

SESS. II.—1884.
NEW ZEALAND.

KUMARA SLUDGE-CHANNEL AND WATER-RACE

(REPORT ON, BY MR. H. A. GORDON, INSPECTING ENGINEER).

Presented to both Houses of the General Assembly by Command of His Excellency.

REPORT by INSPECTING ENGINEER on Resolution of Gold Fields Committee on Petition of Miners using the Government Sludge-channel and Water-race at Kumara.—6th October, 1884.

MEMORANDUM *re* KUMARA WATER-RACE and SLUDGE-CHANNEL for the UNDER-SECRETARY,
MINES DEPARTMENT, Wellington.

Mines Department, Wellington, 10th October, 1884.

IN accordance with the instruction of the Hon. the Minister of Mines I have the honour to report on the Kumara Water-race and Sludge-channel, as follows:—With reference to the recommendations of the Gold Fields Committee to hand over the Kumara Water-race and Sludge-channel to the Westland County Council and the Kumara Borough Council, it will be necessary to give you a *résumé* of the history of the whole subject, in order that you may clearly understand it in all its bearings.

The Kumara Water-race and Sludge-channel are only a small portion of the water-races belonging to the Government in this locality, and they are all so connected together that it is impossible to separate the one from the other. Therefore, if the recommendations of the Gold Fields Committee are given effect to, it means handing over the whole of the Waimea-Kumara Water-race and Sludge-channel—works that have cost in construction £173,143 11s. 8d.

These works were first commenced in June, 1873, and in July, 1876, the portion known as the Waimea Water-race was completed at a cost of £118,575 15s. 2d. In 1876 the Kumara Gold Field broke out, and pressure was brought to bear on the Government to bring in a water-supply for this new field. A private company, known as Learmont and Company, commenced to construct a water-race from Kapitea Creek; but the miners considered it totally inadequate to the requirements, and, in April, 1877, the Government purchased this company's water-rights and water-race, as far as it was constructed, for £8,000. After purchasing these rights the Government enlarged and extended the water-race, and constructed a reservoir in Kapitea Creek; but the water-supply in this creek was found to be totally insufficient, except in wet weather, to meet the demand. They then brought a branch of the Waimea Water-race into the watershed of the Kapitea Valley, and constructed another large reservoir. The whole of the works connected with the Kumara water-supply have cost, in addition to the original purchase, £29,367 4s.

Shortly after the water was brought on to the Kumara Gold Field, the miners urged that it was impossible to work the ground unless a large sludge-channel or tail-race was constructed from the fall into the Teremakau River to a large flat known as Dunedin Flat, and Larrikins, and that this was a work beyond their means; but, in the event of the Government constructing it, they would be willing to pay a rent for using the same to get their tailings away. This rent was fixed before commencing to construct the channel, the miners agreeing to pay 10s. per man per week for the use of the channel four hours per day. The Government constructed this channel, which was first estimated to cost only £4,000 (*vide* manager's annual report of the 8th July, 1879, H.-11, page 30), but which has now cost £17,200 12s. 6d., making the total cost of the whole work connected with the water supply to be £173,143 11s. 8d.; but, although this is the original cost, it is only reasonable to add interest on the capital year after year since the works commenced.

The following table will show the total expenditure every year, and interest calculated at 4 per cent., the shillings and pence being deducted from the expenditure to facilitate calculation. (Taken from Tables 7 and 12, in the Public Works Statements):—

Date.	Amount of Ex- penditure at the End of the Year.	The Mean Ex- penditure on which Interest is payable.	Percentage.	Amount of Interest accrued.
	£	£		£
June, 1873, to June, 1875	78,004	78,004	4	3,120·16
" " to " 1876	98,118	88,061	4	3,522·44
" " to " 1877	117,961	108,039	4	4,321·56
" " to " 1878	128,827	123,394	4	4,935·76
" " to " 1879	141,619	135,223	4	5,408·92
" " to " 1880	144,590	143,104	4	5,724·16
" " to " 1881	151,366	147,978	4	5,919·12
" " to " 1882	162,598	156,982	4	6,279·28
" " to " 1883	164,556	163,577	4	6,543·08
" " to " 1884	173,044	168,800	4	6,752·00
Total accrued interest	52,526·48

Therefore, to the original cost must be added £52,526 9s. 7d. as interest accruing on the capital, thus making the total cost to be £225,670 1s. 3d.

RECEIPTS AND EXPENDITURE.

Since the completion of the first portion of the works in July, 1876, up to the 31st August, 1884, the sales of water from the Waimea-Kumara Water-race, and the expenditure on maintenance have been as follows:—

Date.	Sales of Water.	Expenditure on Maintenance.
	£ s. d.	£ s. d.
August, 1876, to 30th June, 1878	4,213 13 6	2,299 19 8
1st July, 1878, to 30th June, 1879	4,567 0 8	2,000 0 0
1st July, 1879, to 31st March, 1880	3,736 11 9	1,892 0 0
1st April, 1880, to 31st March, 1881	4,453 16 4	3,208 19 1
1st April, 1881, to 31st March, 1882	4,344 8 10	3,483 14 6
1st April, 1882, to 31st March, 1883	5,623 13 4	2,702 15 6
1st April, 1883, to 31st March, 1884	10,414 6 5	3,174 13 4
1st April, 1884, to 31st August, 1884	4,804 8 1	1,160 18 4
Totals	42,157 18 11	19,923 0 5

