight at Moutoa, there is also a large flock of sheep, and a fine wharepuni, 83ft. by 37ft.: this is called Huriwhenua, and is the arena of the labours of Kemp's council.

On arrival at Upokongaro I secured the services of Mr. Woon, and a meeting took place between my captors and Major Kemp, the result of which I forwarded to you on the 22nd September. Te Kuru Kaanga firmly opposed my returning, saying they did not want the railway; and Winiata and Raukawa privately told me to wait, their tongues were tied now, but by-and-by they would speak.

I then returned to Wellington to seek the advice of the Native Minister, and, if possible, get letters from Wahanui and Tawhiao. During my stay in Wellington overtures were made by Kemp through Mr. R. Woon, which resulted in a more amicable understanding with the Government, and a meeting between the Hon. the Native Minister and Major Kemp: after which the latter renewed his promises of assistance, and advised my attendance at a large Native meeting at Ranana, and provided a canoe and men for my return. The meeting was largely attended, and included four or five chiefs of Manganui-a-te-Ao, who were convinced by Major Kemp of the advantages of railway communication, and agreed to my going on; but it was considered necessary to take a strong force. Accordingly, on the 27th September six canoes accompanied me with the following people: From Ranana—Paora Patapu, Rena (wife), Eruera te Ua, Te Wikirini, Te Nau, H. N. Walker; from Pipiriki—Kaieroto, Maata (wife), Turawhi, Mahirini, Maehe, Kaawa (wife), Te Rua, Te Heuheu, Te Huia, Te Whaingā, Ramere (wife), Rehana, Te Hoeroa; from Herurarema—Tohiora, Reri; from Koriniti—Paori Kurimati, Teake; from Kaiwhaiki—Matiaka, Tutaua, Te Rou; from Kukuta—Hikaka, Wikitoria (wife); from Manganui-a-te-Ao—Te Peehi, Peata (wife).

The Wanganui River closes in at about seven miles up, and from thence to Ranana it is more or less gorgy, enclosed by hills some three or four hundred feet high. It is, however, possible to get a horse up to Koriniti along a sort of track at the foot of the river-cliffs, but no further, except inland; there are a few low flats, but not of any great extent. At Ranana there is a large clearing, perhaps a thousand acres, a good deal of which is in English grass. Between Koriniti and Manganui-a-te-Ao is almost a continuous gorge. Excepting at Ranana, Herurarema, and Pipiriki the cliffs frown above one almost perpendicularly, especially between Pipiriki and Manganui-a-te-Ao, and the river runs stilly; I am told that for a long distance above Manganui-a-te-Ao the river has the same gorgy character. I remarked no leading valleys coming from the east from Upokongaro to Manganui-a-te-Ao, but many of the side-hills have extensive flat terraces on top, and small creeks, and doubtless good roads could be graded out, more especially as the hills (mostly *papa*) are not of any great height.

On arriving at Papatupu we were received by about eighty Natives with anything but a friendly demonstration, Taumata, Te Kuru, and Te Oeo being the most determinedly obstructive. The *korero* lasted several days, and at last ended with the up-river Natives leaving the whare in a body and refusing to say or hear any more, and they next morning left Papatupu and went up the river seven miles to their principal place—Te Papa. On the following day we followed them up, and, on arriving within a couple of miles, sent our messenger (Raukawa) to them. This man, Raukawa, being an up-river Native, was considered a seceder and a spy; so they decided to shoot him then and there. A considerable time, however, elapsed before a man could be found to undertake the deed: at last one volunteered, who seized a gun and went towards the door to effect his purpose; but time enough had elapsed to allow for reflection, and several stopped him. Our messenger returned early next morning and said he had come on our opponents busy making cartridges, but after a night's talk they had agreed to meet us. We accordingly went to Te Papa, found a white flag flying, and some twenty-five Natives armed, who fired over our heads twice; and, after two or three days' endeavouring to come to terms, they almost (to use my Native companion's words) forced us back at the muzzle of the gun, and I eventually returned to Wanganui and put myself in communication with the Native Minister and asked for a few troopers. Mr. Bryce thought it unwise to force our way, and directed me to go round to the north end of their district and endeavour to secure the friendship of Peehi Turoa; but, on returning to Ranana, I learned that the obstructionists had dispersed and gone to their planting, so I went on with my work and completed to Waimarino without any further stoppage. Here I found Peehi Turoa, although a rank Hauhau, after a little talk, not averse to the railway, and ready to help me. About this time I learned that Major Kemp, who was to have gone to Taumaranui by canoe before me, had gone down to Wanganui, summoned as a witness in a Court case: so I visited Topia Turoa, Matuahu, and Te Heuheu at their pas at Rotoaira, Tokaano, and Waihi, urging them to send men of influence to help me at Taumaranui. The former contented himself by sending a telegram to Mr. Bryce informing him that he would allow me to go on, but the latter sent two men with me. About this time two Maoris arrived from Tuhua saying that there were two powerful *aukatis* to stop my further progress, and, besides, a dozen mounted Hauhaus patrolling and waiting for us, averring that they were sure to be hung for Moffatt's murder and one or two more would not alter the case. This news so alarmed the Taupo Natives that it was with the utmost difficulty at last I got the promised two to go with us, but on getting within a few miles of Taumaranui they refused to go further, and returned. I had still some other Natives with me, two of whom were of those who engaged determinedly in the armed opposition at Manganui-a-te-Ao: one of these went before me, and at every slight noise he started back on my toes, fearing the mounted patrol. I may here say the Wanganui River above Taumaranui is open for seven or eight miles, with five Maori settlements; and Watarupurupu, the furthest open land up the river, where I first came out of the bush from Waimarino, is the scene of a celebrated fight between the Patutokotoko (who gave me so much trouble in the Manganui-a-te-Ao) and the Ngati-manipoto. The old pa of the Patutokotoko is on a flat-topped isolated hill, with open land all round, except towards Piopotea, in which direction the forest stretches to Waimarino. Dotted over the flat below the pa for a mile or more are short posts stuck in the ground; some are rotted and fallen: these mark the spots where the fallen in battle lay or were buried. Turangatahi and Tuhiora were the chiefs of the Patutokotoko, and their descendants speak with pride of having beaten back their border enemies.

To resume: We reached Taumaranui without obstruction, but were received sullenly, without a word of welcome. So, as it was raining, we pitched our tents in the pa, and waited several hours; after which Ngatai and some others arrived and welcomed us, saying he would protect us here, but we could get no further as the country was stopped. After a couple of days, in reply to my letters, about a dozen men of the *aukatis* came down, but after a long talk refused permission to go further or even send a messenger through their country. They said Wahanui had stopped the country for a long time: some of these had been waiting watching the district for the last six months. So I had no choice but to return by Tokaano and go round the west side of Taupo to Kihikihi, some 150 miles. This I did, and saw Rewi and Wahanui, who informed me that Mr. Bryce was coming in a week's time, and that I must wait till then, when it would be settled satisfactorily. This I did, and in the meantime Wahanui sent and brought all the men who had stopped me out to Kihikihi, including the principal in Moffatt's murder. The meeting which took place was satisfactory in its result, and I have since completed the exploration; and the last words of Rewi (Manga) were, "Tell Mr. Bryce to hasten on the railway: I am an old man now, and I should like to ride in the railway before I die."

JOHN ROCHFORD.

No. 2.

MR. ROCHFORD TO THE ENGINEER-IN-CHIEF.

Sir,—

11th September, 1884.

I have the honour to inform you that I have completed the actual survey of the central route for proposed main trunk line of railway, North Island, and I herewith forward complete sets of plans and further report on the line. The line has been surveyed and levels taken throughout, as well as a great number of cross sections. The survey shows the line to be a highly favourable one, both as to small primary cost in construction and the country it will open out. The estimated cost is £6,093 per mile, without the cost of the land or fencing, but includes a road alongside for the whole length of line for purposes of railway construction. As much information has been given as was possible in the limited time allowed for the survey. There are some few miles on which only the grade line and plan can be shown, but in all cases the possibility of connecting different elevations and their grades is proved. The line was surveyed by four different parties, and each two parties were working towards each other, consequently the section lines could not

be shown continuously; so I have arranged them in four sections, and shown their position, &c., on the key section and general plan.

The total length of the traverse was 223 miles 23 chains, but the actual railway, as measured along the curves, &c., would be only 212 miles 27 chains, which I think may yet be shortened to 200 miles on more detailed exploration.

The First Section, Marton to Hautapu, forty-three miles, is good land all through, and more than half is level, and, except some six or seven miles, all this section is bush, mostly valuable milling timber, and ballast can be got near. The only feature of importance is the Makohine Viaduct; but the following ideas should be carefully worked out before a detailed survey is made: First, whether a better line would not be got by following up the Porewa Valley some three miles further to Pokiore, and then crossing the watershed between the Rangitikei and Porewa. Second, whether it would not be better to follow up the Makohine, and avoid the necessity for the viaduct. Third, whether a shorter line could be got the Makohine, to fall in to present line at Three-log Creek or Hautapu; and whether the bends caused by the Hautapu could not be shortened.

The Second Section, Turangarere to Hautapu, was surveyed the reverse way; but, continuing my description forwards, the land is very good all through, and, except some ten miles, is all bush; the timber is good milling timber. Ballast can be got at several places, and plenty will doubtless be opened out in the cuttings. In the open part of this section limestone outcrops occur in many places some fifty feet above the general flat of the valley, and will no doubt be useful in cheapening cost of culverts, &c. Turangarere is the point from which a communication would be established with the inland Patea, which is a very extensive block of country of splendid character, and is on the road to Napier from Murimotu.

The Third Section, Turangarere to Waimarino, was surveyed forwards, and for the first seven miles is tolerably good open land, grass in the valleys and on hill-sides; tops of hills generally good totara bush; the next thirteen miles the land is open, and, except some four or five miles in the Waitangi Valley, is poor, with pumice sand; but limestone exists, outcropping, as in the last section, all through at a level of about fifty feet above the surrounding flat. This last is the Murimotu Plain, leased as sheep country. Good bricks have been made in the neighbourhood; and the pumice sand and local limestone are said to produce mortar of a remarkably good character.

After this there are about twelve miles of level forest country, timber and soil both good, and to west of the line about 100,000 acres of similar land: still further west, between this and the Wanganui River, there is an area of 100,000 acres of broken country (papa rock and marl), but the land is generally of good quality, and the timber chiefly taua. On the east side of the line hereabouts the country rises, forming a level table-land, moderately good, but not by any means to be compared with the lower flat. The timber on this table-land is largely mixed with kaikowhaka, a poor sort of cedar, only fit for cabinetmakers' work. This table-land ends at the flanks of Ruapehu, from which mountain spurs run down into it.

In this section it would be well to make the following trial lines:—

From twenty-four miles on the section keep more to eastward and strike the Mangawhero one hundred feet higher up, cross the river and keep the grade going up on to the table-land and better grades will be got. From the same spot try another line up Mangawhero, to a place called Totara, about three miles higher up than the line as shown, and grade up on to table-land east of Raetihi, keeping more towards Ruapehu on the table-land; the line would thus be greatly shortened.

Another way of getting on to the table-land worth trying would be by keeping out on the lower flat, and grading up the Makotuku. This last river nearly meets the Mangaturuturu, and both come out of the table-land and form the watershed between the Wangaehu and Wanganui. Then comes the question whether by keeping longer on the lower flat country in the better land the railway would be more productive. Beyond this point it is not worth trying, as all the intersecting rivers run down to the Wanganui with deep banks.

At thirty-seven miles on this section there is a viaduct over the Mangaturuturu; another at thirty-nine miles, over the Manganui-a-te-Ao. These may be lessened probably on more careful survey.

At forty miles there is a viaduct over the Mangatote, which requires special examination. A trial line should be surveyed, running up the south side of the river until the banks are low (probably a mile), then crossing the Mangatote, and following round the base of Hahungatahi until the line is met again. This, in my opinion, will be found good, and enable us to cross the Mangatote with a small bridge. After this there is a short piece of good bush land, and then the Waimarino Plains are reached; these are poor, and not of great extent on the line; but the open country stretches to Lake Taupo on the east. Waimarino will be a very important junction, connecting easily Katikati, Tokaanu, and Tapuaeharuru hot springs, the growing importance of which will attract a very large tourist and invalid traffic. On the west side a connection might possibly be made with the Wanganui River, about Retaruki or Kirikau, and thence perhaps to Taranaki, and so complete the connection of Taranaki with both Wellington and Auckland.

