

PAPERS

RELATING TO THE

CONSTRUCTION OF ROADS

ON THE

SOUTH-WEST COAST OF THE PROVINCE OF NELSON,

AND IN

WESTLAND.

PRESENTED TO BOTH HOUSES OF THE GENERAL ASSEMBLY, BY COMMAND
OF HIS EXCELLENCY.

WELLINGTON.

—
1872.

SCHEDULE OF PAPERS.

I. WEST COAST ROADS—NELSON PROVINCE.

No.	Date.	From	To	Subject.
1	1872 May 31.	Mr. Dobson	Mr. Blackett	Report on progress of Works, with Sketch.

II. WEST COAST ROADS—COUNTY OF WESTLAND.

2	June 1.	Mr. O'Connor	Mr. Blackett	Report on progress of Works.
3	April 12.	Mr. O'Connor	Hon. Mr. Reeves	Report on proposed route for Railway, Greymouth to Ross.

PLAN.

Sketch to accompany Mr. Dobson's Report page 7.

PAPERS RELATING TO THE WEST COAST ROADS IN NELSON AND WESTLAND.

No. 1.

I.—WEST COAST ROADS, NELSON PROVINCE.

Mr. DOBSON to Mr. BLACKETT.

REPORT ON PROGRESS OF WORKS, TO MAY 31st, 1872.

SIR,—

I have the honor to hand you the following Report upon the works in my charge, and the progress attained up to May 31st, 1872:—

1. The work in hand consists of the construction of a dray road from the junction of the Inangahua and Buller to the Ahaura, *viâ* Reefton. The accompanying tracings, sheets 1 and 2, show the line of road approximately; for the convenience of reference I have styled the road from the Buller to Reefton the Inangahua Road, and from Reefton to Ahaura the Grey Road, and each line has been subdivided into four sections. These sections have been divided again into contracts, which in the case of new work have been made as nearly one mile each, as the circumstances allowed. The accompanying schedule of contracts and tenders will give all the requisite details respecting dates, amounts, &c.

Inangahua Road.

2. Section No. 1.—Buller to punt crossing (landing). The total length of road required is about five and-a-half miles, of this, three miles thirty chains are under construction in four contracts, as follows, viz:—

(1). W. Ferris, 100 chains, £543. The work is going on rather slowly in consequence of the difficulty of getting proper outfall for the water of a swamp through which the road runs.

(2). W. Morris, 80 chains, £747 0 0

(3). " " 90 " £822 0 0

The contractor made so little progress with the work that I recommended the Government to cancel the contract and give the work to Messrs. Pell & Atkinson. The contractor had felled all the timber by sub-contracts and I therefore desired the Government to pay the sub-contractors for the work done through Morris, to save all the delay upon making out accounts &c. for the men. The Government is not bound to pay anything, and according to the terms of the specification can claim to take over the contract, paying 50 per cent. on all work actually finished, but not a chain is actually finished as no earthwork is yet done. My reason for recommending payment in this case is because the sub-contractors, who are all poor men, have done the work well, and Morris cannot pay them. Pell & Atkinson carry on the work at Morris' prices.

(4). John Walker, 80 chains, £490. This contract is being carried on satisfactorily and the work is well done.

Besides the works in progress, to complete communication between the Buller and the punt crossing, a side cutting 50 chains in length will be required from Christy's downwards. I have only lately been able to get this set out, and I find the hill side so wet and liable to slip that I cannot recommend the Government to attempt the work during the winter. If the ground would stand at all it should not cost more than £5 a chain, but if the hill begins to slip there is no saying how much it will cost. Besides this, there is a sandstone bluff about 10 chains long at the end of the first contract; it is soft but nearly perpendicular, and requires a short bridge at one end, it will cost at least £350. I intended to carry the road on the shingle bed, but the late flood cut a channel close under the face, preventing this being done.

3. Section No. 2.—Six and-a-half miles let in six contracts to W. Morris, £3600.

This contract is not progressing favourably, the contractor evidently being unable to manage the work properly. It is now nearly five weeks since the contract should have been completed. There have been numerous delays which are no fault of the contractor: floods preventing him from getting tools and men on the ground in the first place, and wet weather subsequently. I have done what I could to push on the work, thinking it better to give a little rather than cancel. All the main part of the work is done, the work that will occupy the most time is metalling two swamps; the metal has to be drawn a considerable distance. If this section is not shortly completed I would recommend the Government to put on a lot of men to complete the gravelling.

An advance of £1000 has been made on this work.

4. Section No. 3.—Four and-a-half miles in four contracts.—Pell & Atkinson, £2880. This work is nearly completed, the contractors having done all in their power to push on the work. An advance of £1000 has been made.

When tenders were received for this section, I advised the acceptance of Pell's for the first three, and Courtney's for the fourth. Courtney, however, refused to take up one alone alleging that his

tender was for the whole, and as I found this stated in the tender I returned the deposit. I could not recommend Courtney's tender for the whole section as he had no backers, and I strongly doubted his ability to get through the work without assistance.

5. Section No. 4.—From Waituhu (left hand branch) to Reefton about four miles, in four contracts, one mile each in length—

No. 1 contract, Chas. Bray, £720.
 " 2 " " " £780.
 " 3 " Barrowman, £720.
 " 4 " This is not yet signed for.

