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Report on the suitability of rock for construction of a sea wall

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A specimen of rock was deposited with the Department of Mines with a request that its suitability for use as a material for a sea wall be examined and reported on. A hand specimen and microscopic thin section were examined by Department of Mines petrologist G. B. Everard.

The existing retaining wall below the coast road from Risdon Cove to Old Beach was examined. Certain of the rocks which make up this wall have disintegrated badly as a result of weathering and wave action, while other rocks appear to have survived well. Small samples of these two types were taken and used as a guide to the behaviour of rocks seen in the quarry between Risdon Cove end the entrance to Risdon Brook Dam.

An examination of the quarry shows that both the suitable and unsuitable material is present and that there are gradations between them. Nevertheless most of the quarry rock is suitable and only a small proportion is unsuitable. The two extreme types may be recognised as follows.

Unsuitable rock

This rock is even dark grey on freshly broken surfaces, and when weathered shows a flaky appearance. If rubbed hard with a moist finger a thin film of clay will be removed, and when rubbed hard for two minutes with a rounded metal surface, such as a ball pane hammer, a polish will be achieved. When struck with a hammer, a dull wooden sound is produced.

These characters are produced by the high proportion of clay minerals in the rock. Beds up to one foot thick exist and appear more common at the base of the quarry but do not amount to more than about 15% of the thickness exposed.

Suitable rock

This rock is blocky in the quarry, is creamy or light grey in colour, rings when struck and will not rub off when moistened or polish when dry. Most of the quarry face will give acceptable material but will require picking if clayey unsuitable rock is to be avoided.

Accelerated weathering tests were not, in the time available, able to show much difference between the suitable and unsuitable material, and the indications seen in the existing sea wall are regarded as the best guide.

It has been assumed in this report that the projected use of this material is similar to the existing sea wall, and no consideration has been given to the properties required for a higher structure.

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