The Fourth Section was surveyed backwards from Te Awamutu, but, continuing my description onwards from Waimarino Plains to the Wanganui River, at eighty-two miles, it is all level bush and high terrace, and generally good soil. The timber is light towards the south, but a couple of miles in it is heavy and good milling timber, and for the last three or four miles, before reaching the Wanganui, is chiefly totara of splendid quality; there is also magnificent matai and kahikatea among it, and there are two natural clearings, Ohongo and Otapouri, but these are poor soil. I should advise further trial-lines from Waimarino to Taumaranui, to improve grades—one starting from Waimarino and another from Ohongo.

Along the Wanganui River is fair open land, some very good, with splendid clumps of timber. Up the Ongarue, from seventy-six to fifty-seven miles, the land along the river sides is generally good,

strong fern land, and many Native cultivations exist both on the flats and the low-side hills, which are generally good.

Limestone outcrops near sixty-six miles. There are some exceptional cases where the hills are pumice-sand and the land worthless. It is necessary to direct attention to the difference between pumice-sand country and the country where drift-pumice occurs amongst the soil—the latter not indicating poverty of the soil, which is injured only to the extent of the room occupied by the pumice. It exists in this form, more or less, from Mokau to Waimarino.

From fifty-seven to fifty-three miles the land is open; much of it plain, of considerable width, but very poor, though there are cultivations on hill-tops near, on land of good quality, with limestone outcrops.

From fifty-three to fifty-one miles we cross good land, with heavy fern on flats, and land of extremely good quality on tops of hills, where many of the Native cultivations are.

From fifty-one to forty-eight miles, low bush hills; soil and timber very good.

From forty-eight to thirty-seven miles, open grass and fern lands; bush on hill-tops; good quality. Shell limestone at forty-eight miles and limestone caves.

From thirty-seven to twenty-nine miles, part bush and part open land; quality of land generally good. Down the Mokau there is a large extent of good land which can be readily reached from the railway, by a level road.

From twenty-nine to twenty-six miles, good land and kahikatea bush on hill-tops, and limestone outcrops of good quality.

From twenty-six miles to Te Awamutu, very good open land, with occasional bush clumps—generally white-pine and pukatea, and to the west a large extent of splendid country of a diversified character. Ballast will generally be got near at hand, and suitable timber for bridges, &c., will be easily obtained.

Alternative Line, Feilding to Hautapu.

Having completed the exploration from Marton through to Te Awamutu, and started survey parties on the line, I explored under instructions an alternative route from Feilding to Hautapu, the map and approximate section of which are forwarded herewith. From Feilding there are two routes to be considered, the one following up the Oroua Valley, and the other up the Kiwitea; both routes have flat country for the first twenty miles, but beyond that the country is very much broken. At about twenty miles from Feilding the watershed-range, lying between the Oroua and Kiwitea Valleys begins to show itself, and, gradually rising, it follows the course of the Oroua until it joins the Ruahine Range. A branch range, of considerable height, turns off from this range, and, heading all the branches of the Kiwitea, runs north-westerly down the general course of the Mangawharariki and ends abruptly at the Rangitikei. Further on another branch range, also high, runs between the Mangawharariki and the Kawatau, ending, like the last, abruptly on the Rangitikei River. A third range, parallel to the two just described, comes away from the Ruahine, and runs between the Kawatau and the Rangitikei Rivers. These three ranges all abut on the Rangitikei River, within the last six miles, immediately below the confluence of the Hautapu. The east side of the Rangitikei River, for at least twenty miles below, presents similar features, with cliffs of heights varying from 200 to 450 feet; the greater heights generally marking the places where ranges end, so that no possible crossing-place from Feilding could be found lower down.

The Oroua route would have to be graded along the eastern side of the watershed range, and a low saddle in the same range crossed into the head of the Kiwitea, near the Rangiwahia Trig. Station, and thence follow over a high saddle into the Mangawharariki; this saddle is shown by the Trigometrical Survey to be about two thousand feet high. The Mangawharariki would then have to be followed down to the Rangitikei River, and would there join the Kiwitea line. This route would, besides being high, be circuitous; and for these reasons I did not consider it necessary to lose time in going through it, so I decided in giving more attention to the more promising route by the Kiwitea.

The Kiwitea route, which is shown in the section, looks more promising, but compares unfavourably with the original line. It should, after leaving the flat country before referred to, be graded along the western side of the watershed range, neither too high up on the hills, nor too low in the valley, which is rough. A good grade can be got to near the Whare Trig. Station ("Curles's whare"), and probably up to the watershed of a branch of the Kiwitea, and a creek following into the Mangawharariki, near the Hinau Trig. Station. The last-named creek would then have to be followed down with a heavy grade of about 1 in 35 to the Mangawharariki. The Mangawharariki would then have to be crossed with a viaduct about 150 feet in height. The Mangawharariki is, like most of the rivers in this locality, a ravine running between high papa cliffs, and hills occasionally on the cliffs, causing a vast increase in height on the river-sides. There are several natural clearings of considerable extent on the Mangawharariki and Kawatau Rivers, but they are difficult of access.

After crossing the Mangawharariki, the country is level but high above the river-beds to the Kawatau River, which has to be crossed next. Near its confluence with the Rangitikei the space between the cliffs is of great extent, but about half a mile up a spur occurs on the side of the river having a bluff of great height abutting on the river. By going round inside it, a short tunnel of about fifteen chains would bring the line out at a better place, and the Kawatau might be crossed, as the cliffs, although about two hundred feet high, meet within about one hundred feet of each other.

On the north side of the Kawatau the country is again flat, though still high above the river-beds, and the line could be taken to a point on the Rangitikei River about one and a half miles above the confluence of the Kawatau. There the third parallel range before referred to as coming down from the Ruahine strikes the Rangitikei; but the narrowest place I have seen in the river also occurs here, and the Natives with me also said it was the only narrow place. It was found to be

about three hundred feet wide on the top, one hundred feet wide in the river-bed, and two hundred and thirty-five feet deep. This would also have to be crossed by a viaduct. The banks are very steep, on one side nearly perpendicular; marl below and gravel above.

After crossing the Rangitikei another steep grade of about 1 in 22 would have to be made to arrive at the original line. This line carries about the same level for the next three miles, and then falls gradually a couple of hundred feet; but I do not think it would be possible to grade gradually up, as high points run out to the river, ending in bluffs. On this account it was necessary to keep well back from the river. The country along the alternative line from Feilding for some twenty miles is exceedingly good both as regards soil and timber, but beyond this point, in the Otamakapua Block, the soil is not good, and the timber is small and of no commercial value. In point of distance the alternative line is longer by about three miles, but the distance from Wellington would be shortened by nearly the distance between Feilding and Marton.

In conclusion, I may add that the line starting from Marton follows nearly a natural river grade, while the alternative line crosses the features of the country.

I have, &c.,

JOHN ROCHFORD.

No. 3.

The INSPECTING ENGINEER to the ENGINEER-IN-CHIEF, Wellington.

SIR,—

Wellington, 10th May, 1884.

I have the honour to report that, accompanying the Hon. the Minister for Public Works, I have travelled generally over this route explored by Mr. Rochfort. At the same time, owing to the proposed line not being set out, and to the shortness of time available, the exact line has not been followed, and some portions of the country to be gone through have only been seen from a considerable distance. Sufficient information has, however, been obtained, with the assistance of Mr. Rochfort's preliminary exploration plan and section, to report on the feasibility of this route.

Starting from Marton the line runs in the valley of the Pourewa, past Hunterville, through easy country for twenty-four miles, and then in the main valley of the Rangitikei, in which the moderately easy slopes of the hills will allow of the selection of a fairly light line, except at the 29th mile, where there will be a short tunnel, and at the 30th mile, where the deep depression of the Makohine Stream will have to be crossed by a high trestle viaduct. At the 44th mile the line crosses by a short tunnel into the Hautapu Valley, which it follows to the 83rd mile. The easy slopes of this valley allow of light work and easy grades, except at a few places of short lengths. The subsoil in the Pourewa, Rangitikei, and lower part of the Hautapu Valley consists of *papa*, in the upper part of the Hautapu Valley of limestone. In the 86th mile the line attains the highest point south of Ruapehu, viz., 2,589 feet. From the Tuhirangi trig. station the country to the south and south-west of Ruapehu could be clearly seen, and appeared to present an undulating tableland, sloping to the west, where, as shown by Mr. Rochfort, a suitable selection of grade and alignment can be made. From 95 miles to 121 miles the line runs through bush, and had to be inspected from Tuhirangi, and from Wainarino, situated at 124 miles. At 126 miles the highest point on the route, viz., 2,646ft., is reached, from where the line descends in the valleys of the Piopioea and Wakapapa to the Wanganui River, at about 150 miles. These valleys could be clearly seen from the Puketapu Range, and appear to offer facilities for choosing suitable grades with moderate work. The Wanganui will have to be crossed, about one mile above Taumaranui, by a truss-bridge 5 chains long; the river-bed is covered with gravel, with rock probably underlying. Above Taumaranui the line enters the valley of the Ongaruhe, which river it crosses at 165 miles, and runs along the right bank to 184 miles. This valley is singularly suited for easy grades and light work, the total rise being only 185ft. in twenty-seven miles. At 189 miles the line goes up the valley of the Ohinemoa, and crosses the watershed between the Wanganui and Mokau at an elevation of 1,220ft. Here the works will be heavy, consisting of a tunnel of about 40 chains length, with moderate grades. The subsoil appears to be limestone or hardened pumice. After crossing this watershed the line passes through a swamp several miles long, through which, however, horses are taken; then through undulating country until the Mokau is crossed, at 201 miles; then through a saddle in the watershed between the Mokau and Waikato (Waipa), by a tunnel two chains long, into the valleys of the Waititi, Mangaokewa, Mangapu, and Waipa, and across the country described in a former report to Te Awamutu. From the Mokau to Te Awamutu a number of small bridges will have to be made over the creeks named, and others: the country is easy, and light grades can be obtained. In conclusion, it appears, considering the length, the height to which the line rises, and the now inaccessible country which it will open up, that this line will be comparatively easy to construct, to maintain, and to work, as it will cost less per mile than the average of the railways in the North Island, and can be made with easier grades and curves.

I have, &c.,

C. B. KNORPP,

Inspecting Engineer.

The Engineer-in-Chief, Wellington.

EASTERN ROUTE.

No. 1.

Mr. G. P. WILLIAMS to the ENGINEER-IN-CHIEF, Wellington.

SIR,—

Public Works Office, Wellington, May, 1884.

I have the honour to make the following final report upon the proposed trunk line of railway from Hastings, on the Wellington-Napier line, to Te Awamutu, the present terminus of the southern line from Auckland. I have completed the reconnaissance survey of the country through which such a line would pass, and I attach to this report general plan and sections of the line.

For the purpose of comparing this route with others that have been proposed for the trunk line I have indicated upon the general section the probable lengths of the principal stretches of gradients that are as steep or steeper than 1 in 50, and the probable dimensions of any important bridges and tunnels.

The length of the line is estimated at 170 miles. The chief difficulties on the line are in the Hawke's Bay portion, between 16 miles and 58 miles. The ranges which lie all along the south and east bank of the Mohaka River are a formidable barrier for a line running westwards from the coast. The coach-road goes over the Titikura Hill, which is some 500ft. higher than the saddle at the Puketitiri Bush, where the line would go, and which is the only feasible gap in the range for railway purposes. The Mohaka cuts the general slope of the country into two, and, after the line has dropped down with a sharp descent to its bed, the main watershed has still to be surmounted. To do this the proposed line follows up the Repia, which runs into the Mohaka, and has a good general direction, cutting down deeply through very high and broken country, covered with bush.

The route described by Mr. Ellman as being peculiarly favourable for railway purposes, an account of which appeared in the *Hawke's Bay Herald*, is only adapted for a road, though it is suggested that it would answer equally well for railway purposes. I except the portion up the Repia, where for a great length the difficulties for a railway are probably no greater than they would be for the construction of a road. "The long ridge separating the waters of the Manga-houhou from those of the Mangaone," along which the present road goes to Patoka Station, rises far too steeply for ordinary railway gradients, and falls and rises again without any advantage of level being gained; it is also too narrow and crooked for railway curves. Further on in the account of the route mentioned the line is described as going from the Anawhenua "flats [which are really only a few broken terraces] by light cuttings to the south-west bank of the Makahu." Now the Anawhenua, before joining the Makahu, enters into a very narrow gorge with steep slopes, about $\frac{1}{2}$ to 1, and several hundred feet high, so that neither a road nor railway could follow it down; and the line must therefore pass over or tunnel through a saddle which rises 270ft. above the creek at 39 $\frac{1}{2}$ miles on section, while on the other side of the saddle the Mohaka River runs about three miles off and 700ft. below it. Yet, in spite of this very rapid descent down to the Mohaka, it is stated, in the description of the bridge site at the Mohaka, that "up to this point the whole road has been almost a gradual rise." This is misleading, as is also the description of the Repia, which is treated as if it were an ordinary valley, any exceptional difficulties being ignored, although for at least eight miles of its length it can only be utilized by means of works of the heaviest description.

