3. To connect the Ngakawau Coal Fields with the River Buller at Westport by means of a railway, and there to construct wharfage at which vessels could lie to take in cargo with safety during floods.

1. The Ngakawau is nearly always navigable for small steamers of not more than 8 feet draft, at high tide the rise being 10 feet, and the bar dry at low water. A vessel of such size can go up to the mouth of the mine and lie with safety at low water, there being a pool measuring five by three chains at this point. Between this pool and the mouth of the river (distant three-quarters of a mile) the bottom is nearly dry at low water. This for some distance consists of large granite boulders and small shingle; as, however, the channel is navigable at high tide, the expense of deepening it need not be incurred beyond removing a few of the largest stones that are in the way. The size of the pool will give an idea of the number of vessels capable of lying there to take in freight at one time—certainly not more than two, with a few barges, representing perhaps a measurement of 250 or 300 tons. By good management this tonnage might be conveyed to the Buller every other day, provided the sea was calm and the bar good.

Taking the above into consideration, I have come to the conclusion that this scheme will not do, for the following reasons:—That twice handling the coal is very objectionable, especially as it is of a friable nature, though not to such an extent as the Brunner coal. The process of digging the coal out of the barges to tranship it into other vessels does it great harm, depreciating its value in the market to a considerable extent. That the transport from the mine to the Buller in this manner would be most uncertain, depending both on the state of the bar and the weather. For instance, during the time of my visit, a shingle bank about five feet above low water was thrown up, with a channel at each end (*vide* plan No. 1), rendering it impossible for a vessel to go out stem on to the sea. For barges in tow this would be unsafe. That the limited supply to be obtained by this means would prove insufficient in a very short time.

The improvements that would be required to work the export in this manner would not be extensive. The channel and pool should be widened and cleared of large boulders and snags. The jaws of the entrance would also require pitching with large stone, in order to prevent the floods from cutting away the shingle and depositing it across the entrance.

2. With the view of rendering the Ngakawau a harbour capable of accommodating the whole trade, and at the same time deepening the water on the bar, I made careful observations of the beach shingle, both to the north and south of the river, in order to ascertain if it was to any extent affected by the current which sets northwards on this coast, as, were it obvious that it moved, it would be out of the question to contemplate much improvement to the channel. My attention was first drawn to the fact that the channel usually ran a straight course out to sea as shown by the dotted lines on plan No. 1. I was assured by a resident that such was generally the case, the channel being diverged neither north nor south. This would be almost certain to happen if the beach shingle moved, as exemplified at the mouths of the Hokitika, Grey, and Buller. It would, therefore, appear that this northerly set does not extend so far, or else that the Torea rocks, three-quarters of a mile south, are a check upon the shingle. It is noticeable that north of these rocks there is considerably less shingle at high watermark. The beach on this part of the coast consists of sand, interspersed with a small quantity of shingle. The bank forming the bar at the mouth of the Ngakawau seems a fixed quantity, and conducts itself in the following manner:—When a heavy sea has been running for some days, the shingle is driven home into the mouth of the river, the channel forcing a straight course through the centre, as shown by the dotted lines on plan No. 1. It is eventually thrown up on either jaw of the entrance. This is, I believe, its normal state, and the river is then easily navigated, for vessels can take the bar end on. On the occasion of a flood in the river, the shingle is swept off each bank or jaw, and spread out across the entrance in the shape of a fan, the current divides in two, passing out between the beach and each end of this fan (*vide* plan No. 1). The surf then commences work upon the shingle, driving it up by degrees again till it reaches its original position, with the channel running through the centre. It was in this state during my visit on the 11th and 12th of June, heavy floods having recently occurred. The course for vessels entering by either channel being almost parallel to the coast line, would bring them nearly broadside on to the surf, consequently, with anything like a heavy sea running, the bar would be very dangerous. To construct works that would improve the channel and prevent these changes at the mouth, it would be necessary to construct two piers or breakwaters, extending from the entrance to a distance of probably 25 chains or into deep water. The shingle would then be washed up outside each pier, and consequently safe from the scour of floods causing its return.

These piers ought to be contracted at the mouth in order to insure the sand and shingle thrown between them by the sea being scoured out by the ebbing tide. I think the distance apart should not be more than 3 chains: were they placed further from each other, the reduced velocity of the stream would be insufficient to clear the channel. The river itself up to or near the mine, or at all events for the full length of the wharfage, would have to be excavated to a depth of at least 12 feet at low water. This would be a most expensive undertaking, as the removal of such material below watermark could not be done by machinery, the boulders being of large size, and firmly packed together by shingle.

I can only give an approximate estimate of the cost of these proposed improvements, as without accurate plans, sections, and borings, and other detail information, it is very difficult to limit oneself to any fixed amount, it being well known that harbour works in open roadsteads are exposed to great risk, and when completed the result obtained is often not commensurate with the expenditure.

Two piers of either granite blocks or concrete, each twenty-five chains long	£51,250
Stone or timber wharf for six vessels	10,780
Excavation of basin at wharf to 12 feet below low water	34,848
Tramways, sidings, coal shoots, &c.	8,000
	£99,878
Contingencies 20 per cent.	19,975
	£119,853