

In order to enable these questions to be answered from here, it will be necessary to get from you a good deal of information, as follows :—

A.—A list of the bridges in question, showing their locality, the probable original cost of each, the probable cost of re-erecting same of local timber similar to what is in them at present, the probable cost of re-erecting of durable timber, the approximate quantity of timber (C.B.M.) in each bridge, and the probable duration of each bridge, as existing on the assumption that they receive ordinary attention only, and not wholesale additions or renewals. Large high fluming can be put into list with the bridges.

B. If maintenance for long period be determined on, would it be possible, in the case of any or all the bridges or large flumes to head the gullies and carry race, in ditching or tunnelling, along sides of same, with flume across creek at crossing, much less costly than original flume or bridge, and, if so, what would be the cost of such diversion in each case.

C. The probable cost of maintenance each year, for, say, next ten years, including ordinary light repairs to bridges and large flumes, but exclusive of probable cost of reconstructing same, or of making diversions to avoid them.

D. The probable gross revenue from race each year, during, say, next ten years, and the probable number of men whom it would keep at work mining for same period.

E. The probable length of time which the ground, immediately commanded by race, and available for gold mining, will hold out, with the number of men who could conveniently work upon it each year.

F. The possible prospects of the race in the future, as regards carrying it on to ground not immediately commanded by it at present. The cost of so carrying it on. The revenue which would thus be derived from it, and for how long, and how many men would be benefited annually. Also, in event of its being so extended by some private company, rather than by the Government, the price which said company could afford to pay for water where taking it from existing race.

G. The probable increase of revenue, if any, which might be derived from buying out the riparian rights (and other rights liable to be interfered with) of leaseholders along Nelson Creek, and the probable cost of purchasing said rights. Also the extra number of men who could thus be kept at mining work, and for how long.

H. The object, so far as I understand it, which the Minister for Mines had in view, when asking the questions above cited, was to obtain sufficient information to enable him to decide upon the most judicious course of action for the Government to pursue with respect to this race in the future, and, especially, as regards the question of maintenance, whether the prospects are such as to warrant the reconstruction of the large bridges, from time to time, as they decay, or whether the whole of the works should not merely be maintained temporarily, and to only the capacity actually requisite, with the view of abandoning them at such period as they would seem likely to become unremunerative, either directly or indirectly.

C. Y. O'CONNOR.

The RESIDENT ENGINEER, Westland,—

Greymouth, 25th May, 1882.

In reply to the queries in Mr. O'Connor's memorandum, 14/196, referred to me for report, I have the honor to enclose herewith a tracing showing the extent of country that could be commanded by the Nelson Creek Water Race; and table, as requested in memorandum above quoted, showing a list of the bridges and flumes on the present line of race, with estimate for reconstructing the same, and the probable term that the present structures will last with ordinary maintenance, and report upon the various questions as follows :—

A. The table attached contains a list of the bridges and flumes on the main line of race, but does not include the branch races, as the present structures on branch races will probably work out all the ground that they command. In the columns headed "cost of ordinary timber," and "cost of all heart timber," former means that ordinary timber is whatever is to be found in the locality of the structures that are to be reconstructed, and to be of say $\frac{3}{4}$ heart wood. "All heart timber" means that nothing but the inner heart of the timber is to be used, and wherever practicable to use either black birch, rata, totara, or kawhaka. The rates estimated for timber per C.B.M. may appear at first sight to be high, but when the nature of the country, the difficulty of access, and the means of transit are taken into consideration, the rates estimated are only reasonable, and not more than what the timber is likely to cost.

The total amount of materials for reconstructing bridges and flumes is as follows :—

| | | | | | | | | | |
|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| Timber, C.B.M. | ... | ... | ... | ... | ... | ... | ... | ... | 9,228 |
| Iron Work, lbs. | ... | ... | ... | ... | ... | ... | ... | ... | 55,231 |

The total cost of reconstruction will be, viz. :—

| | | | | | | | | | |
|----------------------------|-----|-----|-----|-----|-----|-----|---------------|----------|----------|
| | | | | | | | £ | s. | d. |
| If ordinary timber is used | ... | ... | ... | ... | ... | ... | 28,446 | 0 | 0 |
| If all heart wood timber | ... | ... | ... | ... | ... | ... | 28,060 | 0 | 0 |
| Difference in cost | ... | ... | ... | ... | ... | ... | <u>£4,614</u> | <u>0</u> | <u>0</u> |

In addition to either of these amounts, there will be £325 for puddle at ends of flumes, and, say 5 per cent. for supervision, contingencies, &c., which would make the first amount, say, in round numbers, £25,000, and the latter £30,000. The original cost of bridges and flumes was something like the present estimate.

B.—The term for which the present bridges and flumes will last with ordinary maintenance may be set down at from four to six years. A longer period could not be calculated on without wholesale repairs; but I think the principal structures will last from five to six years. Short deviations could