

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,