WESTERN ROUTE.

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 7½ 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 3½ 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 12¾ 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 12¾ miles the line commences to ascend with a 1 in 66 grade to 14¼ miles, where the ridge between the Makuri and Mangaotuku Rivers is passed through with a tunnel 10 chains in ength. 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 35½ 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 42½ 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 42½ miles the line rises with a 1 in 50 grade to 44½ miles : this grade may probably be eased. At 44½ 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 44½ and 45½ miles the line runs along sideling ground without cross spurs—grade level , then through a 6-chain length of tunnel. Falling then to 46¾ miles, with a 1 in 66 grade (but a 1 in 50 grade may possibly be required), the line runs level along sideling to 47¾ miles , work moderate.

From 47½ to 50¼ 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 Waingangara 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 Tangarakau 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 Tangarakau River, at 51 miles.