

TR 12-113-115

## 29. PROPOSED RESERVOIR SITE — VINEYS CREEK, RINGAROOMA

by W. R. Moore

The site for this dam is on Vineys Creek about three miles SE of Ringarooma. At this point the creek has eroded a small gorge, about 40 feet deep and 80 feet wide, through the remnants of a basalt flow. In this gorge, the erection of a water storage dam about 30 feet high is proposed.

The basalt appears to have extruded on the plateau to the S of this area and to have flowed down the escarpment, to form a low spur through which Vineys Creek has cut the gorge. Outcrops in the area are poor and the only basalt considered to be *in situ* is on the NE of the spur in the vicinity of the proposed spillway, on the W bank of the creek near the present weir, and on the track to Naylor's farm near the crossing of Vineys Creek.

The sandstone and siltstone of the Mathinna Beds appear to underlie the basalt. Outcrops of this sedimentary unit were found in a series of post holes to the SE of the dam site. In the area examined, the contact between the rocks of the Mathinna Beds and the basalt is not exposed, but the distribution of red soil from the basalt and yellow soil from the Mathinna Beds suggests that it is an interface with little relief. Hence it is possible that at the proposed dam site Vineys Creek has cut through the basalt into the rocks of the Mathinna Beds. In this case the dam and the reservoir area may both be underlain by the rocks of the Mathinna Beds covered by a thin veneer of Quaternary river gravel and sand.

If this contact does underlie the dam site and reservoir its position and depth are critical, and the depth of weathering of both rock units is important for the following reasons:—

- (a) The interface could be a potential plane of weakness.
- (b) The contact, depending on the nature of the rocks, could form a serious leakage path beneath the dam.

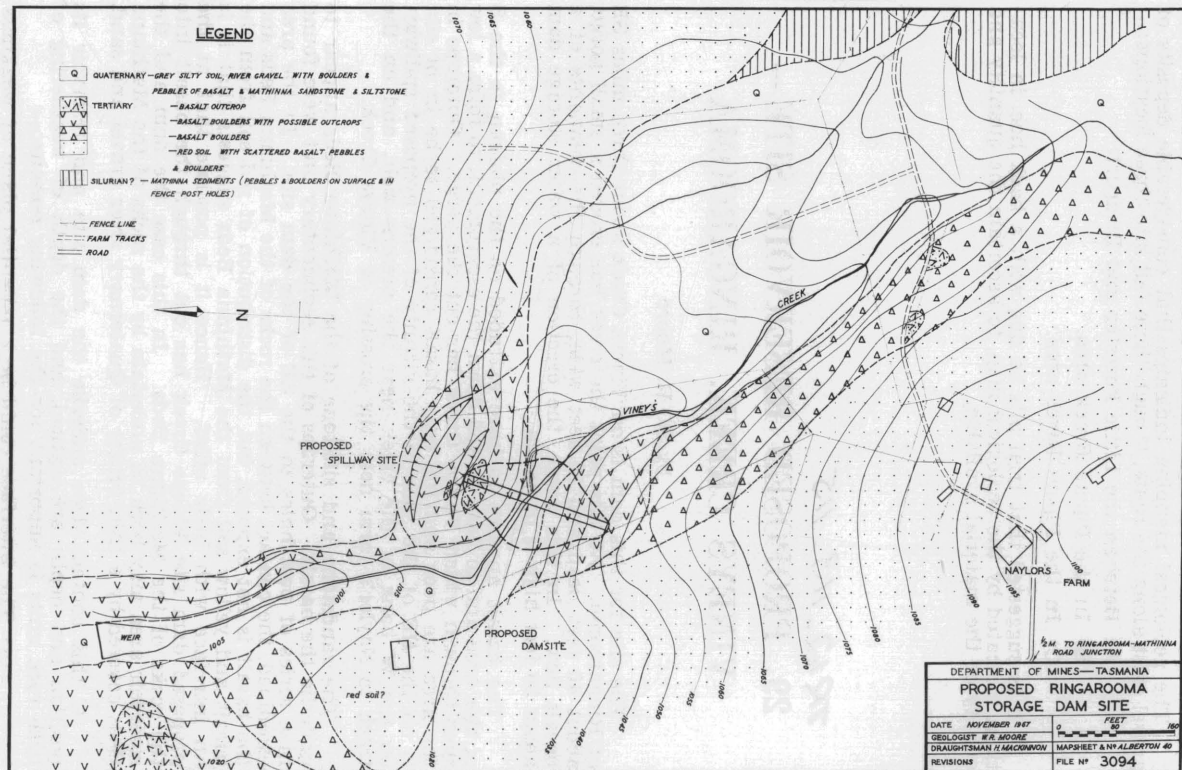


FIGURE 29

### MATERIALS FOR CONSTRUCTION

In the area examined no clay suitable for the construction of the core of a rock fill dam was located. From examination of the parent rocks in the area it is considered unlikely that any suitable clay material would be produced. The basalt contains small, rare phenocrysts of olivine, it is hard and compact, and should prove suitable material for the construction of a rock fill dam. Quarry sites are also available on the escarpment and on the slopes of the plateau close to the Ringarooma-Mathinna Road, but the steep grade of this road combined with the distance from the dam site may make it uneconomical. The basalt, which outcrops on the low knoll on the W bank of the creek near the present weir also appears to be suitable. From surface examination this outcrop appears to contain enough material for the proposed dam, but it lacks the height necessary to make a good quarry site.

### RECOMMENDATIONS

(1) The depth of weathering of the basalt and the profile of the underlying unweathered rock should be established on both abutments, either by drilling or by deep trenches. The SW abutment in particular requires investigation.

(2) At least two holes 20-25 feet deep should be drilled along the centre line of the dam into the unweathered bedrock in the valley floor.

(3) The nature of the material underlying the reservoir, beneath the veneer of gravel and sand, should be established by drilling or trenching.

(4) If a rock fill dam with a concrete upstream face is contemplated, investigation of the basalt knoll to the W of the present weir is advised in order to establish the amount of unweathered basalt available.