I do not wonder, however, that the Repia was not fully understood, as I found that no one had ever been right through it before I went. For six miles its slopes are covered with dense bush, principally Fagus, and this had prevented any passage between its upper and lower ends, until I had a rough foot-track cut through it; though there was an old disused Maori track, now grown over, which led over the hill-tops out of sight of the gorge.

I will now describe the route which is in my opinion the most practicable, premising that, on account of the great summit-levels to be surmounted, long stretches of steep gradients are unavoidable, and that, in order to make them as even as possible, certain river-courses must be followed, the country generally being much too broken up by confused spurs and gullies to admit of grading being carried out otherwise. After leaving Hastings the line passes through easy country to the crossing of the present channel of the Ngaruroro River, at about 5 miles on section. This river has a shingle-bed similar to those in Canterbury, and can be crossed at a height of 15ft. above the bed, with seven or eight spans of 40ft., nearly opposite Mr. Donelly's house. The line would then strike through easy open country, Native land, to the Tutaikuri River, which it would follow up on its south bank, and, commencing to rise at a point opposite where the road strikes off to Rissington on the north bank, it would continue, without any difficulty but a few small cuttings, up to the terrace opposite Seale's homestead, at the junction of the Mangaone with the Tutaikuri River near 15 miles. Now, to reach the Puketitiri Bush the natural course would be to follow up the Tutaikuri to the mouth of the Mangatutu, and then all the way up the Mangatutu; but this is impracticable, as the features of the banks of the Tutaikuri are on too large a scale, consisting often of *papa* reef-terraces two or three hundred feet in height, intersected by deep ravines, or of steep spurs running down from adjacent hills. I propose therefore to follow up the Waihou Creek, whose banks are on a smaller scale, from above its junction with the Manga-houhou up to its source; and, although to follow it up would involve heavy cuttings along its whole distance, yet, by keeping about 100ft. above its bed, in ground sloping on an average between 2 to 1 and 3 to 1, a line may be got following generally ~~to the south-west side~~. The Manga-houhou is worse, if anything, and besides by going more to the north the line would be approaching too near the high country about the Patoka Hill, where the gradients would be inadmissible. In order to get to the Waihou from the river junction at 15 miles the line must go round one side of Mount Cameron. The Waihou and the Manga-houhou after their junction form one stream called the Wai-iti, which flows in a deep broken gorge on the

north and east of Mount Cameron, and this would be too difficult to follow. I propose therefore to keep the line on the south-west side, and, crossing the Tutakuri at a favourable site near 16 miles, at a height of about 60ft., to rise on to the terrace on the north bank, making use of the channel of a small creek which has worn down the terrace; and then, after grading up through some slopes of from $2\frac{1}{2}$ to 1 to 2 to 1, to tunnel through some of the precipitous spurs of Mount Cameron, a limestone hill, and, crossing in one 120ft. span a deep chasm with perpendicular *papa* sides, above the Ardlussa Station, to come out on the Ardlussa Downs and strike the Waihou at about 21 miles on section. Then, following up the Waihou, as before described, to its source, the line would cut through the low saddle, where a road has been formed, on the watershed of the Mangatutu, and cross that stream at the site indicated on plans at $30\frac{1}{2}$ miles. Then, skirting round behind Groom's old station and through another small saddle, the line follows up the Mangatutu Stream, principally on its western side, as far as the Puketitiri Bush. As the grade has to be kept high from 31 miles to 33 miles, the bridges at the crossings would have to be excessively large, so that it is better to keep on the one side if possible in limestone-rock cutting.

From 34 miles to the summit the work will be of a lighter character. The level of the saddle in the bush is 2,070ft. There is another way of reaching the Puketitiri Bush shown on plans, viz., by recrossing the Mangatutu at 31 $\frac{1}{2}$ miles, and following up the Manaroa Creek to its head, from which a fairly good line could be got by skirting round some downs and through the Puketitiri Bush. The Manaroa is much easier to follow than the Mangatutu, being nearly straight, and having sloping sides of 2 or 3 to 1; but the gradient would be even worse, and the deviation would make an extra length of $2\frac{1}{2}$ miles of line. After leaving the bush (which is mostly on a flat, and contains some fine trees of black and white pine, rimu, and a little totara) the line descends on the right bank of the Anawhehua, through fairly good ground for benching, to the saddle at 39 $\frac{1}{2}$ miles, where a tunnel 25 chains long is required. As mentioned before, this creek is blocked in, and escapes through an impracticable gorge. From the tunnel there will be some very difficult grading or sideling of from $1\frac{1}{2}$ to 1 to 3 to 1, in order to drop down to the Mohaka Bridge site at 43 miles 10 chains. This is one of the worst portions of the line: it must be kept well up on the hill-side on the left bank at about the height above the creek indicated on section. The slopes of the railway banks will require rubble-pitching to diminish their length. The Mohaka Bridge site is the same as described in Mr. Ellman's report, and is about 20 chains above some old Maori whares. The banks are about 80ft. apart, and the line for rail level would be at about 40ft. above the river. Also, a better grade is got by going to this site and back again down the river, with an ascending grade on the north side reaching the Repia by a cutting through a high terrace and some more sideling work. In the Repia the line soon enters a deep gorge, and for at least eight miles—viz., from 46 miles to 54 miles—it is necessary to cross and recross the stream at an average of five times to the mile. The outer edge of each bend is usually perpendicular rock for perhaps a hundred feet, then there is a slope of about $\frac{1}{2}$ to 1 for another hundred feet or two, and above that again from 1 to 1 to 3 to 1 for a total height of say a thousand feet, sometimes much higher. On the inner edge of the bends, which the water does not wear into, the slopes are about 1 to 1, terminating usually at the foot in a flatter spur of from 2 to 1 to 3 to 1. By keeping the line at an average of 40ft. or 50ft. above the stream these spurs may be cut through or tunnelled. Small stretches of flat may occasionally be utilized, but heavy rock-cuttings will be the rule. The bush consists chiefly of Fagus, the so-called black and red birch. The line emerges from it at 53 miles and follows the creek to 54 miles, when it begins to rise up to a terrace flat, which it reaches at 57 miles and continues along on the south-west side of the creek, the work being easier as the volume of the stream diminishes, until the summit-level of 2,680ft. (or about 2,600ft. for formation-level) is reached at 64 miles 10 chains. This point is on the watershed between Hawke's Bay and the Bay of Plenty, and is a conveniently low saddle above Lake Pouarua, whence the Rangitaiki River issues. The line skirts round and through some low pumice downs, and drops down on to the open pumice plains at 66 $\frac{1}{2}$ miles, following near the Rangitaiki to the Taupo Road, and then in the general direction of the road over the watershed of the Rangitaiki and the Waikato Rivers, at a height of 2,445ft., until the small village of Opepe is reached; then, skirting round Mount Tauhara, a continuous grade of 1 in 50 will enable the line to drop down to the Waikato, crossing near the Huka Falls. To obtain sufficient length of line to get a uniform grade, it may be necessary, in surveying the line, to skirt round with a wider sweep and with more curves than I have indicated on plans, but the country is sufficiently open to admit of this.

Instead of following up the Repia it was proposed to take the line up the Mohaka to where the Taharua runs into it, and then to follow up the Taharua to its head on the open pumice plains, as shown in Drawing No. 4. I do not think that any advantage would be gained by this route, for the following reasons: The banks of the Mohaka are, on the whole, quite as difficult for a line as in the Repia, on account of the abrupt spurs from the Kaweka on the west and from Te Matai and Big Ben on the north-east side, which rise precipitously above the river. The length of the line up the Mohaka, from the proposed bridge-site to the junction of the Taharua, would be about sixteen miles of very difficult work; but in the Repia a distance of fifteen miles from the same point is sufficient to take the line out of any difficulties, excepting the cuttings at the head, at 64 miles. On the other hand, after traversing equally difficult ground in the Mohaka for sixteen miles, there are two miles of bad ground at the lower end of the Taharua. The bridges in the Mohaka would be at least as numerous as in the Repia, but larger and much more expensive: on account of the big boulders there would be a difficulty in constructing piers by driving piles, so that a single span of 120ft. would often be necessary, instead of one of 60ft. or 80ft., as in the Repia. On account of its larger drainage area the floods in the Mohaka are much worse than those in the Repia, and piers would interfere with the passage of trees in flood-time. The level of the junction of the Taharua with the Mohaka is 1,935ft., and the open watershed at its head 2,475ft., or 200ft. lower than that of the Repia; so that the Taharua gradients would be somewhat better. The total length of the two routes would be about the same.

On arriving at the Waikato River the line might cross in one span of 40ft. above the Huka Falls, where the level of the bed of volcanic rock through which the water has cut a channel is 1,110ft.; the line would then have to bench up the terraces on north-west bank, but, as these are here very steep and broken, I have shown the line descending on the south-east bank on the skew with the river, in sideling of 2 or 3 to 1, principally pumice, and about half a mile further down the river, and then crossing, with two bridges of 60ft. and 100ft. span, at a height of 70ft. above the river; at this site there is an island about eight chains in length, and there is just room for a reverse curve; the line would then rise in cuttings up to the terrace at 95 miles, near the junction of the Wairakei Creek but above it, on its south-west bank. A detailed survey, with cross sections, will be required to fix which of the two modes of crossing would be the cheaper.

At Wairakei there will be some bad ground for working in near the hot springs, but I think the line can be kept above the worst portion, and the creek followed to its head near the crossing of the Main North Road, about 30 chains beyond which is a small watershed near Oruanui, where some heavy cutting will be required in volcanic rock.

In descending to the Ongarahu there is a long dry gully, which may be made use of to assist the cutting; and I think on reaching near the mouth of this the line should bend round sharply to the left (possibly requiring a few chains of tunnel through a rocky spur), and then grade down to the bed of the Ongarahu through some gently-sloping ground. The Ongarahu may be easily followed to near Pukemoremore, the banks being low, and its course being through a tolerably open valley, consisting of shallow swamps and low hillocks of pumice. At 107 miles a low ridge at the foot of Pukemoremore divides the Ongarahu from the Waipapa Creek, and here a choice of two routes can be made. I will first mention the one marked on plans and section as "Deviation." This line would follow down the Waipapa Creek to the Waikato River, where an expensive bridge, of probably 200ft. span, would be required; but after crossing the river it may be followed down on its right bank for fourteen miles, without any very heavy work, on terrace flats, which are not intersected by any very bad gullies. From 121 miles to 122 miles, on "deviation," the spurs from Whakamaru rise abruptly over the river, but with occasional rock-cuttings there is room to get round them, and the terrace flats open out again for a width of a quarter of a mile, and present no difficulty up to 129 miles on deviation near the Kopokorahi Stream, after which there would be some heavy cutting in sideling. Besides the bridge being probably costly, the objection to the deviation would be that it is three miles longer than the line as laid down on maps.

The line as laid down on plans, instead of branching down the Waipapa at 107½ miles, crosses the Waipapa Creek at the junction of two small streams, and rises with moderate gradients in the direction of the Waipapa Bush, as far as about 112 miles, through some swamps of no great depth, and among hillocks of from 50ft. to 150ft. high covered with poor tussock grass. There are several good patches of bush in this locality growing on high flats and ridges, the position of which is marked upon the plans; they contain a large proportion of totara trees, and there is a noticeable improvement in the soil where the bush is; there is less depth of pumice, which has probably been washed down at some period into the lower-lying lands. At 112 miles the line bends sharply to the left, still rising towards the saddle at a break in the hills called Ngatakurua, at about 113 miles. Through this pass the Maori track leads to Kihikihi. The line would then descend quickly to the Potangotango Creek, and down the banks of it to near the Whakakaho, a very prominent hill with broken angular outlines. In following this creek some heavy cuttings would be necessary, principally in pumice, and the line should be kept at about 40ft. above the creek, utilizing occasional terraces. At 121 miles, at a level of about 750ft., the line leaves the creek and slopes with a more gentle descent to the Mangakino Creek, which contains a considerable volume of water, but may be crossed with two spans, of a total length of 120ft., at a height of about 100ft. above the water, and at about 10 chains from the junction of the Waikato River.