The lowest tender is B. Smyth, £660; if he fails to take up the contract and forfeits the deposit, Barrowman's will be next at £780. The first three contracts have just been signed, and the contractor will commence at once.

Reefton to Grey.

6. Section No. 1.—Reefton to plain near Mai Mai, seven miles. This was let to W. Courtney who utterly failed to carry out the work—he sub-let it in long pieces, and never went near the work. I therefore advised the Government to cancel the contract and carry on the work by day labor, paying the sub-contractors for all work actually completed at fair prices, of course paying nothing to the contractor. I was instructed to execute the work as I recommended, and have about 200 men at work at present, the section will be completed with as little delay as possible.

7. Section No. 2.—This is entirely through open ground and although the road will eventually require forming and metalling, for the present the drays can work without anything being done.

8. Section No. 3.—At present drays work up the river bed and along the old track, but this section will require making as soon as possible. About four miles of bush road, a portion of which is swampy, will have to be made. The survey of the line has just been completed, but I have not received the plan yet. The work will probably cost about £3000.

9. Section No. 4.—Improvement of existing road between Ahaura and Little Grey Junction.

This work was authorised by the hon. Mr. Reeves when on the ground. The work was let in three contracts. The first comprised the levelling of the steep gradients in the road adjoining the Ahaura. The second comprised the forming and metalling of the road from Lardi's to McNiel's; and the third similar work from McNiel's to the Little Grey. The tenders were sent in at schedule prices, and we estimated the cost of amount of work required at £1170.

Before the contracts were fairly commenced the Provincial Government had completed the improvement of the cutting leading into the Ahaura, and after this was done the boats no longer went up to Totara Flat, but made the Ahaura the terminus, causing all the up country traffic to pass over the road in progress of formation. This necessitated the metalling of all the new work, which makes a considerable difference in the total cost, which it will increase by at least £500.

10. All the contracts have been let at schedule prices, and the sums are very high, but this must be expected where so much work is going on at once. Had it been possible to have extended the expenditure over a period of twelve months, the work would have cost at least 30 per cent. less.

11. To complete the road for through traffic the following works are required:—

Grey Road Section, No. 3 Estimate	...	...	£3000	0	0
Sandstone Bluff, Inangahua	...	...	300	0	0
Punt	...	...	250	0	0
Punt Approaches	...	...	250	0	0
Side Cutting, near Christy's	...	...	500	0	0
			<hr/>		
			£4300	0	0

Of the before mentioned works I have called for tenders for the construction and fitting of the punt, but the only one received was £400, an absurd price, which I could not advise the Government to accept. All the boat builders in the Buller and the Grey are busy, so advise waiting a little and inviting fresh tenders.

I have met with more difficulty than I expected in getting approaches for the punt crossing. On the west side of the river the cutting will require to be very deep, to get a reasonable gradient.

The Sandstone Bluff should be put in hand at once, but I cannot recommend commencing the side cutting at Christy's during the winter months.

I should be glad to receive instructions concerning these works.

12. The cost of the works in progress may be stated approximately as follows:—

Contracts in progress	...	...	£13,632	15	0
Day laborers and piece work	...	...	5320	0	0
Paid to Surveyors, Overseer, Laborers, &c.	...	...	358	3	0
			<hr/>		
			19,310	18	0
Estimate of remaining works	...	...	4300	0	0
			<hr/>		
			£23,610	18	0

Together with this Report I beg to forward an Abstract of Contracts in hand and Schedule of Tenders received.

I have, &c.,
 A. D. DOBSON.

ABSTRACT OF TENDERS HERETO APPENDED, SHEWING THOSE ACCEPTED,
AND APPROXIMATE TOTAL COST OF CONTRACTS IN PROGRESS.

INANGAHUA ROAD.

Section.	Contract.	Name of Tenderer.	Approximate Amount.			Approximate Total.		
			£	s.	d.	£	s.	d.
No. 1—Christy's to Landing	No. 1	William Ferris	543	0	0			
Ditto, ditto	2	William Morris	747	15	0			
Ditto, ditto	3	Ditto	822	0	0			
Ditto, ditto	4	John Walker	490	0	0			
No. 2—Landing to Larry's Creek	1 to 6	William Morris	3600	0	0			
No. 3—Larry's Creek to Fern Flat	1 to 4	W. Pell	2880	0	0			
No. 4—Fern Flat to Reefton	1	Charles Bray	720	0	0			
Ditto, ditto	2	Ditto	780	0	0			
Ditto, ditto	3	Fergus Barrowman	720	0	0			
Ditto, ditto	4	Bernard Smyth*	660	0	0			
						11,962	15	0

* With the exception of Bernard Smyth, all the above Tenderers have signed the Contracts; should he not sign, he will forfeit deposit, and Barrowman's tender, at £780, be accepted, which will increase total £120.

