

TR12-78-80

19. DAM SITES ON THE RIVER JORDAN, $\frac{3}{4}$ MILE SOUTH OF APSLEY

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The area was examined at the request of the Rivers and Water Supply Commission, Tasmania. It was Site No. 9, one of a programme of six sites examined on the River Jordan during 1967.

TOPOGRAPHY

In the vicinity of this site the Jordan has cut a steep sided valley into hills which rise to about 1,500 feet A.S.L., or about 700 feet above the river. Upstream to the N and downstream to the S the valley widens out and becomes flat-bottomed. It is followed by the old disused Melton Mowbray-Apsley railway, and partly by the Lake Highway which crosses the Jordan in the N of the area.

The bed of the Jordan is covered by boulders and gravel; solid rock is not often seen but is probably only at shallow depth. Some ponds remain in summer but flow ceases. The valley slopes and bottom are well wooded except in the area shown on the NW quarter of the map.

GEOLOGY

Triassic sediments in the area have been complexly intruded by dolerite of variable type and have subsequently been faulted. There is some alluvium on the valley floor.

Triassic Sediments

These sediments consist of medium grained impure 'spotty' feldspathic sandstone (often called 'pepper-and-salt rock') and interbedded fine pale green or buff mudstone. The sandstone is probably up to 100 feet thick, individual beds being markedly lenticular and false-bedded and usually about a foot or 18 inches in thickness. The rock is soft, and weathers easily but irregularly, forming caves in some areas. It gives rise to several feet of very sandy soil where it does not outcrop.

The mudstone is only seen in artificial exposures and is very soft. Occasional hard siltstone fragments are found.

Contact with the dolerite has affected the sediments only very locally. Within three feet of dolerite some recrystallisation and sugary texture has developed, but it is not apparent at greater distances. Neither the sandstone nor mudstone is markedly jointed.

Dolerite

Over most of the area, the dolerite is dark, fine grained and closely jointed, usually into slabs. It has intruded the sediments in the form of an irregular sheet dipping at about 20° to the W, and a chilled margin is apparent where exposures are good. The fine dolerite is limited toward the N by a vertical contact with gently dipping sandstone but everywhere else low angle contacts are seen and the influence of the topography has made them sinuous. Generally the dolerite forms the hills, and sediments are seen in the valleys. Only in the mid-section of the map does the dolerite form both river banks.

In the high ground in the E of the area a lighter coloured, coarse phase of dolerite is seen. It appears to be faulted against the other rocks and small lenses of fine dolerite have been involved in the faulting. The direction of faulting is not clear, but the coarser material seems more likely to be the upthrown side.

Alluvium

Thin spreads of alluvium about eight feet thick, cover the valley floor in some places. It is usually of boulder size, with some admixture of sand and clay. Soil covers the more stable alluvium further from the river bed. Stiff blue clay has been excavated in construction of a dam in a tributary creek (W of C-D).

CONCLUSIONS

There are probably three limitations to the use of the area as a site for a rock fill dam, but none of these appear insuperable. They are:—

- (1) The irregular weathering and close jointing seen in some places in the dolerite must make the exact location of the abutments a matter of some concern.
- (2) The soft nature of the sandstone may make relatively deep excavation necessary to provide cut-off in these rocks.
- (3) There appear to be only limited quantities of suitable clay for a core, but exploration could reveal whether sufficient exists.

No difficulty in obtaining dolerite rock fill material is anticipated, as quarries already exist, and the bed of the old railway provides excellent access to the valley.

Two sites for a dam are indicated approximately on the map by the lines A-B and C-D (see fig. 38).

A-B is in a part of the valley where dolerite forms both banks, and where relatively massive and unweathered abutments could be found.

C-D although not geologically such a good site enables the storage of the dam to be increased by an amount represented by the area of valley between C-D and A-B, an area where the valley is wider. The length of C-D is not significantly greater than A-B. Being at a slightly lower level than A-B, C-D decreases the risk of interference with the Lake Highway bridge at Apsley or with the highway foundations.