On my first journey through this country I kept entirely on the western side of the Waikato, with a view of seeing if a line could be got without crossing and recrossing that river. I found the ground pretty fair as far as the next big creek (also called Waipapa), but beyond this there is a narrow range or ridge rising abruptly some 500ft. above that creek, and called Moetahanga: it reaches down to the Waikato; and further on there is a higher range, of which the principal hill is called Wharepuhunga. This whole range is covered with bush, and extends down to the Waikato. On its northern slopes it is intersected by deep ravines, especially one called the Waipare. The difficulties caused by these obstructions would be too great for the location of a line entirely on the western side of the Waikato; so that I propose to follow the Waikato River closely on its right or eastern bank, crossing over to it at about 127 miles, at the spot shown on plans. The river here goes over a fall of about 15ft., and above this again there are several rapids. I think the river can be crossed just above the fall by a bridge of 160ft. in length, and that a pier could be built into the rocky bed of the river in order to divide the bridge into two spans.

The country on the eastern side now consists of high fern downs broken up by volcanic action, and unsuitable for a line; but the watershed on these downs runs nearly parallel with the river and only a few miles back from it, and the water reaches the Waikato, from the eastern side of this ridge, only by running northwards for some miles beyond the Waotu. Consequently there are few stream-channels intersecting the eastern bank of the river, which consists usually of a cliff of volcanic rock about 100ft. high, with a slope of about 2 to 1 of loose rock and pumice below the cliff; or else a terrace-flat, at a height of about 20ft. to 80ft. above the river, is to be found at the foot of the cliff. There are several spurs of volcanic rock which would probably require short tunnels, not exceeding, I think, a total of 40 chains in length. There would be a good deal of heavy rock-cutting in places, but the ground would be all solid and free from slips, and the long stretches of narrow flats would allow the cost of the work on this portion to be reduced to an ordinary average. Near the Waotu the hills rise to a considerable height at a mile from the river, but the flats on the river-bank below are well adapted for a line.

I think the river can be recrossed by one span of 160ft. at a point about a mile and a half above the old pa opposite Mangere Creek. There is a small island on the west side of the river, just above site of bridge. The line would commence to rise after crossing the river, and, cutting into the slopes of the rising ground at the edge of the river-flats, it might be some 80ft. or 90ft. above the river at the mouth of the Mangere—a small creek with a deeply-cut bed, which should be followed up so far as it would serve to take the place of cutting. There is a flat, with some large swamps in it, extending for a mile or two back from the river on this side, and about 200ft. above it. A small ridge west of this flat forms the watershed between the Waikato and the Punui, and the saddle is only 300ft. above the former river. From the saddle some careful laying-out will be required for two miles, in order to locate the line among some gullies at the head of the Wairaka Creek, which can afterwards be followed without difficulty from 152 miles to its junction with the Punui at about 157½ miles. There are some small swamps to cross, but they can easily be drained. The southern side of the valley is, on the whole, the better one. Below the junction with the Punui I should prefer to keep on the northern side, but a few crossings are unavoidable. This river has a shingle-bed, and flows with a moderate fall through a fine open valley well adapted for a line; and the soil is a rich loam. The line would leave the bank of the river near 167 miles, and, rising for about three miles through some undulating downs, would reach the Te Awamutu terminus at 170 miles.

With regard to the capabilities of the country generally for supporting a line passing through it, I am afraid I cannot speak favourably. For the first sixteen miles the line passes through good agricultural country; but it is already fairly well served with roads leading to the railway to Napier. I think it probable that a branch line so far would be a success. For the next ten miles the country is so broken that only a small proportion of it can be considered agricultural land; and beyond this to 66 miles the line passes for forty miles through very rough country, which is coated frequently with pumice, and will apparently only bear very thin stocking. The line will open up about 120,000 acres of similar country belonging to the Crown in Hawke's Bay. For the next eighty miles the line passes through purely pumice country, which is so sterile that sheep will not thrive on it, and it is doubtful whether it is capable of being put to any profitable use. Afterwards for ten miles the country would take grass with surface-sowing; and the last fifteen miles of line run through good agricultural country.

In examining the Maori country between Taupo and Te Awamutu, and west of Lake Taupo, I found that the work occupied twice as much time as it should have done, owing to the dilatory habits of the Natives and the difficulty of moving about anywhere without constant long talks with them. The country west of the Waikato being unsurveyed, I was obliged to employ Maoris as guides. Although several times ordered to go back, I managed to prosecute my work without any active resistance; and found that the letters with which I was provided from the Hon. Mr. Bryce to the different chiefs were always received with great respect.

With regard to a possible combination of the Waikato line with a central route from the Wanganui District, I found, on travelling inland round the west side of Lake Taupo, that the country between the Hurakia Range and the lake consists of high flats, terminating in precipitous cliffs from 100ft. to 300ft. high; and the country is intersected with enormous ravines, the creek-beds in which are about 600ft. below the average level of the country, and consequently no practicable line could be got for railway purposes. Along the eastern side of the lake, however, a capital beach line could be constructed at moderate cost, partly by low embankment through shallow swamps, and partly in shallow water under the pumice cliffs, but nowhere meeting with any great difficulty. A good line could be got down the Upper Waikato River from Lake Rotoaira, which is at a level of 1,900ft., and round the southern shore of this lake, to join with any practicable line from the south.

In order to fix my position by compass bearings I had to ascend several hills which were hitherto *tapu*, and had not been ascended by any European—notably the remarkable hill called "Titirapepa," the northern summit of the Hurakia Range: its height is 3,450ft.

I have calculated all the levels given herein from barometrical observations carefully taken, and, in most cases, checked by repeated observations, and they were all corrected by simultaneous observations taken at stations of well-ascertained levels. Wherever possible the levels were referred to the calculated heights of trig. stations.

In concluding my report, I am glad to have the opportunity of thanking Mr. Horace Baker, Chief Surveyor of Hawke's Bay, for his kind assistance, as well as the several station-owners along the line of my route. My thanks are also due to Major Scannell, in command of the Armed Constabulary at Taupo, and to the two Maori chiefs, Hitiri Paerata and Rewi, or Manga, of the Ngatimanipoto.

An approximate estimate of the cost of this line of railway, including formation, rails, rolling-stock, and stations, amounts to £1,200,000. The cost of land is not included in this estimate.

I have, &c.,

The Engineer-in-Chief, Wellington.

GEORGE PHIPPS WILLIAMS, M.Inst.C.E.

WESTERN ROUTE.

No. 1.

Mr. R. W. HOLMES to the ENGINEER-IN-CHIEF, Wellington.

Sir,—

New Plymouth, 26th May, 1884.

I have the honour to report as follows on the proposed line of railway between Stratford and its junction with Mr. Rochfort's line (known as the central route), about six miles to the north of Te Uira. Te Uira is a small Native settlement about four miles in an easterly direction from Te Kuiti, and about thirty miles to the south of Te Awamutu.

Starting from Stratford, the line runs through flat country as far as the Toko River, about seven and a half miles. There is a descent of about 400ft., owing to Stratford being situated on the slope of Mount Egmont; this gives a general grade of 1 in 99, but, owing to sundry depressions, 1 in 50 will probably be required for short distances, making the balance flatter. Between $7\frac{1}{2}$ and 10 miles the line passes over a low ridge which separates the Toko and Makuri Rivers: 1 in 66 or a flatter grade can be employed here. At $8\frac{1}{2}$ miles the Kakouri River is crossed.

Before proceeding further, I wish to draw your attention to the position of Stratford with regard to the general direction of the line beyond 10 miles. It will be seen that the line takes a large bend at 10 miles, Stratford being situated too far to the north, so that a more suitable position for the junction station would be about two miles south of Ngaire, where a good station-site can be obtained. This would save about six miles on the through line between Wellington and Auckland, though the actual length to be constructed would be the same; it would also save a considerable portion of the rise and fall to and from Stratford. I have not been over the country between Ngaire and 10 miles, so I cannot say that the alteration would save any expense. I am nearly certain the line could be constructed this way, so I draw your attention to the direction, as I consider it quite worth running a trial line through.

The line from 10 to $12\frac{1}{2}$ miles follows up the Makuri Valley; grades nearly level, and cross section flat. The construction from Stratford to this point will be very easy.

At $12\frac{1}{2}$ miles the line commences to ascend with a 1 in 66 grade to $14\frac{1}{2}$ miles, where the ridge between the Makuri and Mangaotuku Rivers is passed through with a tunnel 10 chains in length. The line then descends to 16 miles with a 1 in 66 grade. The work of construction, with the exception of tunnel, will be moderate. The tunnel at this place could be dispensed with by running long grades of 1 in 50 and rising to top of ridge, thereby lengthening the sideling work about a mile on each side, making the works over cross gullies very much heavier, probably costing more, and rising an unnecessary height of about 130ft.

From 16 to 28 miles the line follows up the Mangaotuku Valley; cross section flat, grades easy, and work of construction light. The creek might have to be bridged in a few places to straighten the line.

Between 28 and 32 miles the line ascends with a 1 in 66 grade, passes through a ridge with 5 chains in length of tunnel, and descends to the Makatiu Valley with a 1 in 66 grade. A tunnel is shown here for similar reasons to preceding one. The work of construction along sidings will be moderate.

From 32 to 34 miles the line follows down the Makatiu and up the Pohokura Valley; cross section level, and construction easy.

From 34 to $35\frac{1}{2}$ miles the line rises with 1 in 50 grade to a tunnel 16 chains long, through the Patea-Wanganui watershed. This tunnel cuts 300ft. off ridge, and is actually necessary. It then descends with a grade of 1 in 66 to 39 miles. This grade is shown 1 in 66 on section, but it might be found advisable to employ a 1 in 50 grade to lessen cost of construction.

From 34 to 39 miles the construction-works will be heavy, principally on account of steep cross section and deep cross gullies.

Between 31 and 36 miles an alternative line was explored to endeavour to shorten the distance, and save fall and rise; but it would require an additional 25 chains of tunnel, and much heavier work throughout, and is altogether impracticable.

From 39 to $42\frac{1}{2}$ miles the line follows up the Wangamomona Valley: cross section level, and construction-works easy. The Wangamomona will probably require crossing a few times to straighten line.

From $42\frac{1}{2}$ miles the line rises with a 1 in 50 grade to $44\frac{1}{2}$ miles: this grade may probably be eased. At $44\frac{1}{2}$ miles a short tunnel 4 chains in length is required, but it may be found advisable to lengthen it to ease work on the preceding grade.

Between $44\frac{1}{2}$ and $45\frac{1}{2}$ miles the line runs along sideling ground without cross spurs—grade level; then through a 6-chain length of tunnel. Falling then to $46\frac{1}{2}$ miles, with a 1 in 66 grade (but a 1 in 50 grade may possibly be required), the line runs level along sideling to $47\frac{1}{2}$ miles; work moderate.

From $47\frac{1}{2}$ to 50 $\frac{1}{2}$ miles the line rises with a 1 in 50 grade to a tunnel 5 chains in length through a ridge, and falls with another 1 in 50 grade into the Waingarara Valley. This portion will require rather heavy construction-works. It then continues down the Waingarara Valley, with easy grades and work, to its junction with the Tangarakan at 51 miles.

From Stratford to about 12 miles the character of the country is flat, being on the slope of Mount Egmont, and consisting of volcanic earths. The rivers are very rapid, with boulder-beds, with a low terrace on each side, forming the river valley. At about 12 miles the character of the country changes altogether, the volcanic earths giving place to *papa* rock and clay liable to slips in places: the rivers, after a rapid descent for a short distance from their sources, run very slowly, the fall in them being by short rapids or low falls, with long reaches of comparatively still water between. The valleys are narrow at bottom, and are formed by ranges of hills with sharp ridges, ranging in height from 300ft. to 800ft. above the valleys: this style of country continues to the Tangarakan River, at 51 miles.

From 51 to $57\frac{1}{2}$ miles the line continues up the Tangarakan Gorge with an easy grade, a considerable distance being saved by cutting off two long bends by passing over low saddles, as shown on section. On each side of the Tangarakan River there are from 2 to 10 chains of easy sideling ground, then a perpendicular cliff of about 300 feet in height of *papa* rock, and sideling ground up to a height varying from 600ft. to 1,000ft. above river. The tops of the ridges are generally covered with black birch, all *Fagus fusca*, with good barrels. The piece of comparatively-flat ground along base of cliffs will enable the line to be constructed without exceptional work or sharp curves. It will be necessary to bridge the river in three, and possibly in five, places.

At 57½ miles the line commences to ascend by a 1 in 50 grade to 59½ miles, and then by a flatter grade to the saddle in the Tangarakau Range at 60½ miles.

At 57½ miles the line enters a small creek-gorge, which rises rapidly to 59½ miles, the sides being very steep, which will make the work heavy.

From 59½ to 60½ miles the creek runs slowly, the sides being much flatter, and the work of construction will consequently be very much easier. In consequence of the creek falling so slowly at the top, it will be impossible to cut off any more of the rise than can be done by a cutting.