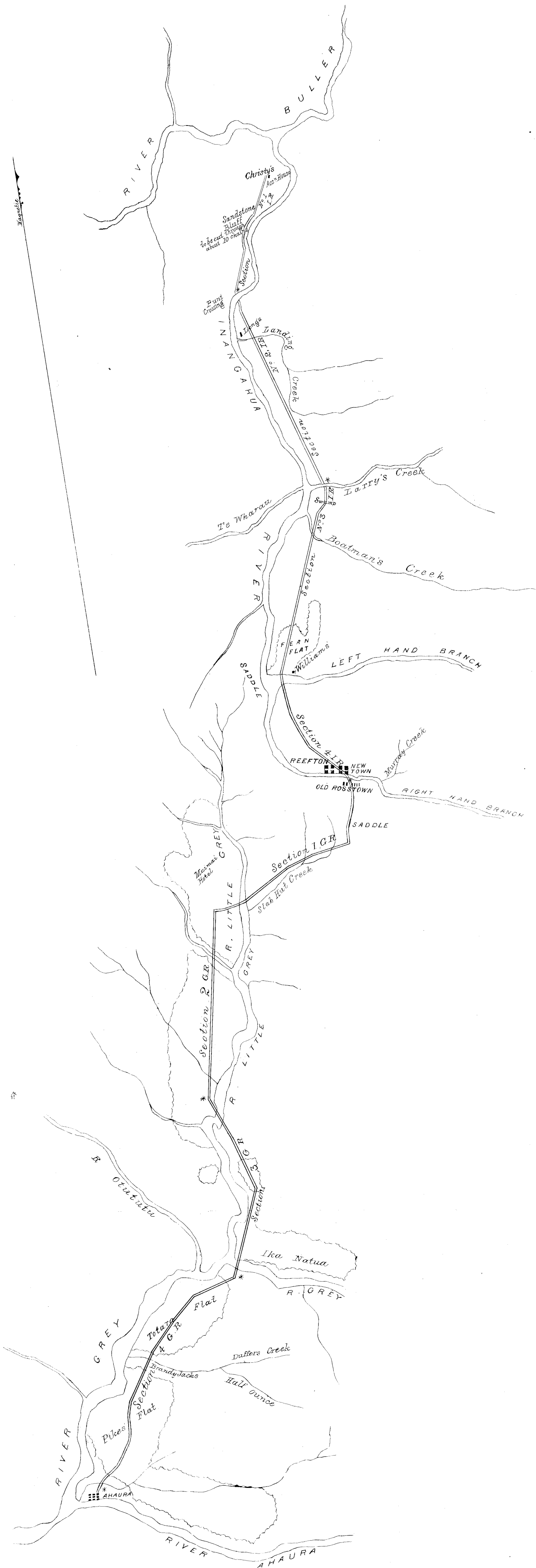
GREY ROAD.

No. 1—Reefton to Mai Mai	1 to 7*	William Courtney	5320	0	0			
No. 4—Ahaura to Junction†	1	Alexander White	250	0	0			
Ditto, ditto	2	M. Tracey	360	0	0			
Ditto, ditto	3	J. Kitchen	560	0	0			
		Extra cost	500	0	0			1170 0 0
								500 0 0
		Contracts in hand ... ..	...			£13,362	15	0

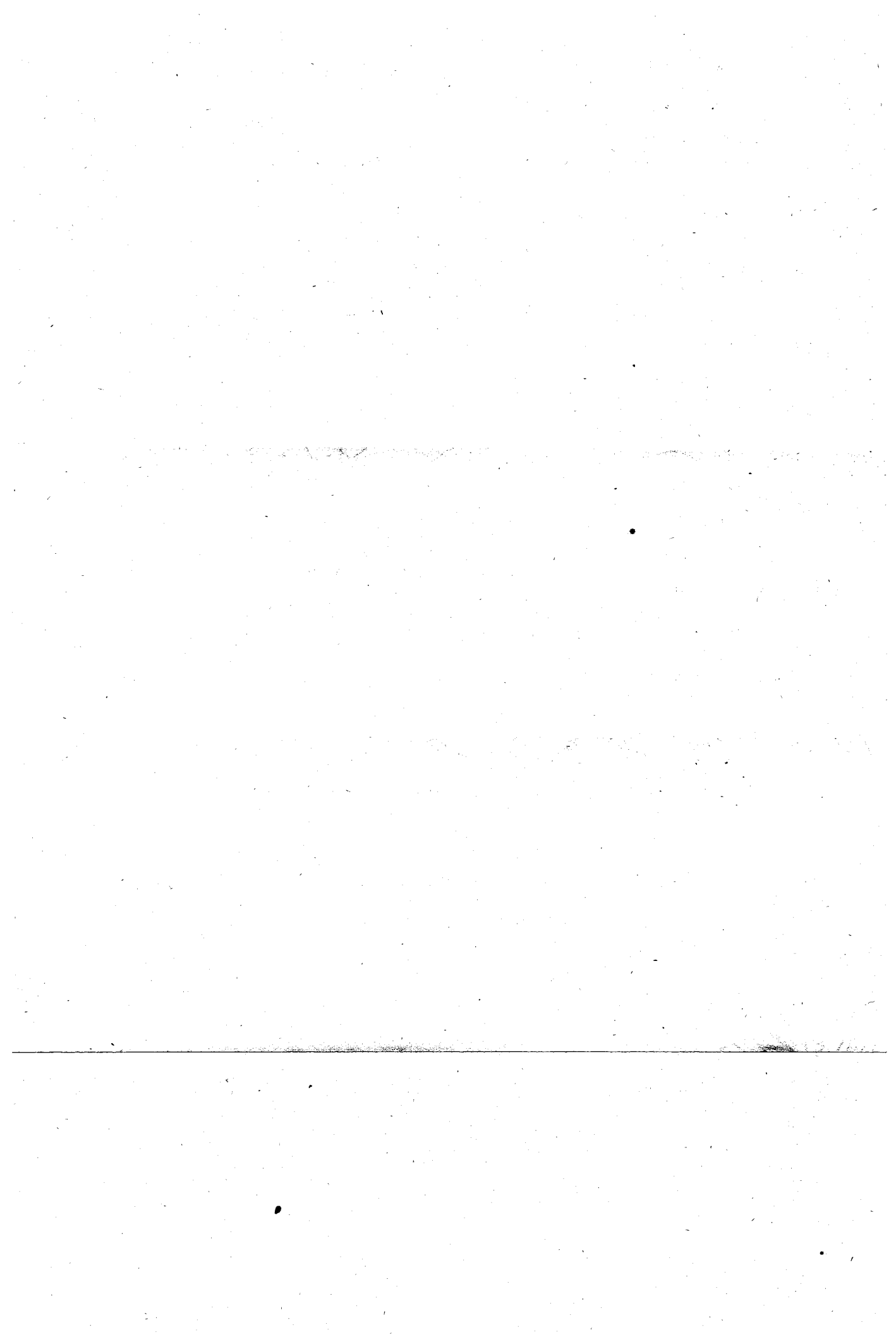
* This Contract has since been cancelled, and the works are being carried on by day labor, but will cost about the same.