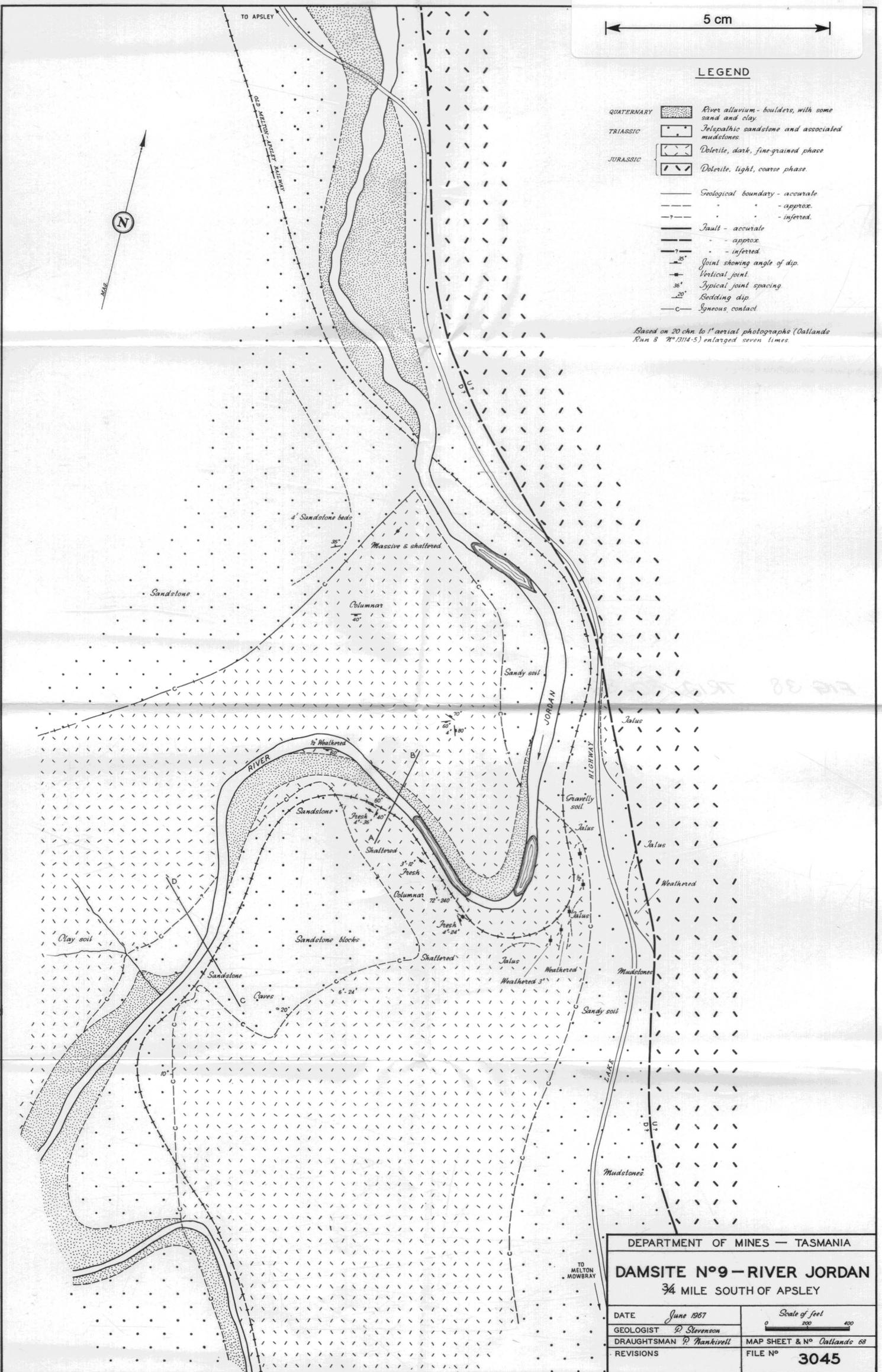


FIGURE 38

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RECOMMENDATIONS

A small amount of clearing and excavation at A-B would be necessary to position dam abutments and foundations exactly. More work would be required at C-D, but excavation here would be in sediments and probably within the capability of bulldozers.

Either site would require up to 600 feet of diamond drilling to check joint patterns, frequency and permeability under water pressure; and additional footage to investigate rock-fill and, if required, clay reserves.

The exact positions of dolerite-sandstone contacts could be determined by magnetometer measurements.

Weathered and shattered zones in dolerite could be explored by seismic velocity measurements. Any geophysical measurements should precede diamond drilling.