From 60½ to 63½ miles the descent into the Eao Valley occurs by a 1 in 50 grade. The work of construction along this grade will be very heavy.

From 63½ to 66½ miles the line passes up the Eao Valley with easy grades and work to a saddle at the head of the Mahorahora; it then descends by a 1 in 50 grade, with moderate work, to the Mangaroa Valley at 68½ miles (this grade may probably be flattened); then up the Mangaroa Valley to 72 miles; then crossing into the Ohura Valley on a very low saddle with an easy grade; then up the Ohura and Waikaka valleys to 85 miles with easy grades. The work of construction to 81 miles will be easy, then to 83 miles it will be a little heavier, and from 83 to 85 miles it will be heavy, requiring a short tunnel at 84 miles to cut off a bend in the river. Between 85 and 87½ miles the ascent to the saddle in the Wanganui-Mokau watershed is made by a 1 in 50 grade, the work of construction being moderate.

From 87½ to 91½ miles the line descends by a 1 in 50 grade. The work of construction along this grade will be very heavy, including one tunnel 10 chains long through a cross spur: in fact, I consider this the worst portion of the whole line.

Before proceeding further, I might state that, from a view I had of the country, I think the line between 63 and 71 miles may be straightened considerably. I was unable to examine this part as thoroughly as I wished, on account of provisions running short.

From 91½ to 93½ miles the line passes over open flat country, the construction-works required being easy.

Between 94½ and 97½ miles the line rises by a 1 in 50 grade, and descends by a 1 in 55 grade to cross the low hills between the Mokau-iti and Mokau rivers; work moderate.

From 97½ to 109½ miles the line runs up the Mokau Valley, with flat grades and easy work, the large bends in the river being cut off by passing over saddles in the low hills in the valley.

Between 109½ and 112 miles the line descends by a 1 in 50 grade into the Mangapu Valley. Two lines for this grade are shown on the plan, as a trial line must be run on both to decide which is the better. The work on both will be very heavy on account of steep sidelings, cross gullies, and tunnel.

From 112 to 123 miles the line follows down the Mangapu Valley to Mr. Rochfort's line near the confluence of the Mangapu and Mangakewa creeks; work easy.

The Tangarakau Range, which is crossed by the line at 60½ miles, extends from thence in a northerly and south-westerly direction, the country towards the east being a great deal lower than that towards the west. The country on east side consists of valleys varying in width from 20 to 100 chains, with low hills on each side varying in height from 200ft. to about 400ft.; while the Tangarakau Range stands out like a wall, the top being very straight, with very few peaks, and reaches an extreme elevation of about 1,100ft. above the Ohura Valley. The valleys narrow in again at about 83 miles, near where the line commences to ascend to the saddle in a branch of the Tangarakau Range, which forms the Mokau-Wanganui watershed, and continues narrow to 90 miles; there being no flat land in them: the hills on each side are very steep.

At 90 miles the line is in open country, comparatively flat, which is drained by the Hinoteko, a tributary of the Mokau-iti: both these rivers are crossed at about 94 miles, they being situated very close together. From there to 100 miles, in crossing from the Mokau-iti to the Mokau, the country is rather broken.

From 100 miles to Te Awamutu the valleys are altogether wider, and covered (with very few exceptions) with dense fern. At 94 miles the line enters the limestone country. This stone will form a suitable material for building culverts, as slabs varying in thickness from 1 to 6 inches can be obtained without any quarrying or dressing, which would suit well for the floors and roofs of 9in. to 18in. drains.

The Wairere Falls, in the Mokau River, near 98 miles, are formed by a mass of stone of the same description as that in the hills round Wellington: this is covered above the river-level with a cap of limestone horizontally stratified.

A seam of coal, about 5ft. thick, is exposed to view on each side of the Tangarakau River at 55 miles, and is similar in character to that now being worked about twenty-four miles from the sea up the Mokau River.

The maximum length of the bridge required to cross any of the rivers, on the square, will be 80ft., with the usual end-spans according to height of approaches.

Before finally adopting this line, I consider it advisable to explore the country to find whether a line could be run from 42 miles in an easterly direction to the Eao, and up that river until the line already explored is reached: this would avoid the rough and valueless country in the Tangarakau Gorge, and would open more effectively the good country said to exist in the lower part of the Eao Valley. This line was not examined because time was short, and, having found a practicable route, I did not consider it advisable to waste time and money in trying to improve the line already obtained, as it could be done to better advantage while running the trial line.

From 61 to 74 miles an alternative line was explored as shown on plan, which is not an improvement, as it runs out of the direction, and lengthens the line, and is no saving in cost.

A line was also explored from 77 miles up the Ohura Valley, across a very low saddle, to join Mr. Rochfort's line in the Ongarue Valley. The grades would be easy to the saddle; from thence a drop of 200ft. occurs, which would require a 1 in 50 grade. At 87 miles this

alternative line enters the pumice-stone country, which extends the remainder of the distance, viz., to 123 miles, where the line, as described, would join Mr. Rochfort's, at a distance of 25 miles from Te Awamutu. The construction-works required would be moderate over a considerable length of the line, but very costly over other portions; the formation averaging probably a little over £4,000, and this with rails, rolling-stock, stations, &c., added, would amount to a total of about £7,000 per mile, not including cost of land.

I have, &c.,

R. W. HOLMES,

Resident Engineer

The Engineer-in-Chief, Wellington.

No. 2.

Mr. A. J. RAWSON to the CHIEF SURVEYOR, New Plymouth.

SIR,—

New Plymouth, 30th April, 1884.

I have the honour to forward the following report:—

Though my late journey through a portion of the King country was strictly to explore for a railway route, yet, as that journey took me through a considerable tract of little-known country, I have thought it would be perhaps affording useful information to forward a brief report of the nature of the country from a settlement point of view, more especially as the broken character of the country along the coast is generally supposed to extend much farther inland than it in reality does.

After leaving the Tongaporutu, until arriving at the Makarakia, the country is broken and unfit for settlement, judging by what can be seen from the track, but the Makarakia has a fair bush valley and so has the Waitara.

The Tangarakau is a narrow bush valley, almost gorge, with abrupt ridges on either side, but the creeks running into it have, many of them, fairly good small bush valleys, and there is some good bush tableland at the head of the river.

The Eao drains about 40,000 acres, and has a fine bush valley, the soil being a rich river deposit, and the bush containing some fine timber and light scrub free from supplejack. The hills are mostly easy, and fit for grazing. Roads could be got through the valley and into the Tangarakau and Mangaroa.

The Mangaroa and the Waitohena drain about 60,000 acres, and joining form the Mangaroa, which flows into the Ohura. The land in the main valley and the two branches is of the same nature, being bush, with scattered patches of scrub and fern land of good quality. The valley is wide and level, the soil being a rich river deposit. The hills towards the Tangarakau and Mokau are high and broken, but towards the Waikaka and Ohura they are lower, mostly suitable for grazing, the soil being of good quality. The bush is scattered heavy timber, with light under-
scrub, free from supplejack. Roads could be got up and down the valley and into the head of the Eao and into the Ohura at the junction of the Mangaroa and that river, and about three miles below the junction of the Waikaka and Ohura.

The Waikaka drains about 30,000 acres. It has a good valley, as have most of the branches opening into it. About half the country so drained by this river is fern land, half of which is light fern land from having been over burnt; the rest is bush and scrub, the soil of which is of very good quality. The valley is suitable for a road, as are most of the valleys opening into it.

The Ohura drains about 75,000 acres. With the exception of two or three miles the whole of this valley is fit for settlement; these two or three miles lie from the Taupo track down stream, the immediate valley being smothered in pumice-stone, which pumice-stone extends through the narrow valley to the Ongarue, and for some distance up and down that river. The Ohura Valley is half fern, half bush and scrub, the southern side being mostly fern, as the Natives have apparently had clearings on that side. (The Waikato tribes are said to have been driven into these valleys by the Ngapuhi.) About half this fern land has been deteriorated by being frequently burnt, probably requiring a long period of sheep-grazing to recover its original tone; but, where not so burnt, the tutu and fern are heavy, showing good soil. The bush land is invariably of the best quality. The hills sloping into the valley are not abrupt, and could mostly be ploughed. There is plenty of good timber (rimu, kahikatea, matai and totara) scattered through the valley, many spots being suitable for mills. This river, like the Mangaroa and Waikaka, can for long distances be navigated by canoe. The whole length of the valley could be traversed by a road; branch roads could also be got into all the surrounding valleys.

The Mokau-iti.—This branch of the Mokau drains about 45,000 acres, chiefly an open fern valley, intersected by swamps and dotted by kahikatea clumps. The swamps will be perhaps the best part of the valley in the future, as, from the river and its branches having a good fall with banks from ten to twenty feet high, they will be easily drained, the swamps, being of the same nature as those I have seen drained in the Rangitikei-Manawatu District, affording fine summer pasturage. The kahikatea bush is in sufficient quantity to be worked by mills. The fern land has in parts been over cropped and over burnt by the Natives, but would take grass well; the rest of the fern land is of good quality, more especially on the slopes of the hills. Grey limestone crops out of the hills in large quantities in several places, and clay suitable for pottery is plentiful throughout the valley. The whole valley can be easily traversed by roads, one of which could go over into the head of the Ohura and another into the Waikaka.

Coal of the same nature as the Mokau coal, and apparently part of the same seam, is to be found cropping out in several places on the Tangarakau and at the head of the Eao, the seam where seen being four or five feet thick with a slight dip to the south.

The whole of the bush in the Eao, the Mangaroa, the Waikaka, and the Ohura would be easier than ordinary bush to clear, as the underscrub is of a light nature and free from supplejacks, and would be cleared out very much by cattle, of which there are none running there now. Similar bush on the Kiwitea Block (Manawatu District) was rapidly taken up in consequence of the wild cattle having cleared away the underscrub.

The few Native tracks are much overgrown.

No Natives are settled on the Ohura permanently, except near its junction with the Wanganni and between the head of the Ohura and Ongaruhe, nor are there any Natives on the Eao, the Mangaroa, or the Waikaka. There are several settlements on the Mokau-iti.

The railway route from Stratford would tap the whole of the good country here spoken of. Independently of the railway there appear to be only two ways of getting at this country from the coast by roads: either by the Mimi or Tongaporutu into the Makarakia, from there into the Waitara, and from there into the Tangaraku, and out of that into the Eao; or in from the Awakino across the Mokau, and up the Mokau-iti into the Waikaka. All road work in the country itself would be comparatively easy.

The most central point, say, for a township would be on the Ohura, about the junction of the Waikaka.

The country was seen from the route and from many surrounding hills which I had occasion to climb.

Having been engaged for some time in farming, and having been over much of the Wellington, Nelson, and Taranaki Provinces, I venture to state that about 250,000 acres of the country here spoken of is well suited for settlement—in fact would be readily taken up in the Wellington, and eagerly in the Nelson, Province. The nature of the country would admit of moderate-sized sections coming in for a share of bush and scrub or fern, and flat, with grazing hills.

I have noticed that the few who have penetrated to this part of the country are too apt to undervalue it from the present temporary difficulties to be met with; also judging it by such a standard as the Waimate Plains, forgetting that such land as that has long ago been taken up in other parts of New Zealand.

The Taupo track is much overgrown, and is almost impassable for horses; but, in the event of a gold rush taking place to Tuhua, a man could walk from the mouth of the Mokau by this track to Tuhua in three days. Dr. Hochstetter travelled by this track; he appears to have mistaken the Waikaka branch of the Ohura, and he also describes the pumice-stone as extending right down the Ohura, which it does not, as previously mentioned.

With the exception of a few Wanganui Natives, all those met with were friendly and willing to assist in any way.

The Chief Surveyor, New Plymouth.

I have, &c.,

ARTHUR J. RAWSON.

No. 3.

Mr. R. W. HOLMES to the ENGINEER-IN-CHIEF, Wellington.

Sir,—

19th June, 1884.

I have the honour to report on the character of the land and minerals found along the proposed line of railway, between Stratford and Te Awamutu.

From Stratford to about twelve miles the soil consists of volcanic earths, with a good covering of vegetable matter, suitable for grass and root crops, but it does not seem heavy enough for growing grain. From twelve to fifty-one miles the volcanic soil gives place to alluvial deposits, consisting of clay with a good black soil on top, and papa rock beneath. This land I consider is better than the preceding, but, owing to its broken nature, only small patches in the narrow valleys could be utilized for cropping, the remainder would form good grazing land. The bush consists of white and red pine, rata, and matai, the undergrowth being light and open.