† In consequence of the heavy traffic going upon the new road in this section, during the progress of the work, very considerably more metalling was required than was at first contemplated, increasing the cost by about an extra £500.

All the Contracts being let at Schedule Prices, the figures must be considered as fixed sums.



SCALE 2 MILES to an Inch



WESTLAND ROADS.

No. 2.

II.—WEST COAST ROADS, WESTLAND.

Mr. O'CONNOR to Mr. BLACKETT.

District Engineer's Office, Hokitika, 1st June, 1872.

SIR,

I have the honour to report that the works undertaken in the County of Westland from June, 1871, the date on which they first commenced under the Immigration and Public Works Act, to the 31st May, 1872, are, as stated in Schedule attached, each of the several sub-divisions being more particularly described under separate numbered headings, also attached.

In relation to the progress of these works generally, and to the cost of their construction as a criterion in the case of other works which may be contemplated hereafter, there are two facts which it is necessary to bring under your notice—1st, The exceptionally bad weather which prevailed up to the end of February last, eight months' rainfall, giving an average of 4-10th of an inch per diem; and, 2nd, The rate of wages, which, partly in consequence of the inclemency of the weather, but mainly on account of the paucity of the population, has been maintained throughout at twelve (12) shillings for eight working hours.

With respect to the Main Trunk Line of road, and its cost, there is an additional fact to be mentioned, viz.,—That this road, while on the one hand it was designed to afford through communication, from a colonial point of view, was also so placed in the country that it fulfils the purpose of local roads connecting all the principal mining centres; and that although in consequence of its being so placed at a distance from the sea shore, and crossing from river to river over rugged mountain ridges, it may appear costly, if reckoned by the mile; yet the whole end to be attained was arrived at much cheaper and more efficiently in that way than it could have been by means of a main road along the beach, with all its necessary branch roads to the centre of population.

I have, &c.,

C. Y. O'CONNOR,
District Engineer.

COUNTY OF WESTLAND, NEW ZEALAND.

Schedule of Works undertaken under the Immigration and Public Works Act, 1870, 12th June, 1871, to 31st May, 1872.

NATURE OF WORK.	SUBDIVISION OF WORK.	REMARKS.	REFERENCE No. TO DESCRIPTION AND DIAGRAMS ATTACHED.
Trunk Road—			
Greymouth to Ross ...	Greymouth to Omotomoto ...	Works in progress	1 A
” ” ...	Omotomoto to Marsden ...	Surveyed ...	2 B & C
” ” ...	Alternative Line, Grey to Marsden direct	Explored ...	2 B & C
” ” ...	Marsden to Hohonu ...	Works in progress	3 D
” ” ...	Stafford to Arahura ...	” completed	4 E
” ” ...	Hokitika to Kanieri ...	” ” ...	5 F
” ” ...	Kanieri to Ross ...	” in progress	6 G H & J
Branch Roads	17 MP Christchurch Road to Grey and Ross Road ...	Works completed	7 K
Water-races	Waimea District Water Supply ...	Surveyed ...	8 L & M
Grey Protection Works	Quay Wall, Maori Cemetery to Tainui Street ...	Works in progress	9
” ” ”	Strengthening Wharf, Tainui Street to Boundary Street ...	” ” ...	9
” ” ”	New Wharf, Tainui Street to Johnston Street ...	” ” ...	9

TRUNK ROAD—GREYMOUTH TO ROSS.

1st Sub-division—Greymouth to Omotomoto.

The length of this sub-division is 2 miles and 11 chains. Its course is generally parallel to the Grey river, and for the greater part of the distance the formation width is cut out of a steep hill side which constitutes the river bank. It was surveyed during the months of February and March last, and a contract was entered into for its construction on 8th April.

