

REPORT OF ENGINEER FOR PUBLIC WORKS.

SIR,—

Public Works Department, Rarotonga, 15th April, 1908.

I have the honour to submit my report on public works for the year 1907.

I have, &c.,

H. M. CONNAL, Engineer.

Report on Public Works for 1907.

Creek-walls.—In the settlement of Avarua the two main creeks have had a certain amount of concrete walling done, and, if funds will permit, this work might be continued during 1908, especially the part of Vaikapuangi Creek at the *whare manuiri*.

Reef-passages.—Little has been done in the way of reef-passages. As you are aware, the difficulty has been to obtain the dynamite from New Zealand by the steamer, as the steamer is only permitted to carry one case of 50 lb. per trip, and, as Tahiti has also to be supplied, we have only been able to obtain a few cases, which have been stored at Mangaia for this year's work, when we hope to make a start on the Mangaia passage. As you are aware, to make a success of any reef-passage, it will have to be walled in to stop the sea on the sides and back. During a visit of Mr. Coane, a Victorian civil engineer well acquainted with island work, I had a conversation with him on this matter, and he quite agrees with me that any small reef-passage without the walls would be useless. The reefs are by no means soft coral, being fairly hard. At any rate, by the little experience I had at the Island of Mauke last August, I found that we had not much difficulty in putting down holes of 6 ft. in depth with drills, which I consider sufficient in most places; but the drilling-machines sent from New Zealand were of no use on the hard coral. On soft coral I dare say one of them might do. We have all the appliances at Mangaia to make a start except sufficient dynamite, or, rather, gelignite. I told Mr. Coane about the difficulty we had in obtaining gelignite by steamer, and he had got over that difficulty by using rack-a-rock, the American explosive, as steamers carry for him the cartridges one trip and the oil the next—the two separate are harmless. I have written to New Zealand on this point, but as yet have not received an answer.

Avarua Water-supply.—We have carried the water now down as far as Avatiu, and supplied each house requiring water by pipes 2 in. in diameter as the main. The original intention was to have pipes of 4 in. in diameter of cast-iron or wood, and we only meant to supply water close to the end of the 6 in. main pipe, with the 2 in. pipes as a temporary arrangement until we could get the 4 in. pipes imported for us; but the people were so anxious to get water at once that we went on with the 2 in. pipes to Avatiu. With a little care in the use of the water the 2 in. pipes may be sufficient for some years. If the supply is found to be too small, we might make use of the 2 in. pipes for another settlement, and put in the pipes of 4 in. in diameter. It would not be a very great work to change the pipes; only the service connections would cause a little trouble. The water in the eastern direction has also been carried as far as Mr. Shearman's house by pipes 2 in. in diameter, where 4 in. pipes were meant for the same reason as before stated. All the houses along the pipes requiring water have been connected as far as I know.

At the intake on the creek some improvement might be made by having a settling-box, or something of the sort. The intention was not to make any work of a permanent character at the present intake, as Dr. Pomare, on his visit to Rarotonga before we started the water-supply, wished us to take the water from further up the creek; but I hardly think this necessary for the present, as the water seems fairly pure in ordinary weather.

Avatiu Water-supply.—At present the people along the main road at Avatiu have only been supplied with water, and those in the back are anxious to get water; this might be done by continuing the 2 in. pipes along the back road to Avatiu. This pipe would pass close to and supply the Catholic Mission.

Arorangi Water-supply.—As requested by the Resident Commissioner, I visited the three places suggested by the Arorangi member of the Council for getting water for the settlement of Arorangi. Two of them would not suit at all, for various reasons, the principal being not sufficient water at each, they being only small springs. The third one, on the Muriavai Creek, at a place called Makiokio, I recommend, as the water, I am told, is permanent, good, and plenty of it; and with about 8,000 ft. of 2 in. diameter pipes and a few extras, the work could be done for about £500, the people paying for the service pipes and connections, and £1 per annum, as the Avarua people do for upkeep and interest.

Bridges.—During this year in Rarotonga I think at least two new bridges might be constructed, and I propose that the bridges be of reinforced concrete, with girders covered in concretes, and decking of concrete on expanded metal. The concrete bridges already built have reinforced arches. A sum of, say, £300 might be put on the estimates for the two new bridges.

Island of Takutea.—The Island of Takutea, belonging to the Government, was again visited during the year by a party for the purpose of cleaning the cocoanuts already planted, and planting part of the remaining area. The island has now 179 acres planted in cocoanuts and 48 acres remaining to be planted. I submit that a sum of £100 be again put on the estimates for Takutea.

Roadway at Union Steamship Company's Sheds.—I believe the Union Steamship Company intend building a new shed on the western side of the present sheds, and a crossing may be required across the creek. I propose that if the shed is built a concrete crossing be made.

15th April, 1908.

The Resident Commissioner, Rarotonga.

H. M. CONNAL, Engineer.