This shows a profit of £22,234 18s. 6d., but this is considerably diminished by the working of the Kumara Sludge-channel. This channel was completed in March, 1882; and from that date to the 31st August last, the channel fees and expenditure on maintenance have been as follows:—

Date.	Channel Fees.	Cost of Maintenance.
	£ s. d.	£ s. d.
1st April, 1882, to 31st March, 1883	925 13 4	1,703 11 1
1st April, 1883, to 31st March, 1884	2,127 18 3	6,405 10 8
1st April, 1884, to 31st August, 1884	912 14 7	3,421 8 3
Totals	3,966 6 2	11,530 10 0

The working of the sludge-channel, therefore, shows a direct loss of £7,564 3s. 10d., during a period of two years and five months. To take the water-races and sludge-channel conjointly, the sales of water and channel fees amount to £46,124 5s. 1d., and the expenditure on maintenance to £31,453 10s. 5d., leaving a balance in favour of sales of water and channel fees of £14,670 14s. 8d.; but from this amount there is a deduction to be made before arriving at the direct profits. There are bad debts written off the books amounting to £96 5s., and the amount of outstanding accounts on the 31st August last amounted to £2,506 14s. 11d. The outstanding accounts to the amount of £2,000 are considered good, and may be calculated as such in making any statement with reference to the benefits derived by the construction of these works. Therefore, a deduction of £602 19s. 11d. has to be made from the sales of water and channel fees, which leaves £14,067 14s. 9d. direct profit on the undertaking. As accrued interest has been added to the original cost of construction, the amount of direct profits, £14,067 14s. 9d., will have to be deducted from £225,670 1s. 3d., which makes the actual cost of the works to be £211,602 6s. 6d. The profits from this undertaking having extended over a period of seven years and five months, they amount to about £1,897 per annum, or about $\frac{2}{3}$ per cent. on the capital invested.

COLLATERAL ADVANTAGES.

The approximate amount of gold, as far as can be ascertained, obtained by means of these works, and the number of miners employed since the first portion of them was completed, have been as follows:—

Date.	Number of Miners employed Yearly.	Amount of Gold obtained.
July, 1876, to June, 1877...	No information	No information
" " to " 1878...	740	24,000
" " to " 1879...	723	22,415
" " to 31st March, 1880	570	19,730
1st April, 1880, to " 1881	511	18,917
" " to " 1882	500	16,880
" " to " 1883	297	11,900
" " to " 1884	384	17,305
" 1884, to 31st August, 1884	395	7,162
Total	138,309

This shows that there has been £13,830 18s. paid in gold duty; and, taking the yearly number of miners employed, it shows that 3,890 miners' rights have been taken out, as every miner has to hold a miner's right before he can obtain any certificates for rights on the gold fields. Therefore, adding the amount received for miners' rights to the gold duty, it makes £17,720 18s. To this amount may justly be added the Customs duty and other taxation; and in making up this amount every miner's right will at least represent four of the population, inasmuch as the mining community is a migratory population, following the different rushes on the gold fields, and travelling from colony to colony, in accordance with circumstances. If they have payable claims, they will stop in one place for a certain time; but, when any other field offers inducements, they are off at once. Very few of this class settle down to agricultural pursuits. Adopting the basis of population as four for every miner's right issued, and taking £3 7s. per head as the average amount of taxation annually, it makes £42,126 paid under this head. This, added to gold duty and the amount received for miners' rights, makes the total collateral advantages amount to £59,846 18s.

GENERAL ADVANTAGES.

Taking the whole as a colonial venture, it shows the direct profits to be £14,067 14s. 9d., and the collateral advantages £59,846 18s., making the total amount £73,914 12s. 9d. that has been collected by means of these works during a period of seven years and five months, which equals £9,966 per annum. Taking the total cost of construction to be £211,602 6s. 6d. it amounts to about 4½ per cent. per annum on the total outlay.

Water-races on gold fields are properties that are yearly decreasing in value. They are not like roads and railways, which open up the country and become more valuable every year. Water-races are constructed to command a certain area of auriferous ground, and beyond that area they are of no value: therefore the ground they command is every year being steadily washed away, and consequently diminishing their value. Fifteen years may be fairly set down as the maximum life of a water-race, in order to provide for the redemption of capital.

TAILINGS DIFFICULTY.

There is a large area of ground in the vicinity of Kumara that is likely to pay the miners for working it on the hydraulic principle; but the time is not far distant when the question of tailings will crop up. The present tailings site is filled up to near the edge of the Teremakau River, and will soon be depending on the river to wash the tailings away. This will gradually raise the bed of the river and cause it to overflow its banks, and any private land there is on the low flats on either side of the river between the sludge-channel and ocean beach is liable to be damaged by the action of the tailings. However, there is very little agricultural or pastoral land in this locality.

RECAPITULATION.

The original cost of the works was £173,143 11s. 8d.; adding accrued interest, and deducting the profits, the actual cost at the present time is £211,602 6s. 6d. The direct profits from the working of these water-races from the 1st August, 1876, to the 31st August, 1884, have been £14,067 14s. 9d., and the collateral advantages during same period, £59,846 18s.; making a total of £73,924 12s. 9d.: and the amount of gold, as far as can be ascertained, that has been obtained by the aid of these undertakings is 138,309oz.

HENRY A. GORDON,
Inspecting Engineer.