The specification provides for 14½ feet width of formation, and 10 feet width of metal 9 inches thick. There are also to be turnouts 6 feet wide at all sharp bends. The total quantities and amount of each class done to date are as given in table below.

DESCRIPTION.	TOTAL QUANTITY.	QUANTITY COMPLETED.
Bush clearing (medium)	171 chains ...	111
Excavation in rock, to be carted 14 chains...	3,900 cubic yards	500
" in clay and stones	16,500 " ...	8,400
Retaining walls	240 " ...	None
Drains	2 chains ...	None
Culverts (34 in all)	124 lineal feet ...	None
Metalling	171 chains ...	None
Turnouts	21	None

The total amount of the contract is £3,350, equal to £1,567 per mile.

The quantity of work done as above is equivalent to 41 chains of the road completed.

TRUNK ROAD—GREYMOUTH TO ROSS.

2nd Sub-division—Omotomoto to Marsden, and alternative line—Greymouth to Marsden direct.

The first of these routes was surveyed and the plans and specifications prepared for contract between the months of September and December, 1871. It is at an average distance of 4 miles from the sea beach, traversing almost unexplored country throughout the greater part of its course. For 3 miles the inclination averages 1 in 10, and along that part of the road would be cut out of steep sidling. The distance by it from Greymouth Post Office to Marsden would be 11 miles and 3 chains, and a 12 feet metalled road from the present termination of the Omotomoto Road before described is estimated to cost £15,900.

The second route was simply blazed through with rough barometer levels. It traverses country already partly opened up by tramway communication, &c. The average distance of the explored line from the sea being 1½ miles. The grades throughout are easy. By it the distance from Post Office, Greymouth, to Marsden, would be 9 miles 51 chains, and the cost of a 12 feet metalled road would be £11,100.

TRUNK ROAD—GREYMOUTH TO ROSS.

3rd Sub-division—Marsden to Hohonu.

This sub-division is 7 miles 17 chains in length. Close to the township of Marsden it crosses the New River, and from thence to the Hohonu, or Greenstone Creek; its course is up one side of the intervening ridge and down the other. The maximum height reached is 650 feet above the level at either end. It was surveyed during the months of June, July, and August, 1871, and has since been contracted for in six separate sections. The last of these was let on the 2nd March.

The formation is to be 17 feet wide, and the metal 12 feet wide and 12 inches thick. The work involved, and the amount of it done to date, is shown in the table below.

DESCRIPTION OF WORK.	TOTAL QUANTITY.	QUANTITY COMPLETED.
Clearing heavy timber	490 chains ...	473
" scrub	77 " ...	77
Earthwork	51,422 cubic yards	42,100
Retaining walls	290 " ...	50
Drains	311 chains ...	270
Culverts (48 in all)	246 lineal feet ...	220
Bridges, one 108 feet lattice, and 3 plain—20 feet, 113 feet, and 50 feet	291 " ...	130
Metalling	577 chains ...	370
Turnouts	45	40

The total amount of the contracts, together with £250 authorised by day labour, comes to £9,752 17s. 8d., equal to £1,352 per mile.

The quantity of work at present completed is equivalent to 450 chains finished road.

TRUNK ROAD—GREYMOUTH TO ROSS.

4th Sub-division—Arahura to Stafford.

This road was surveyed during the months of June and July, 1871, and let by contract in 5 sections on 11th September following. The final certificate was given on 27th March last. As constructed it is 3 miles 63 chains in length, and follows an easy line of country with moderate grades throughout. The formation width is 17 feet and the metal is 12 feet wide and 12 inches thick. The total amount of work involved in the construction is shown in following table.

DESCRIPTION OF WORK.	TOTAL QUANTITY.	QUANTITY COMPLETED.
Clearing heavy timber	206 chains ...	206
„ scrub	65 „ ...	65
Earthwork	13,132 cubic yards	13,132
Drains	368 chains ...	368
Culverts (30 in all)	251 lineal feet ...	251
Bridges—one 45 feet lattice girder and completing; one 60 feet truss bridge, which existed over Waimea Creek, say equal to 17 lineal feet	62 „ ...	62
Metalling	275 chains ...	275
Turnouts	16	16

The sum total of the contracts, with extras, came to £3,415 8s. 2d., being at the rate of £902 per mile.

The maintenance of the same distance for 12 months is now let by contract for £509, equal to £134 per mile per annum. It is in good repair throughout.

TRUNK ROAD—GREYMOUTH TO ROSS.

5th Sub-division—Hokitika to Kanieri.

This road has been surveyed by the County authorities before General Government took over work. The total length is 1 mile 67 chains. It was let by contract in two sections during the month of August, 1871, and was opened for traffic on 1st December same year. Its course is generally parallel to the Hokitika river, and the ground followed is flat. The formation width is 17 feet. The width of the metal is 12 feet, and its thickness 12 inches. The quantities of earthwork, &c., &c., were, as given below:—

DESCRIPTION OF WORK.	TOTAL QUANTITY.	QUANTITY COMPLETED.
Clearing heavy timber	147 chains ...	147
Earthwork	3,000 cubic yards	3,000
Drains	206 chains ...	206
Culverts (10 in all)	101 lineal feet ...	101
Bridges, one 45 feet, log bridge	45 „ ...	45
Metalling	147 chains ...	147
Turnouts	11	11

The total amount of the contracts and extras was £1,822 6s., equal to £999 per mile.

