

MEMORANDUM for the UNDER-SECRETARY for PUBLIC WORKS.

Auckland, 28th August, 1899.

Opotiki-Rotorua Country.

REGARDING the continuation of the Gisborne-Opotiki reconnaissance survey towards Rotorua, my information does not enable me to speak with much certainty on two very important heads—viz., the amount and character of maximum grading, and the extent and class of the necessary bridging.

A ridge of hills of moderate height divides the valley of the Waioeka, the main river of the Opotiki Plains, from that of the Waiotahi. This ridge would probably not offer much difficulty. From the Waiotahi, passing inland of the Ohiwa Harbour, and to the Nukuhou Valley, the country is rather broken, and I am unable to say what minimum of curvature might be necessary. From Nukuhou to Whakatane the same broken character of the country continues, the hills stretching down from the *tuhoe*-land at Waimana to the sea at Whakatane being about 400 ft. in height. I am not aware what facilities may exist for grading down into the extensive plains which extend between the Whakatane and the Tarawera Rivers, but no doubt the matter is practicable enough, and very probably easy compared with some parts of the route between Opotiki and Gisborne.

The Whakatane-Rangitaiki Plains extend crosswise a distance of about fourteen miles, and end on the west bank of the Tarawera River. There the country rises up like a wall, as seen from a distance, and forms the broken forest table-land which extends inland from Matata, and is continuous through the lake-country to the Kaingaroa Plains. Here the grading will require much exploration, as the total rise from the plains to the forest saddle above Rotoma is over 1,000 ft., requiring a length of ten miles to overcome it. From Rotoma and Rotoehu to Rotorua the country is not difficult, and some of it particularly easy. The total distance, Opotiki to Rotorua, may be put at eighty-five miles, the distance as the crow flies being fifty-seven miles.

The bridging on the eastern half of this route would be rather extensive. The rivers are the Waioeka, Waiotahi, Nukuhou, Whakatane, Waioho, Rangitaiki, and Tarawera. Three of these, the Waioeka, Whakatane, and Rangitaiki, drain an immense extent of very mountainous country, and are subject to very heavy floods, and carefully considered flood-openings would be necessary in addition to the bridges, in a line crossing these valleys. From Tarawera to Rotorua the bridge-work will be of a very slight and easy character.

It will be seen that a large extent of the route from Opotiki to the Tarawera is across rich alluvial plains, about half of which are closely settled, and form important agricultural districts. Of the ridges and hills between these valleys I can only speak of the Whakatane Range, and, so far as my observation extends, these are of clay-slate, but of considerably closer and harder nature than those I observed in the interior explorations. The country from Tarawera to Rotorua is wholly of soft rhyolitic rocks and gravels.

There is not a large extent of bush on this route. It exists in rounding the Ohiwa Harbour to the Whakatane Hills, and from the rise west of the Tarawera to Tapuwaeharuru on Rotoiti. About three or four miles more extend between Rotoiti and Tikitere. With these exceptions the country is open.

Considering the great extent of easy work on this line of country, amounting probably to three-fourths of the whole length, I am inclined to think the large amount of bridging may be balanced in cost by the easier formation in earthworks, and that the average cost per mile may be no more than that I have estimated for Gisborne-Opotiki. Of course, no more rolling-stock would be required than what I have estimated for that other part of the route—which is a very full estimate, and, you will observe, is the same as for the Urewera route of nearly twice the length, but which would not have half the traffic.

The Under-Secretary for Public Works.

JAMES STEWART, M.Inst.C.E.

The UNDER-SECRETARY for PUBLIC WORKS to Mr. JAMES STEWART.

(Telegram.)

Wellington, 31st August, 1899.

PLEASE send by first post lithograph map, scale four miles to an inch if possible, showing possible route Opotiki to Rotorua, to illustrate your report of the 28th instant.

James Stewart, Esq., M.I.C.E., Auckland.

H. J. H. BLOW.

The UNDER-SECRETARY for PUBLIC WORKS to Mr. JAMES STEWART.

(Telegram.)

Wellington, 31st August, 1899.

COULD you wire rough approximate estimate of probable cost of line between Opotiki and Rotorua, so as to enable comparison to be made as regards total cost of both routes?

James Stewart, Esq., C.E., Auckland.

H. J. H. BLOW.

Mr. JAMES STEWART to the UNDER-SECRETARY for PUBLIC WORKS.

(Telegram.)

Auckland, 1st September, 1899.

ROUGH approximate cost of formation and permanent-way, Opotiki-Rotorua, may be taken as that of Section 1, Gisborne-Opotiki—say, £3,220 per mile, or for eighty-five miles £273,700; no rolling-stock to be added. Have posted maps showing approximate route as near as I can make it out in absence of detail examination of salient points.

The Under-Secretary, Public Works, Wellington.

JAMES STEWART.