regards the claims now in work, and will continue to be so for the higher lying ground. But to enable the low ground to be worked, the race must be brought up at a lower level, and this the Company will certainly not do at their own expense.

9. If this plan (Mr. Pyke's) is preferred, I would advise that a new agreement be made with the Dead Level Company, as I believe more advantageous terms could now be obtained. In any case it would be necessary to secure the rental, with rating power, &c., to the Board of Management.

I have, &c.,

Chas. E. Haughton, Esq., Under Secretary for Public Works for Gold Fields, Dunedin.

H. W. ROBINSON, Warden.

Mr. BARR's Report upon proposed Main Channel at Hogburn, Mount Ida.

Roads and Works Department,

Dunedin, 13th March, 1871.

SIR,—

In accordance with instructions of 15th September, 1870, I have the honor to report upon the petition of miners and others at Naseby in the matter of the damages caused to the lower parts of that township by overflow of tail water from the workings. In order to gain all the necessary information upon the point, I have had levels taken by the District Engineer, and have myself visited the locality, inspected the different workings, and conferred with residents in the district upon the evils complained of.

The town of Naseby is situated on a spur dividing Roach's Gully from the main gully, the chief damage being caused by the workings in the former. In the main gully the owners of "Dead Level No. 1" exercise the right of having a tail race for about 6 miles of its length, from which they have the power of excluding the tailings of all other parties, the consequence being that they have maintained a well-defined channel for about 4 miles of the gully, having the sides sodded up, and the tailings from other claims banked up to considerable heights, whereby the fall from the side spurs into the natural bed of the creek is destroyed. Much ground is thus rendered unworkable, both by the accumulation of tailings from the higher portions, and by the impossibility of getting sufficient fall from these after the deposit has attained considerable height, but I consider this evil is less than had the exclusive rights of the Dead Level Company not existed, for then the *debris* would have spread over the whole floor of the gully, blocking up the water-course, or cutting it into numerous small rills, whereby its power for scouring purposes would have been much less than where directed in one stream as at present. This is evident in many places where a stream carrying forward gravel and shingle of considerable size becomes so weakened by being spread over a wider surface as to allow fine tailings to be deposited in its course. In Roach's Gully the disadvantage of allowing a water bed to be filled up indiscriminately is evident upon a large scale, and is really the chief cause of the evils for which a remedy is presently sought. Here the different workings have been allowed to distribute their *debris* into any part of the lower grounds, the consequence being that they have now accumulated to such an extent as to be in some places 16 to 18 feet in depth, and having their surface elevated above the streets of Naseby. In ordinary weather, and with the usual quantity of water running down, the diggers are able to prevent that doing damage to the stores and other buildings in the township by lines of tussocks and sods, but, in the event of a flood such means will be quite inadequate to save the townspeople from annoyance and loss of property. Unfortunately, the danger is still increasing as the workings progress, and, unless some means be adopted, it will be a question, in time, as to whether the workings upon the spurs draining into Roach's Gully or the township will have to be abandoned.

As either result would be a misfortune to the district, it becomes a matter of considerable importance that steps be taken without delay to avoid both evils. So far as the damage to Naseby by floods is concerned, I may leave the main gully above the township out of consideration, and confine myself to the subject of Roach's Gully and that portion of the main gully below the crossing of the Dunedin road.

In the first place, then, I find that, so far as the natural fall of both gullies is concerned, there is no obstacle to the success of a sludge channel, properly constructed and maintained, to carry off so much of the solid matter as to prevent a dangerous elevation of the ground in the neighborhood of the workings; for I find that tailings consisting of sand and clay are presently moving upon a gradient of 1 in 99, while the average fall of the main gully for 3 miles below the Dunedin road is 1 in 61, so that if taken proper advantage of there can be no doubt that with the ordinary quantity of water fine gravel could be carried along, while in floods, as heretofore, or by the aid of periodical flushing, heavier gravel could be carried down to sufficient distances to prevent damage to the upper workings.

It would be necessary to commence this channel about 3 miles below the Dunedin road, and carry it up the main gully to above that crossing, and thence up Roach's Gully to above the present foot bridge, at which point the several tail races would require to be led into it as near the direction of the channel as possible, and at slopes within 100 feet of the outfall not greater than that of the channel, otherwise there would be *debris* discharged into it of a larger size, and at a quicker rate than it could carry off. It would require to be not less than 6 feet wide at the bottom, with sides sloped at about 1 horizontal to 8 vertical, and in the main gully it would be well to build these up to probably 2 feet above the level of the ground, while in Roach's Gully, where the deposit is so deep, the bottom of the channel would be sunk not less than 6 feet below the surface. If funds would permit, of course it would be well to build the sides of stone as being the most durable material, but, all circumstances considered, I believe it would be better to employ sods, which may last for five or six years with but little repair if properly selected and cut, and so built as to obtain the maximum stability, but the portion in Roach's Gully, where the bottom would be upon the artificial ground, would require to be pitched with stone along the bed. I have recommended the length above stated, as I can see no part of the gully higher up than that which has not already got so much deposit upon it as to render a