The maintenance has been let for 12 months in one contract, amounting to £143, or at the rate of £78 per mile per annum. It is in good repair.

TRUNK ROAD—GREYMOUTH TO ROSS.

6th Sub-division—Kanieri to Ross.

This sub-division is 14 miles 55 chains in length. It commences on the south side of the Hokitika river, so the traffic will have to reach it by means of a punt, which is in the hands of a private individual. The punt is well constructed and maintained. The course of the road is generally parallel to the sea coast, and about 2 miles distant. It commences and ends at a level about 30 feet above the sea, but crosses on its route a succession of ridges, some of which reach an elevation of 300 feet. The survey of the original line was completed in September, 1871, but 3 miles at Kanieri end has since been amended so as to bring road through township of Woodstock. It was divided for contract into 14 sections, and ten of these have been let at various times since December, 1871. At Hokitika end for 7 miles 71 chains the road is specified to have 12 feet width of formation, and 8 feet width of metal 8

inches thick. For the remainder of the distance to Ross (6 miles 64 chains) the formation width will be 17 feet, and the metal 12 feet wide and 12 inches thick. The work involved in construction is as given below:—

DESCRIPTION OF WORK.	TOTAL QUANTITY.	QUANTITY COMPLETED.
Clearing heavy timber	1,159 chains ...	650
" scrub	18 " ...	18
Earthwork	24,428 cubic yards	14,500
Drains	926 chains ...	370
Culverts (76 in all)	468 lineal feet ...	190
Bridges (7)—one 87 feet, one 35 feet, one 57 feet, one 19 feet, and one 29 feet, plain log bridges; and two 34 feet lattice bridges	295 " " ...	90
Metalling	1,176 chains ...	290
Turnouts	85 " ...	21

The sum total of the contracts for construction, together with estimated value of 4 sections now open for tender, amounts to £12,340 4s. 3d., or at the rate of £840 per mile. The items executed are equivalent to 417 chains of road completed.

A mile and a-half at Ross end was opened for traffic on 13th May, and is being maintained by contract. It is in good order.

BRANCH ROAD.

17 M.P.—*Christchurch Road to the Greenstone Road.*

The survey of this road was finished in August, 1871, and it was let by contract in 4 sections during the month of October. The last section was completed on 30th May. It is the connecting link between the Canterbury Road and the Trunk Road of the County, leaving the former at the point where it changes its N.E. course into one directly easterly towards Christchurch, and hitting the latter at a point nearly midway between Hokitika and Greymouth; the intervening ground fortunately offering great facilities for a junction at that place. The length, as constructed, is 4 miles 65 chains. The formation width is 17 feet, and the metal 12 feet wide and 12 inches thick. The quantities were as follows:—

DESCRIPTION OF WORK.	TOTAL QUANTITY.	QUANTITY COMPLETED.
Clearing heavy timber	290 chains ...	290
" scrub	95 " ...	95
Earthwork	7,223 cubic yards	7,223
Drains	445 chains ...	445
Culverts (24 in all)	74 lineal feet ...	74
Metalling	385 chains ...	385
Turnouts	30 " ...	30

The total cost was £3,598 1s., or £748 per mile.

The maintenance for 12 months is at present open for tender. The road is in a good state throughout.

WATER-RACE.

Survey for Waimea District Water Supply.

The survey was completed on 11th May. It is 32 miles in extent, the line in the first instance having been carried into the heart of the district, and thence to all the surrounding workings of importance. Two reservoirs, the one 48 and the other 39 acres in extent, having also been surveyed at the head. The works, as far as I am able to report upon them at present, not having yet had time to follow out of the whole of the surveyed line, will consist of—

	300 chains piping, with an average pressure of 110 feet.
	200 " fluming, averaging 17 feet in height.
	About 700 " boxing or tunnelling.
And the balance	1,360 " ditching.
Total as above	2,560 "

A much cheaper undertaking, however, and more likely to be remunerative, is presented by the Main Race taken alone.

It would consist of 15 miles 34 chains of conduit, made up as follows:—

	260 chains	pipng as before.
	125 „	fluming, avering 17 feet.
	About 400 „	boxing or tunnelling.
And the balance	449 „	ditching.
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Total as above	1,234 „	

The diagram attached is a reduction from working plan.

GREYMOUTH PROTECTION WORKS.

(1.) *Quay Wall, Maori Cemetery to Tainui Street.*

This work consists of dry stone rubble, built with the largest stones that can be moved with the machinery to hand. The total length is 25 chains. The average height about 22 feet, and the average width about 9 feet. It is calculated to be of material assistance in the construction of a railway and the delivery of coal, as well as serving its immediate object, viz.,—preserving the town of Greymouth from absolute destruction. About $\frac{1}{100}$ of the work, including preliminary outlay for plant, has been completed for £1,904 8s. 4d., of which the Native Trust has already contributed £999 4s. 8d. The total estimate was £6,000.

(2.) *Strengthening Wharf, Tainui Street to Boundary Street.*

This work was commenced on 27th May. It is being carried on entirely out of the £4,000 Loan from General Government to Greymouth Corporation. $\frac{6}{100}$ of the total has been completed at a cost of £58 14s. 9d., the estimates being £1,000.