From fifty-one miles to sixty-three miles in the Tangaraku Gorge and vicinity, the land is useless for agricultural purposes owing to the bad soil and precipitous nature of the country, the tops of the cliffs being covered with black birch. The black birch is all *fagus fusca*, of a good size, and will form good bridge material and sleepers.

From sixty-three miles to eighty-three miles in the Eao, Mangaroa, Ohura, and Waikaka Valleys the land is good, especially the Eao and Mangaroa Valleys; all alluvial with clay subsoil. The continuous bush terminates in the Ohura Valley at about seventy-three miles, it then becomes broken up with fern clearings; where the fern has been growing undisturbed the top or vegetable soil is very good; but in many places, particularly along the Native tracks, it has been damaged by repeated fern fires. There is first-class white and red pine, matai, and rata in the Eao and Mangaroa Valleys, particularly in the former.

From eighty-three miles to ninety miles the soil is good, but the land is too broken for anything but grazing purposes.

At ninety miles the continuous fern country begins, and continues all the way to Te Awamutu; the land is good, with a clay subsoil.

From ninety-four miles to one hundred and twenty miles limestone shows in numerous places, cropping out above the surface.

From one hundred and twenty miles and to Te Awamutu very little limestone is seen.

Along the alternative line, up the Ohura, the good land continues to eighty-seven miles, it then enters the pumice-stone country, which continues for the remainder of the distance. The pumice

land is very bad, the only good soil being seen on the tops of the hills, and consequently is very limited. A few totara trees are growing in the patches of bush along this line.

Of minerals nothing was noticed but the coal seam in the Tangarakau Gorge; this is a similar coal to that now being worked on the Mokau River; the seam is about five feet thick.

A little hard cemented gravel was seen in the Tangarakau River banks, and a small quantity of shingle was seen in the Mangaroa River.

I have, &c.,

R. W. HOLMES,
Resident Engineer.

The Engineer-in-Chief, Wellington.

No. 4.

EXTRACT from a REPORT by MR. LAWRENCE CUSSEN, District Surveyor, to the ASSISTANT SURVEYOR-GENERAL, Auckland, dated 4th July, 1884.

Description of the Country.—The triangulation has not sufficiently advanced to give a detailed description of the country, which, of course, will be supplied when my maps are sent in. The following curtailed sketch may prove useful in the meantime, as I think the quality and quantity of agricultural land in the King country has been over-estimated by most people: The open country lying between the Punui and Mokau Rivers, through which the Waipa and its tributaries flow, contain the only extensive area of good agricultural land that I have seen. This comprises an area of about 700,000 acres, bounded to the east by the Rangitoto, Ranginui, and Wharepunga Ranges, and to the westward by the broken, wooded country extending southward from the Pirongia Ranges to the Mokau River at Tautoro. This country contains a variety of excellent land for all agricultural purposes, comprising limestone, rich volcanic loam, and, along the rivers and streams, extensive and fertile alluvial flats. Timber for all purposes is easily available. The district is well watered. Roads can be made at a slight cost. Brown coal is to be found in the Hanturu Ranges, to the west of Otorohanga about nine miles; it is also to be found near Te Kuiti, and probably will be got elsewhere when the district is more known, as many of the rivers and streams have particles of coal in them. Between the Mokau and Waimeha Rivers the country is very broken, and the land variable in quality. There is some limestone on the Mokau, near Te Kuiti; but the limestone land is limited in this neighbourhood, and very broken. The valleys are generally open, and the ranges and hills covered with mixed timber, containing rimu, totara, &c., though the totara is not plentiful. There is a considerable area of table-land amongst the hills in this district that is nearly all under forest, and the soil is good; but it is generally difficult of access. About fifteen miles to the eastward of Te Kuiti the pumice-country begins, though after this there is good land in the bush and on the table-lands. The valley of the Ongarue and Waimeha Rivers is very poor—thousands of acres of wretched pumice flats, covered with stunted scrub and dried tussock-grass, with pumice all over the surface. From the Waimeha to Taumararua some better land is met with. There are small alluvial flats along the banks of the Ongarue, where the Natives have cultivated: on the sides and tops of the fern-ridges the soil is good, but the country generally is very broken. About the Tuhua Mountain there is some good land and plenty of valuable timber, which can be made accessible from Ongarue Valley. Lying between the west of Taupo Lake and the valley of the Ongarue, and extending from Pureora, the most northern peak of the Hurakia Ranges, there is about 300,000 acres of broken country, including the heavily-wooded ranges of Hurakia and Hauhangaroa. The land is very variable in quality, a small stream sometimes dividing a good volcanic loam and a sterile pumice tract; I noticed this even in the table-lands on the mountains. This district is cut up by deep gullies and streams, with table-land between. There is a great deal of valuable timber, including totara, though not a great deal of the latter. The timber would be accessible—at least a good portion of it—from the Te Awamutu and Marton railway-line. Between Taringamutu and South Taupo there is some good bush-land, though broken; there is also a good deal of useful timber, but it will be difficult of access, and roads through this country will cost a great deal to form. On the west of the Waikato River, and extending about twenty miles north from the Hurakia Ranges, is a broken tract of open country, called the Kaiangaroa, containing about 100,000 acres. It is intersected by deep gullies and ravines. The land is poor: bare rocks and landslips everywhere visible. The Maraeroa Plains, at the head of the Waimeha River, comprise about sixty to eighty thousand acres of fairly-good open country, though some of it is poor, with pumice lying on the surface. A great deal of the country around here is level and undulating. The bush-land is variable, some of it good and some a light pumice surface. Finally, outside the area of 700,000 acres before mentioned, lying between the Mokau River and Kihikihi, &c., I have not seen any considerable area of land suitable for general agricultural purposes, though much of the country might be profitably occupied by settlers holding one thousand acres and upwards, and here and there a small farmer would find enough of good land to settle upon.

LAURENCE CUSSEN.

No. 5.

MR. F. M. SKEET, Assistant-Surveyor, to the CHIEF SURVEYOR, New Plymouth.

New Plymouth, 30th July, 1884.

SIR,—In accordance with your instructions, I have the honour to forward the following report on the country between Stratford and Mokau which would be opened up by a line of railway from Stratford to Te Awamutu:—

15—I. 6.

On leaving Stratford the line follows the valley of the Patea, which, to the Makuri Stream, is good agricultural bush land, about eight miles in length and ten miles wide, with a clay subsoil and a thick black soil on top. The timber in parts is plentiful, and suitable for mills, consisting of rimu, matai, white pine, and patches of totara.

A road-line would connect at Makuri that would open up the country to the Mangaehu and down the Patea River, some ten miles further. Following up Makuri as far as the saddle to Mangaotuku, it meets a practicable road-line that would come down that valley, tapping the country between the Tariki Road and central Waitara, some forty thousand acres good forest land, timber principally rimu, matai, rata, and white pine; soil rich.

Crossing the saddle to the Mangaotuku another road would come in, opening up the country down the Mangaehu Valley eastward to Wanganui and head of the Whenuakura and Waitotara Rivers; country varied, valleys good, but the steep slopes of the Matamateonga Ranges (which rise, in places 2,000ft. above the surrounding country) would be useless for agricultural or pastoral purposes, and should be retained as a forest reserve. The line does not run through this country, but some miles distant, abreast of it.

The line follows the Valley of Mangaotuku for about twelve miles, in undulating country five miles wide: upper end swampy; in parts fern, light bush on hill slopes, easily cleared; soil good. About half way, about twenty-five miles from Stratford, a road would come over a low saddle from Makahu and Upper Mangaehu, where some ten thousand acres of fern and light bush country could be brought into use for settlement.

On some of the branch streams there are large patches of white pine, and on the main ridge, above Waitara, rimu, matai, pukatea, and totara are plentiful.

From Mangaotuku it crosses a saddle to the Makahu, and then on to the Whangauromona, getting into the country drained by the Wanganui and its tributaries. Here roads would open up country down the Whangauromona, Lower Tangarakau, part of the Wanganui near the bend at Puketapu, some 4,600 acres. In parts the hill-tops are covered with black birch, but it does not continue for long distances, and not generally on the flat ground near the streams. From Whangauromona it goes through about ten miles of rather broken and abrupt country to the Tahoraparaoa, where roads would come in from different directions, opening up the Lower Tangarakau, another part of the Wanganui Valley, and the upper part of the Waitara. A break of good country is about here, not very wide, but of about twelve miles in length: soil is good; timber large and plentiful.

From Tangarakau, sixty miles from Stratford, until near the Eao Stream, about six miles, the country is rugged and unfit for settlement. Timber is black birch, high and straight.

Southwards towards the Lower Eao timber is more rimu and rata, with patches of birch. Coal crops out in different parts, indicating an extensive field. The country at this particular place near the coal-beds is by far the worst on the route. The stream meanders through ridges 1,100ft. to 1,400ft. above its level, which are abrupt and rough.

Tangarakau at its source is much better, the Valley of Waitaanga opening out near a stream that flows to Mokau, giving a considerable amount of available land.

Near the Tangarakau-Eao Saddle there are about two thousand acres of good land, hardly expected; it is caused by the meeting of several ridges. Similar spots are frequently met with in Taranaki.

Once into the Eao the country changes to open fern valleys and forest-topped hills.

Roads would come over from the Lower Ohura and Wanganui, where the country is a mixture of fern, scrub, and bush, the land near the streams and on banks of river being good agricultural, with rich soil, the European grasses that are there growing luxuriantly, the clover especially so.

Following the Eao to its source, and over to Mangaroa, the country is good. A road coming down Mangaroa would open country towards a large branch of Mokau called Punirau.

Some of the streams that come into Ohura have valleys that run considerable distances back, mostly fern and scrub. A little above Nihoniho Ohura breaks into two, the northerly branch, Waikaka, taking its rise near the tributary of Mokau-iti. This stream has several branches that have good fern valleys, and in the bends of the river the land is of good quality. Ohura proper continues towards Ongarue, still through fern, toi, scrub, and light bush, its branches also running well back two to three miles, with open valleys.

From Waikaka the line goes over into the valley of the Mokau-iti, where a change in the character of country and soil is much more noticeable. The hills are flatter topped, valleys wider, and soil better, the outcrops of limestone, which is very plentiful, giving an abrupt appearance to the surroundings. It continues good for a mile or two below Totoro on the Mokau, some twelve miles in length and seven miles wide.

The Mokau Valley (north-east), stretching for miles inland towards the Waikato district, looks good.

From Totoro the horse-track turns to the Awakino, to avoid the rough country down the Mokau River.

From a mile or two below Totoro the Mokau flows between high hills, the spurs in places coming to the water's edge, and very steep. There are breaks where the country is good, though not many, this end of the valley being more suitable for coal industries than for farming purposes.

As regards available country opened up fit for settlement, from Stratford to where the line leaves Mangaotuku—some thirty miles—about 170,000 acres would be contiguous to the line, though the branch roads that have been mentioned would bring in an extra amount of 65,000 acres.

From Mangaotuku to Eao is twenty-four miles in length, twelve miles on each side embracing 360,000 acres, about half of which would be suitable for settlement purposes. To counteract this, there is in the most rugged portion the Tangarakau coal field, through which the line runs.

From Eao to the Mokau-iti, some thirty-five miles by about fourteen miles wide, gives 300,000 acres. This part is a mixture of open valleys, low hills, and high ridges. Near the dividing range,

with the exception of the higher parts, the soil is good. This district includes the Ohura Valley, but not to the Ongarue, from which a large additional area would doubtless feed the line.

The line would run parallel to 290,000 acres of Crown land, half of which would be opened up by railway, the remainder being reached from the coast. The line would run through two other blocks, one of Crown lands, 50,000 acres, and another estimated at 70,000 acres, on the Tangarakau, at present under negotiation, and on which the Government have made a large advance. Three blocks on the Ohura and Wanganui of 25,000 acres would also be opened up; this also is Crown land.

The coal field is a very extensive one, judging from the outcrops on Lower Tangarakau, Central Tangarakau, Eao, Ohura (near the Opatu Block), Mokau-iti, Mokau, and indications also on the Tongoporutu, near the coast; in all, some thirty-two miles long by twenty miles wide.

Limestone is plentiful in the Mokau country, and there are indications of it at the Stratford end, about six miles from present railway.

I have, &c.,

The Chief Surveyor, Taranaki.

H. M. SKET, Assistant Surveyor.

INDEX TO MAPS.

DIAGRAM SHOWING THE THREE ROUTES.

KEY-MAP SHOWING EXPLORATIONS.

MR. ROCHFORD'S SURVEY (PLAN)	...	...	} CENTRAL ROUTE.
" " (SECTION)	...	...	

MR. WILLIAMS'S SURVEY (PLAN)	...	...	} EASTERN
" " (SECTION)	...	...	

