

REPORT OF MR. J. MILLAR, F.S.A., C.E., ON THE TOKOMAIRIRO AND TUAPEKA LINE OF RAILWAY.

Mr. J. MILLAR, F.S.A., C.E., to the Hon. W. REEVES.

SIR,—

Dunedin, 1st August, 1872.

In accordance with instructions from the General Government, conveyed to me through His Honor the Superintendent of Otago, I have the honor to report upon and furnish a reconnaissance survey for a projected line of railway, partially sketched out in the suggestive petition (hereunto annexed, *vide* Appendix A.) addressed to His Excellency the Governor by the residents of the midland districts of this Province.

In pursuance of His Honor's instructions I proceeded to examine that portion of the westerly extension of the Southern Trunk Railway—already surveyed and reported on by Mr. Brunton—where it passes through the town of Clinton, and tending towards the Mataura.

Having traversed this line through the Popotunoa and Waipahi districts, I adopted it as a base line, and established a junction with it nine miles west of Clinton and about eighty-four miles from Dunedin, as delineated on the map herewith. From this point the proposed "Great Central Trunk Railway" starts, taking a generally northern direction, parallel to that portion of the Waipahi River, lying between the point indicated and its confluence with the Pomahaka River, passing over the latter, at a slightly oblique reach in the river where the banks afford favourable abutments for a railway bridge, and landing upon the north-east side; following its windings by side-cuttings in solid ground, through the gorge between the outcrop of the Tapanui Ranges and the base of the Conical Hills, until an almost level plateau is reached, stretching away to the west side of the town of Tapanui (twelve miles distant from the junction) and its adjoining extensive forest of valuable timber. Five steam-power sawmills, of a minimum aggregate of 100 horse-power, are at present fully employed there, and apparently may be for many years to come.

From Tapanui the line is continued through a magnificent tract of about 250,000 acres of chiefly alluvial country, unsurpassed in the Province for its excellence of soil and fertility. This plain comprises the Pomahaka Valley, Robert's Flat, &c., lying at the base of the Tapanui Ranges, where they gradually blend with the central plateau right up to the Spylaw Creek, and lie ready for immediate agricultural settlement upon a permanent and extensive scale, presenting no special engineering difficulties for railway construction.

The Spylaw Range, being of considerable altitude, may be ascended by simple contouring, with one or two moderately heavy cuttings. Here a new township might, with advantage to the public convenience, be established, where the line crosses under the highway between Dunkeld and Switzers.

These ranges also are fit for settlement. The ascent from Moa Flat will be through a leading valley, by easy contour gradients, cutting through an intervening narrow saddle of little more than one chain width at its apex; from whence a descent through the Benger district may be had upon the opposite side by traversing the natural sinuosities of a corresponding valley, right down to the level plains lying between the Benger Burn and the Clutha (*i.e.*, Molyneux) River; upon the auriferous banks of which the township of Ettrick is situated, at a distance of 36 miles from the Waipahi Junction.*

Pursuing the comparatively level gradients along the banks of the Clutha for seven miles, the township of Roxburgh (*i.e.*, Teviot) is reached, from whence the line would be continued to the gold mining township of Alexandra, a further distance of 22 miles. Alexandra is passed on the west side. At the same time, I lay down for choice an alternative line *through* that township, at, however, an increased cost of a railway bridge over the Clutha River, thus forming a communication with the town of Clyde, distant four miles, where I utilize a railway reserve laid off there several years ago.

Being of opinion, however, that the Province would be best served by the line being continued for thirteen miles further (*i.e.*, having its terminus at Cromwell), I have therefore traced the line in that direction, upon the west bank of the Clutha River, it being preferable in an economical point of view, as it presents features fitting for railway construction, besides obviating any necessity for interfering with the narrow and expensive roadway excavated out of the mountain side upon the opposite bank. On the west side the line would generally pass over the outcropping spurs of the hills, where they die away into river banks. The altitude obtained would be sufficiently above the river level to preserve the line from being flooded during any sudden rise occasioned by the snow melting upon the upper ranges.

* Taking the Southern Trunk Railway and its western extension as a base line, I find that the distance from Tokomairiro to Ettrick *via* Lawrence would be 55 miles; whereas, from the same base line at the Waipahi Junction to Ettrick is but 36 miles, showing a saving of 19 miles of construction, seeing that in any case the western extension is required to communicate with Invercargill.