(3.) *Wharf, Boundary Street to Johnston Street.*

This work is also carried on exclusively out of Loan as above. It is composed of three rows of piles, with 14 feet intervals. The face piles are carried on in line with existing wharf, and the back row approach nearly to the face of bank, as scoured by February freshes. $\frac{9}{100}$ of the total is completed at a cost of £2,455 2s. 8d., the estimate being £2,700.

WEST COAST ROADS.

SCHEDULE OF WORKS AUTHORISED UP TO 31st MAY, 1872, BUT NOT YET LET OR CONTRACTED FOR, IN THE COUNTY OF WESTLAND.

GREYMOUTH PROTECTION WORKS.

(Carried on by day labour and task work.)

FROM	To	DISTANCES.	WORK.	AUTHORISED.		ESTIMATED AMOUNT REQUIRED FOR COMPLETION, BEING UNEX-PENDED BALANCE OF SAME AUTHORIZED.
				£	s. d.	£ s. d.
Maori Cemetery ...	Tainui Street ...	M. C. L. 0 25 0	Stone facing with clay backing ...	7,500	0 0	5,595 11 8
Tainui street ...	Johnston Street ...	0 17 0	Wharf ...	3,700	0 0	1,186 2 7

CONNECTING ROAD TO MARSDEN TOWNSHIP.

(Carried on by day labour and task work.)

New River Bridge ...	Tramway Station ...	0 27 0	Road ...	250	0 0	250 0 0
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KANIERI AND ROSS ROAD.

Sandstone Creek, sec- tions 4, 5, 6, and 7...	Mahinapuna Lake ...	4 32 85	Road ...	2,870	0 0	2,870 0 0
	" " ...	4 32 85	Maintenance ...	—		350 0 0

AUTHORISED ON 27th MAY.—TENDERS TO BE SENT IN ON 10th JUNE, 1872.

(Carried on by day labour and task work.)

Weri Foot Bridge over Totara River...	...	0 2 40	Foot Bridge ...	70	0 0	70 0 0
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REPORT ON PROPOSED ROUTE FOR RAILWAY FROM GREYMOUTH TO ROSS.

Mr. O'CONNOR to Hon. Mr. REEVES.

Greymouth, April 12, 1872.

SIR,

In accordance with your instructions of 22nd February last, I have the honour to forward herewith a tracing, showing proposed route for Railway, "Greymouth to Ross," together with statistics of population, &c., &c., as stated on margin, and to report as follows:—

Main Road, Greymouth, to Hokitika.—The main line of road between Greymouth and Hokitika, as at present undertaken and partly constructed, is laid out so as to give access to the principal mining centres between the two places.

It may be roughly described as forming two sides of a triangle with the sea for base, the apex of the triangle being at the Greenstone Creek, an inland workings eighteen miles from each of the extremities, and eight miles from the coast in a straight line. Between Hokitika and Ross there are no inland workings except the Kanieri and Woodstock, so that the road, after passing through these places, is carried direct to Ross, a course generally parallel to the sea beach, and about two miles inland of same.

Proposed Railway, General Course.—The general course of the proposed Railway would be parallel to the sea coast throughout, at an average distance of twenty chains therefrom.

Greymouth to Hokitika.—Along the distance between Hokitika and Greymouth few people are living near the route proposed, and as both these towns are seaports, the traffic between them would be principally confined to coal. Some merchandise, however, would be sent by rail from Greymouth to the New River, and from Hokitika to the Arahura. This line would also doubtless develope and foster the timber trade of Hokitika, particularly in future time, when the distance the logs will have to be carried to the mill may raise the cost of supply beyond the market value, unless improved communication is provided.

The coal traffic between the Brunner mine and Hokitika would be considerable, and immediately advantageous. It would develop mining in the vicinity of Hokitika, by providing a cheaper and more efficient fuel than now exists, by means of which the auriferous deposits near Kanieri, at present unoccupied, might be drained and worked; and it would no doubt reduce the freight of goods to Hokitika from other than New Zealand ports in providing back loading for the ships, which often return in ballast.

Hokitika to Ross.—Between Hokitika and Ross there are only about two hundred persons living along the route proposed, but the whole population of Ross and the surrounding district (in all about two thousand four hundred) being fed from the seaport of Hokitika, the Railway between these points would be of immediate advantage in diminishing the cost of provisions, and reduce the risk attendant on their carriage across dangerous rivers. The principal workings at Ross being at a considerable depth below the surface, and in wet ground, the drainage of them requires powerful machinery mostly driven by steam, and the want of coal for this purpose is greatly felt. Wood is at present used for fuel, but though there is an ample supply at hand, it is of an inferior quality for generating heat, five cords of wood being only equal to one ton of coal; and the cost of cutting and delivering it is so great that in one case, "the Ross Extended Claim," coal, if delivered at Ross for £2 a ton, would reduce the working expenses £800 a year.

A striking proof of this statement being correct, exists in the fact that at present about three tons of coal are weekly consumed at Ross, although the cost delivered there reaches £6 5s. per ton.