MESSRS. HOLMES AND CARKEEK'S SURVEY (PLAN)	...	...	} WESTERN
" " " (SECTION)	...	...	

LAND TENURE MAP.

REPORT

OF THE

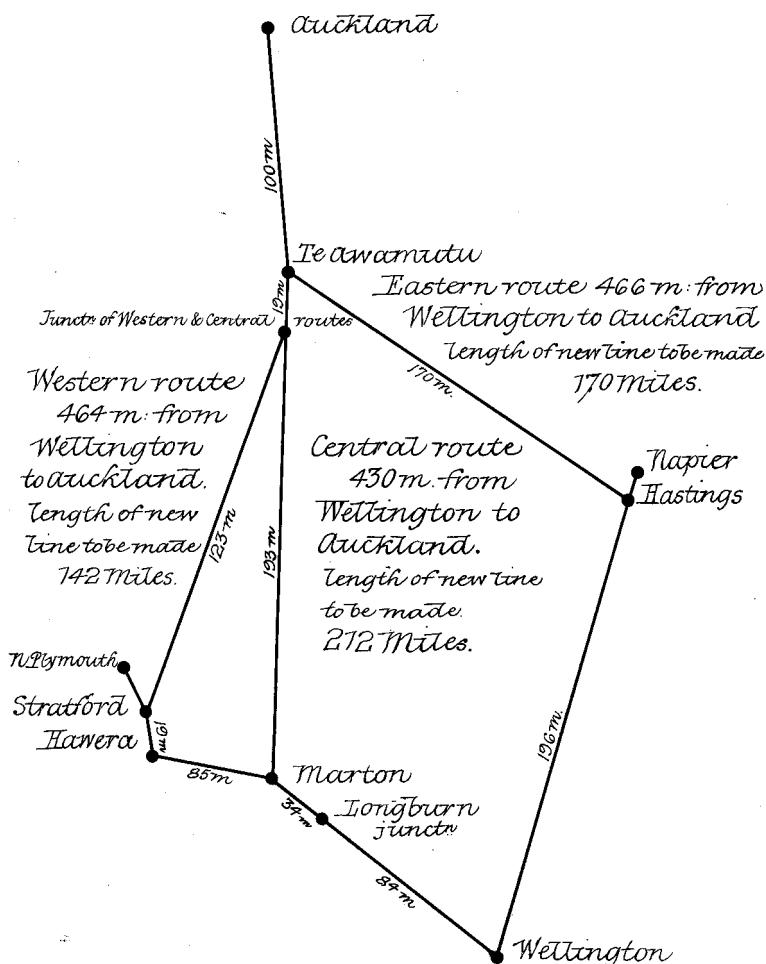
COMMISSION

ON

THE SURVEY

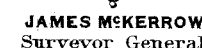
OF THE

LANDS



On Western route the total rises from Marton to Te Awamutu are 5527 ft. falls 5831 ft.

On Central route the total rises are 4911 ft. falls 5221 feet. that is there are 610 ft. more rise & fall on the Marton - Stratford line than on the Central line equivalent to 24 m. more haulage on the former.



**SHOWING EXPLORATIONS FOR RAILWAY ROUTES
BETWEEN AUCKLAND AND WELLINGTON.**

Scale of Miles.

Reference.

Chief Towns shown thus **WELLINGTON**
 Minor Towns and Post Offices **HAMILTON** ○
 Roads
 Railways 
 Boundaries of Provincial Districts 

REFERENCE.

THE UNIVERSITY OF CHICAGO

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Note.—Figures along the respective lines indicate mileages.

SKETCH PLAN

OF THE

CENTRAL ROUTE RAILWAY LINE MARTON TO TE AWAMUTU

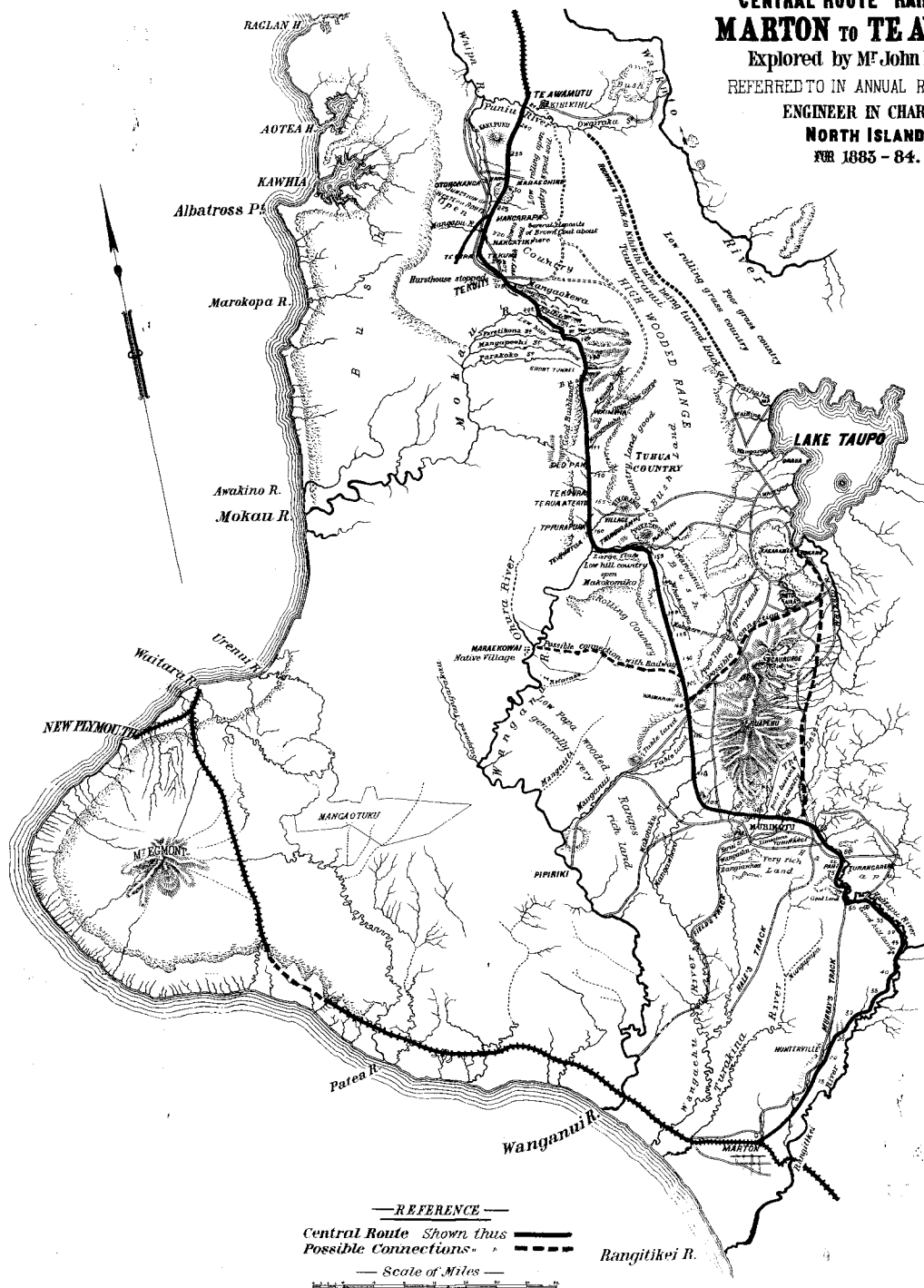
Explored by MF John Rochfort

REFERRED TO IN ANNUAL REPORT OF THE

ENGINEER IN CHARGE

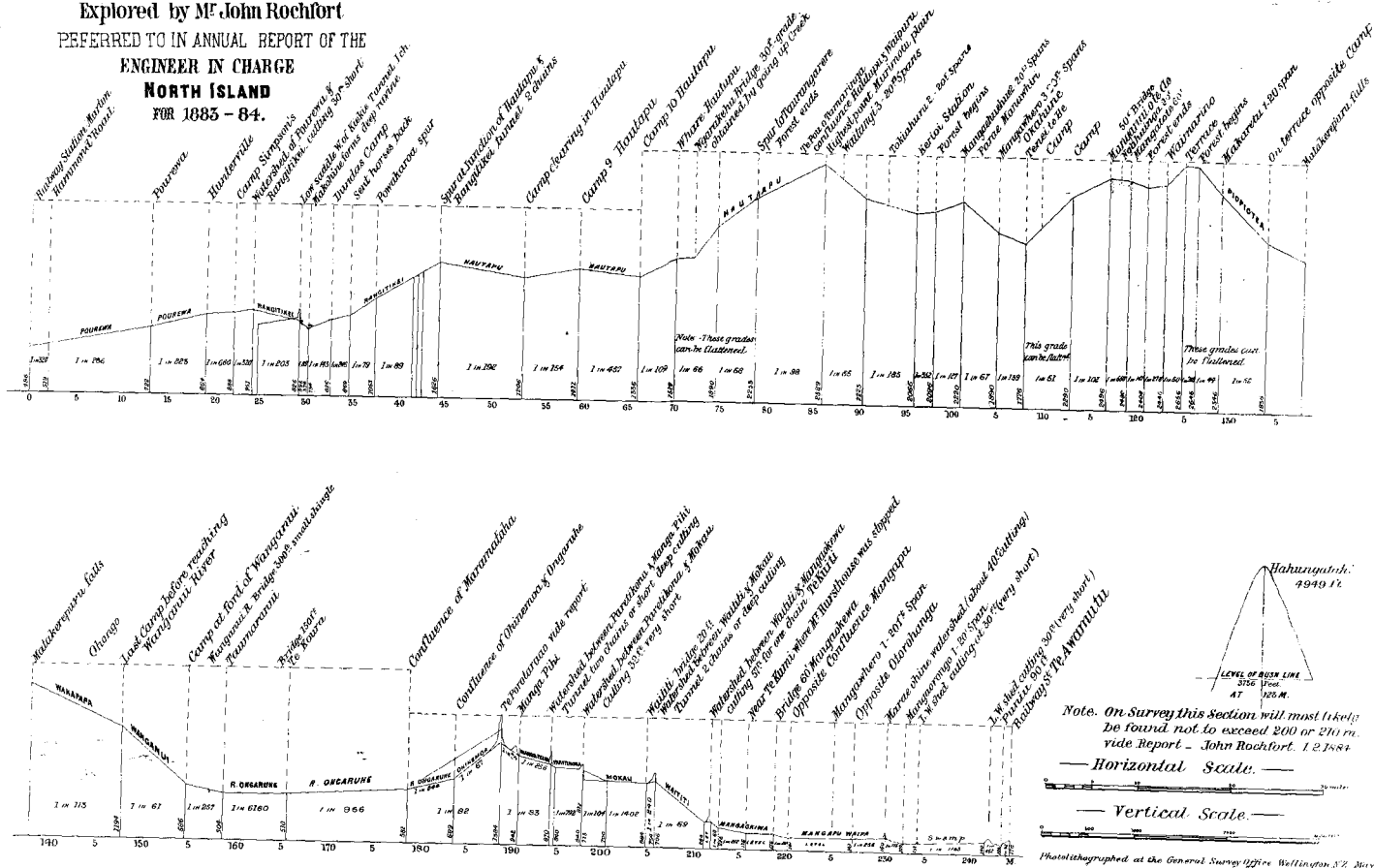
NORTH ISLAND

FOR 1883-84.



Explored by Mr John Rochfort
PREFERRED TO IN ANNUAL REPORT OF THE
ENGINEER IN CHARGE
NORTH ISLAND
FOR 1885 - 84.

