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PROPOSED DAM SITE—ISANDULA

by T. D. Hughes.

The Ulverstone Council wishes to augment the town's water supply by means of a dam across the West Gawler River at Isandula. The consulting engineers are R. M. Foster and associates. From a geological point of view, the site appears suitable.

SITUATION

The proposed intake is situated on the West Gawler River, just above its junction with the East Gawler and six miles south of Ulverstone. The district is known as Isandula and a good macadam road which branches from the bitumen road at Gawler passes close to the site. This site is near the present intake where water is taken by gravity in a 12 inch pipe to Ulverstone. The river has cut down deeply from the basalt plateau and its banks are generally steep and gorge-like. The topography has been influenced by the differing hardness of the rocks in the greywacke series through which it cuts. Softer beds have caused the development of small flats and more gently sloping hills along the river's course and the longest dimensions of these flats correspond to the strike of the beds. One small flat is located between the alternate sites of the dam and the other upstream from the number two site and adjacent to the road.

GEOLOGY

This locality occurs near the northern boundary of the Sheffield One Inch Map Sheet and the rocks are shown as Gog Range Greywacke Formation. They consist of an interbedded suite of greywackes, siltstones and breccias. Sometimes bedding is clear, sometimes it is masked by pronounced jointing. The beds strike at about 5° east of north and dip to the west at 30° to 40°. Cleavage is

strongly developed locally but usually is not significant; where seen, it strikes at 330° and dips steeply to the east (70°-80°). Jointing on the other hand is extremely well developed and at No. 1 damsite it completely masks the bedding so that the rocks appear to be of igneous origin. Jointing is in several directions throughout the area but major directions are at 100° with a dip of 80° to the south and 5°-10° with dips to both east and west. At the Number two site there is another set at 350°. No faulting is apparent at either site but regional mapping indicates a strong fault downstream.

THE PROPOSED SITES

Number One site, which appears to be the more logical, is located just above the present intake weir. Good outcrops of rock are visible and there is ample material situated above the dam level to construct a rock filled structure. The principal rock type outcropping is described as a greywacke. Cleavage is not well developed and the bedding is almost completely masked by a strong joint pattern the major direction of which is at 100°.

The No. 2 site does not appear quite as suitable although rock outcrops well in the river bed and on the hillsides. The rock here is closer to a siltstone and the bedding is more pronouced, with incipient cleavage and some jointing.

HOLDING QUALITIES OF ROCKS

This series of rocks, greywackes, siltstones and probably lavas are fairly impervious in themselves but some water will percolate through various structures. Bores put down into similar beds have yielded small supplies of water. However this is true of nearly every rock type and should not cause concern. The joint planes appear to be the channels through which most water will percolate but, even through these, the loss should be small and it is not considered that grouting will be necessary.

The rocks weather uniformly from the surface and large zones of underground weathered rock, such as are found in dolerite, are not considered likely.

There is no indication of faulting or any other movement at either of the two sites.

APPENDIX

by G. Everard.

The following describes a rock specimen collected by Chief Geologist T. D. Hughes at Isandula near Sprent.

The specimen is a greyish and greenish grey mottled rock stained slightly with iron oxides; its clastic nature is well marked in hand specimen by angular fragments of felspar, quartz, quartzite, pyrite and microscopically indeterminable rocks and minerals in a very fine matrix. Grain size of the fragments is from less than 1 mm. to almost 1 cm. Signs of bedding can be seen but are obscured by folding and induration.

In thin section angular fragments of felspar, quartz, quartzite and mudstone appear in a very fine grained groundmass. Both orthoclase and plagioclase felspars are present and are slightly cloudy with alteration. Smaller fresh finely twinned albite crystals are also present in the matrix. Fuchsite is common in ragged greenish patches, but the colour varies and some patches are practically muscovite. There are a few minute spherules of muscovite with cores of quartz.

Plastic flow is shown by lines of recrystallised quartz. The rock is a greywacke or greywacke breccia, with incipient alteration.