Survey.—The line, as shown on tracing, with the exception of the distance through Borough of Greymouth, and about a mile and a-half at Ross end, has been run throughout on the ground, and levels have been taken along it for about a mile near the Teramakau, where the country is comparatively difficult, and between Hokitika and Arahura, where a road was being constructed. As a main route, it is rather objectionable on the score of being too near the coast line; but an ample exploration made before survey, and all the information gathered since, prove it to be the only practicable line for a Railway of moderate cost. I do not think any good purpose would be served by exploring the line again, as the information at hand is amply sufficient for the purpose of a rough estimate, and would even be sufficient to guide the clearing of the timber, if the construction of a Railway be determined on.

I have, &c.,

C. T. O'CONNOR,

District Engineer, Westland.

The Hon. W. Reeves, Minister for Middle Island, Christchurch.

COUNTY OF WESTLAND, NEW ZEALAND.

Estimate of a Railway from Greymouth to Ross.

Commencing from Coal Mines Line on Mawhera Quay, and ending at Aylmer Street, Ross. Total distance, 39 miles 50 chains.

	£	s.
1. Clearing, 3,170 chains, at 70s.	11,095	0
2. Excavation, 50,000 chains, at 1s. 9d.	4,375	0
3. Drains, 2,700 chains, at 25s.	3,375	0
4. Formation, 2,700 chains, at 20s.	2,700	0
5. Bridges, where spans exceed 60ft., 1,450 lineal ft., at £8	11,600	0
" " " " 40ft., 200 " at £5	1,000	0
" " " " 30ft., 7,800 " at £4	31,200	0
" " " " 20ft., 250 " at £3	750	0

6. Culverts, 1,600 lineal ft., at £2	...	...	£	s.
7. Ballasting, 53,000 cubic yards, at 2s. 6d.	...	...	3,200	0
8. Sleepers (25 per chain), 76,000 ft., at 3s.	...	...	6,625	0
9. Rails, fish plates, &c., fixed, 39½ miles, at £1,300	...	...	11,400	0
			51,512	10
			£138,832	10
Contingencies, 10 per cent.	...	...	13,867	10

Station accommodation and sidings at Hokitika and Ross	£152,700	0
			2,300	0

Total, exclusive of rolling stock	£155,000	0
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Sub-divisions.

Greymouth to Hokitika, 24 miles 10 chains	85,000	0
Hokitika to Ross, 15 miles 40 chains	70,000	0

Portion of the present population of the County of Westland who would be more or less beneficially affected by the construction of Railway from Greymouth to Ross.

				AGGREGATE
				POPULATION.
Greymouth Borough	...	2,181	...	2,181
Greymouth to Teramakau, say	...	1,500	...	2,358
Teramakau to Arahura, say	...	2,000	...	2,139
Hokitika Borough	...	3,572	...	3,572
Hokitika to the Wanganui river, including	}	2,875	...	2,875
Ross township and the surrounding workings				
Total benefited	...	12,128	{ Aggregate }	13,125
			{ population }	

The population of the County south of the Wanganui river (564 in all) would also be beneficially affected, but as possible passengers on the line only, their supplies being landed at Okarita roadstead, a point about 40 miles below Ross.

Timber Trade.

Quantity of sawn timber exported from Hokitika ... 70,000 superficial feet weekly.

By calculation, the quantity of green timber equivalent to a ton in weight would be 600 superficial feet, but it is usually charged freight, by tramway, at the rate of 400 superficial feet per ton.

For traffic returns given below the calculated rate has been assumed as correct.

Present consumption of Fuel.

				Cost.	
				£	s. d.
At Hokitika—wood, 40 cords per week	...	...	...	1	4 0 per cord
" " —coal, 30 tons	"	"	...	2	0 0 " ton
" Ross—wood, 100 cords "	"	"	...	1	4 0 " cord
" " —coal, 3 tons "	"	"	...	6	5 0 " ton

Probable immediate consumption of Coal if delivered by Railway at 6d. per ton per mile (measuring from pits), with 10s. per ton added for excavation, &c., &c.

				£ s. d.	
At Hokitika, 40 tons per week, at	...	...	...	1	6 0 per ton
" " for export, 50 tons per week, at	...	...	...	1	6 0 " "
" Kanieri, 10 tons per week, at	...	...	...	1	16 0 " "
" Ross, 20 tons per week, at	...	...	...	1	14 0 " "

Probable immediate Traffic Returns of Greymouth and Ross Railway.

				WEEKLY.	
				£	s. d.
Coal,	90 tons, carried 24 miles at 12s.	per ton	...	50	8 0
"	20 " " 39½ " 20s.	"	...	20	0 0
Merchandise,	12 " " 10 " 5s.	"	...	3	0 0
"	10 " " 6 " 3s.	"	...	1	10 0
"	20 " " 15½ " 7s. 9d.	"	...	7	15 0
Timber,	60 " " 3 " 1s. 6d.	"	...	4	10 0
Passengers,	60 " " 24 " 24s.	"	...	72	0 0
"	50 " " 15½ " 15s. 6d.	"	...	38	15 0

Total immediate returns which might be expected ... £197 18 0

As it is probable that the development of mining now being attained by increased facilities in internal communication, the contemplated water-races, if constructed, and the opening of Inangahua reefs, will all tend to increase traffic and population, the probable future returns of this line might be set down at, say double the above, viz., £396 per week.