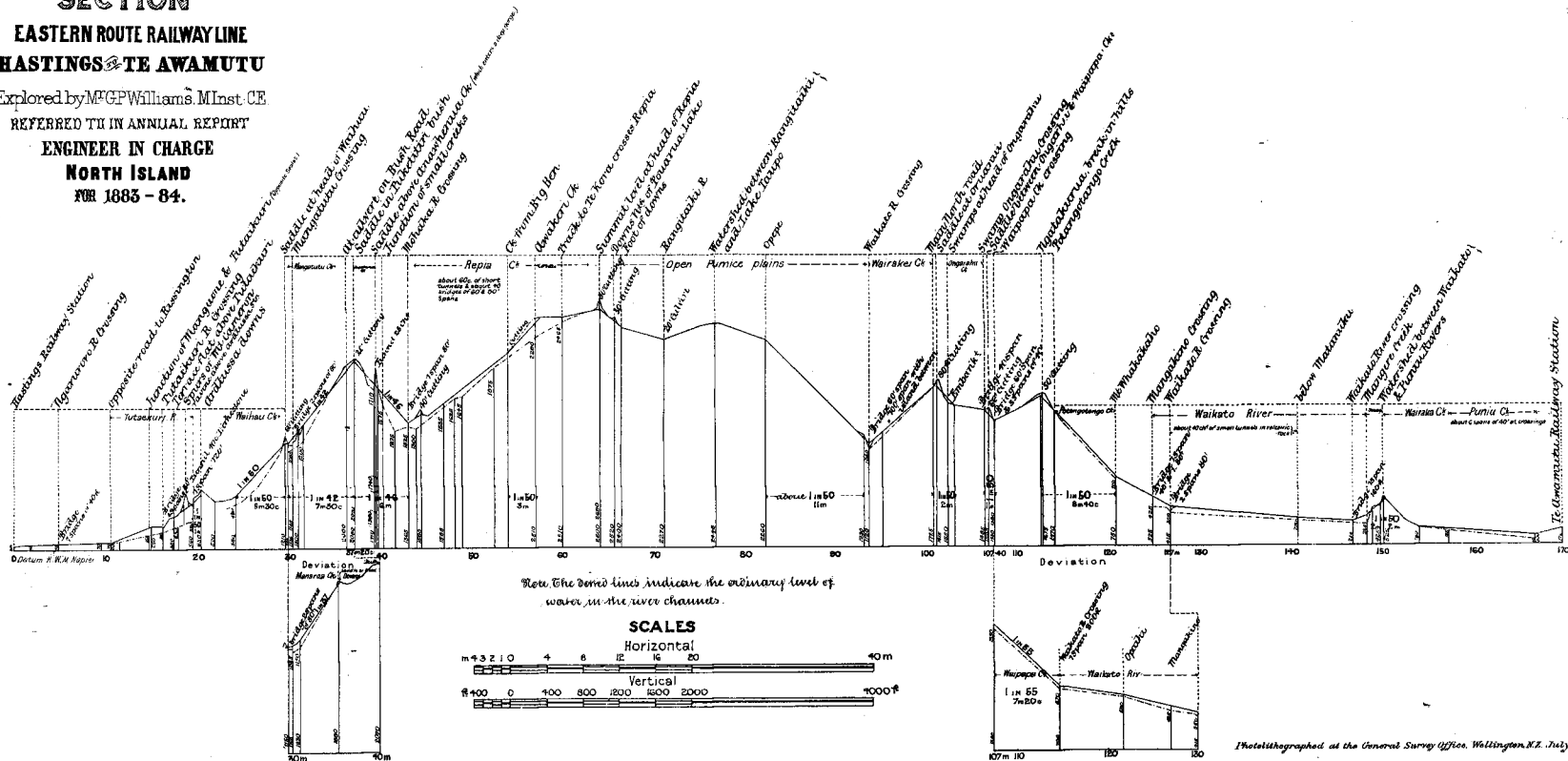
PREFERRED TO IN ANNUAL REPORT OF THE
ENGINEER IN CHARGE
NORTH ISLAND
FOR 1885 - 84.



Photolithographed at the General Survey Office Wellington NZ May 1888

EASTERN ROUTE RAILWAY LINE

Explored by M^cGP Williams M Inst CE
REFERRED TO IN ANNUAL REPORT
ENGINEER IN CHARGE
NORTH ISLAND
FOR 1883 - 84.



Photolithographed at the General Survey Office, Wellington, N.Z. July 1884

Explored by Messrs R.W. Holmes & M. Carkeek
REFERRED TO IN ANNUAL REPORT OF
ENGINEER IN CHARGE
NORTH ISLAND
FOR 1883 - 84.

Scale of Miles



SECTION WESTERN ROUTE RAILWAY LINE STRATFORD TO TE ANAMUTU

Explored by Messrs R.W. Holmes & M. Carkeek

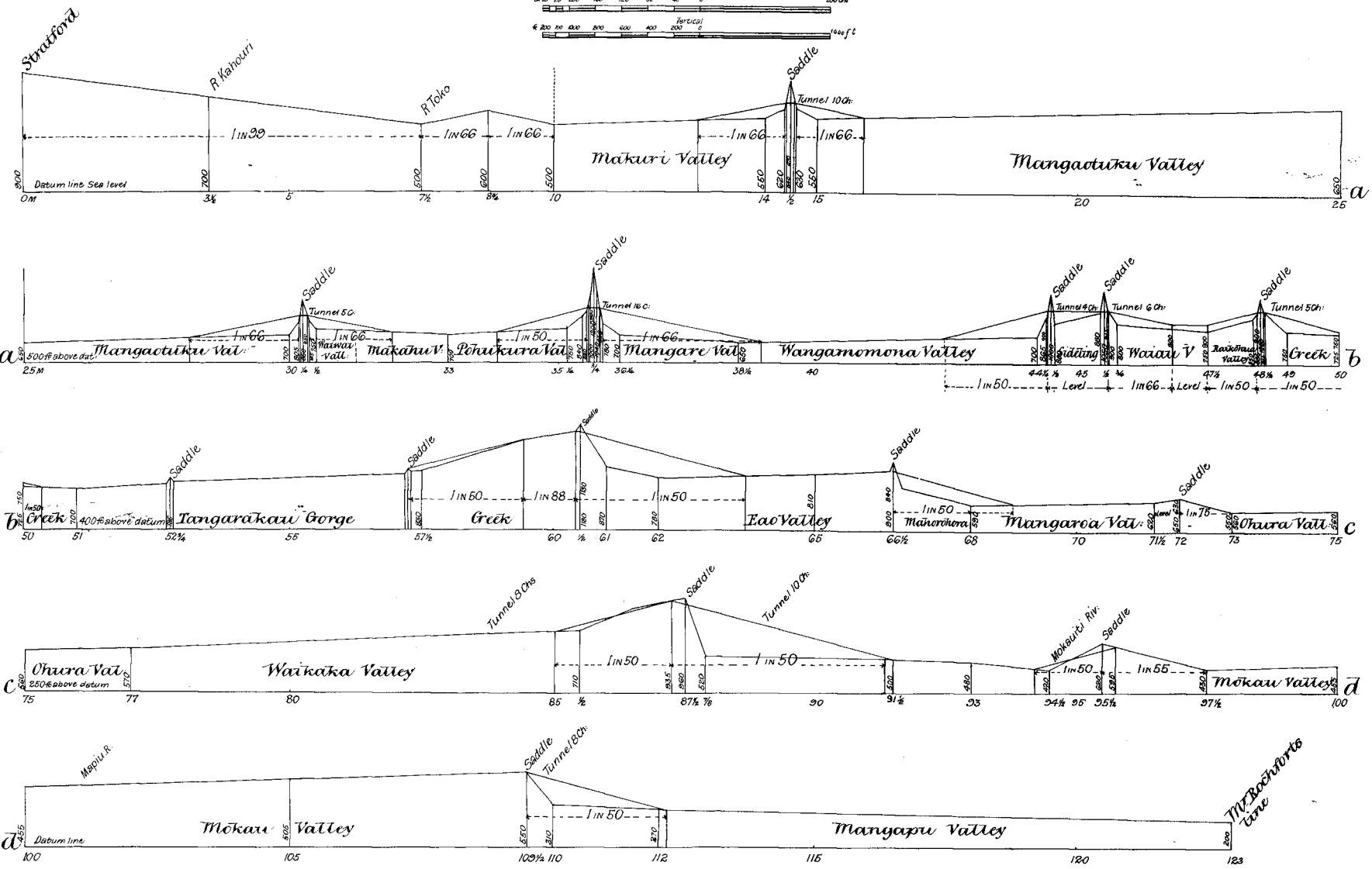
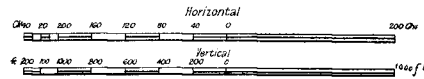
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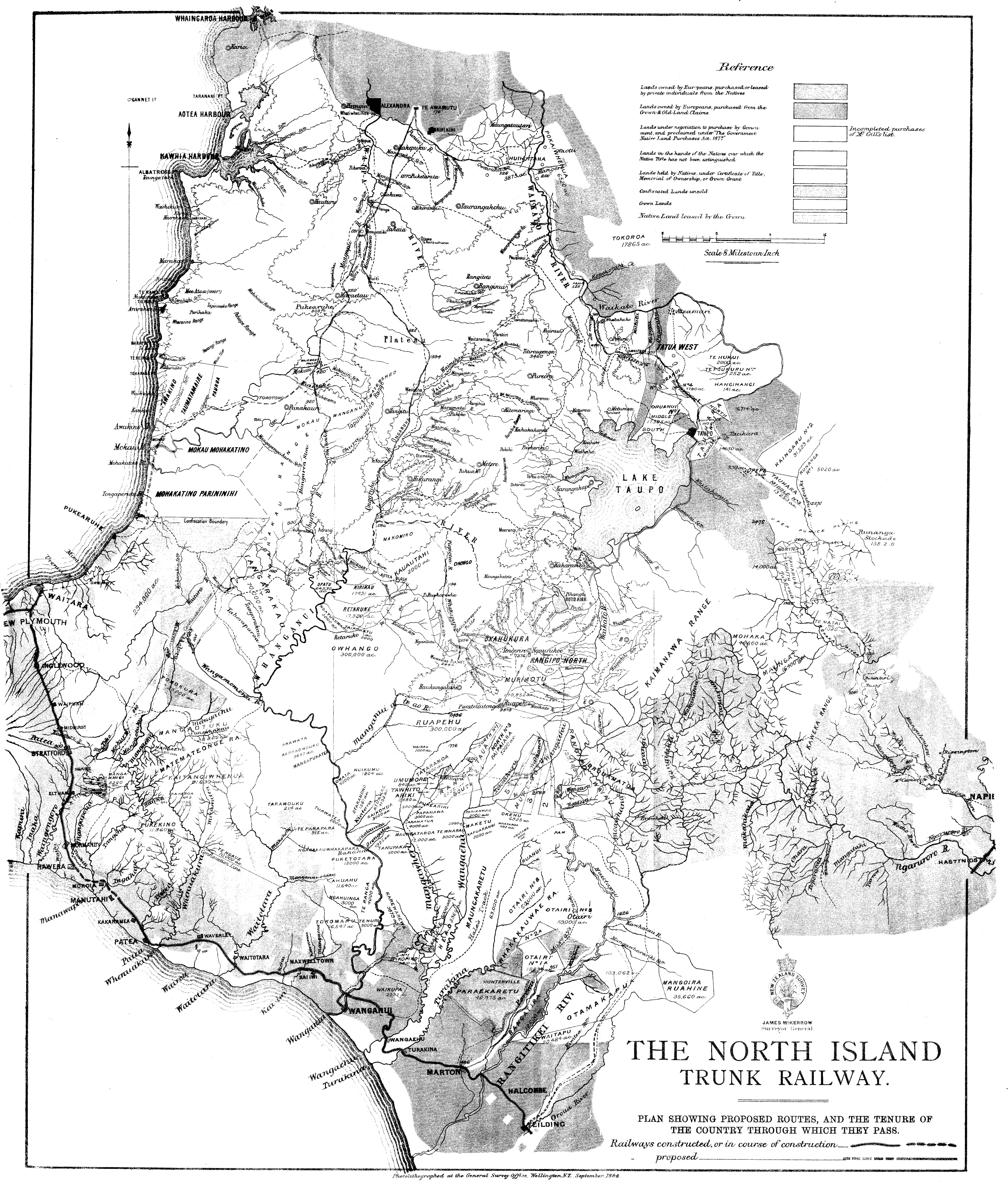
ENGINEER IN CHARGE

NORTH ISLAND

FOR 1883-84.

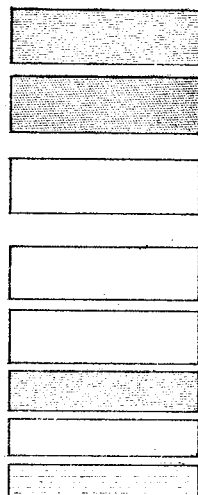
SCALES





Reference

- Lands owned by Europeans, purchased or leased by private individuals from the Natives
- Lands owned by Europeans, purchased from the Crown & Old Land Claims
- Lands under negotiation to purchase by Government, and proclaimed under The Government Native Land Purchase Act, 1877
- Lands in the hands of the Natives over which the Native Title has not been extinguished
- Lands held by Natives, under Certificate of Title, Memorial of Ownership, or Crown Grant
- Confiscated Lands unsold
- Crown Lands
- Native Land leased by the Crown



TOKOROA
17865 ac.

Scale 8 Miles to an Inch

THE NORTH ISLAND TRUNK RAILWAY.

PLAN SHOWING PROPOSED ROUTES, AND THE TENURE OF THE COUNTRY THROUGH WHICH THEY PASS.

Railways constructed, or in course of construction —
proposed —

