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26. INDUSTRIAL WATER SUPPLY, TRIABUNNA

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INTRODUCTION

A request was received from R. M. Foster and Associates, on behalf of the Spring Bay Municipality, for geological advice on proposed damsites on the Prosser River about 1½ miles upstream from Orford. The proposed dam forms part of a new water scheme to supply the new alginate industry at Louisville. Several possible sites have been located in a short stretch of the river a few hundred feet above the existing pumping station. At present there is insufficient topographic information available to select any particular site. The portion of the river containing all possible sites was examined by the writer on 6th October, 1962.

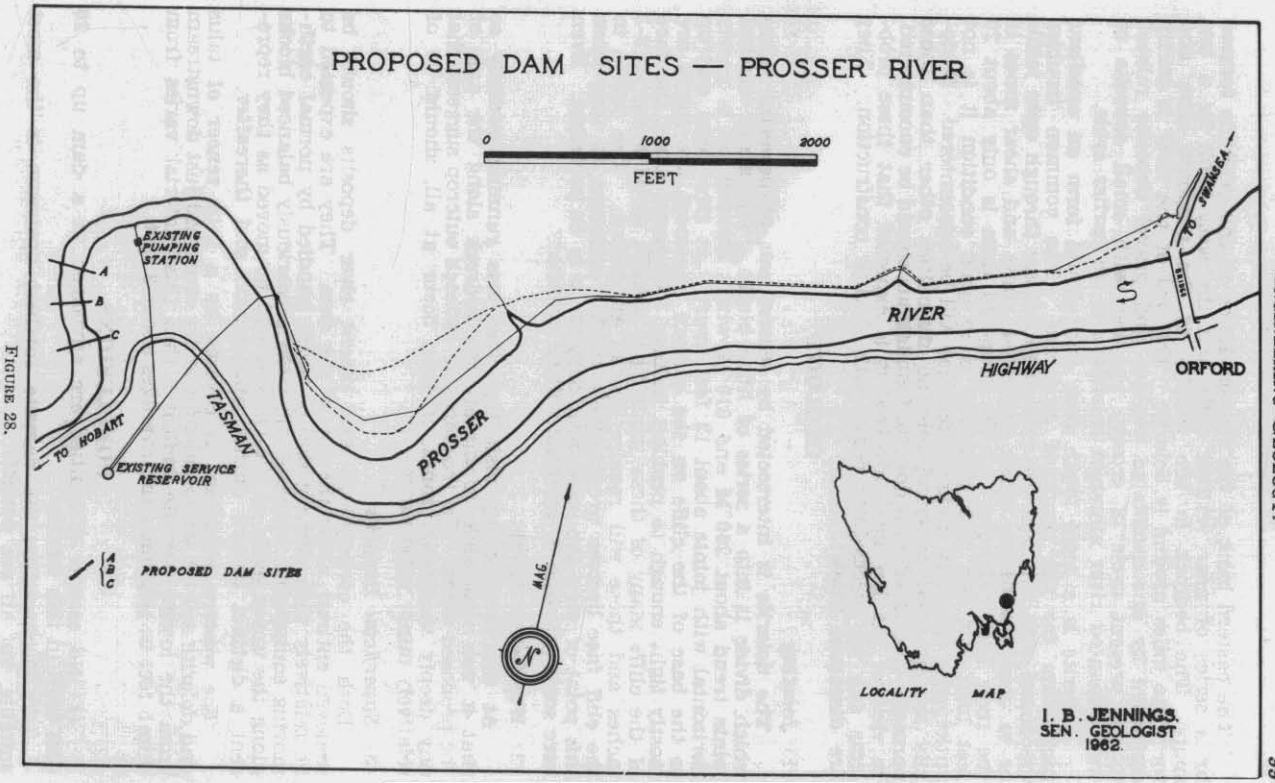

FIGURE 28.

5 cm

The eastern bank of the Prosser River at this point is formed by a series of near vertical cliffs and the west bank by a low spur. The bedrock in the vicinity of the proposed dam and for some miles around is dolerite. The bed of the river is partly concealed by unconsolidated boulder and gravel deposits related to the present cycle of erosion together with small deposits of well cemented river alluvium belonging to an earlier cycle.

Dolerite is a hard tough rock and should form an excellent foundation for the proposed structure. The common troubles associated with this rock are related to leakage through open joints or to deep weathering along concealed joints and shear zones in the river bed. However, as the proposed dam is only about 20 feet high and the rock generally is in good condition it is not anticipated that any undue difficulties will be encountered. Basically the proposal is sound and no difficulties other than those normally associated with dolerite foundations should be encountered. In view of the low head involved it is expected that these problems can be successfully dealt with during construction. They are discussed below:

GEOLOGY

(1) *Jointing*

The dolerite is intersected by several sets of powerful joints which divide it into a series of huge blocks. The major vertical joints trend about 280°M and 010°M whilst another set is nearly horizontal with joints about 12 feet apart. At river level and up to the base of the cliffs on the eastern abutment the joints are mostly tight enough to prohibit leakage. However, along the face of the cliffs many of these joints have opened up as much as 2-3 inches and these will require special treatment. The joints in the cliff face become progressively tighter upstream so that from this point of view the uppermost damsite it to be preferred. Even here some grouting or guniting will be necessary.

(2) *Weathered Zones*

At the time of my visit the river was running strongly so that it was impossible to inspect the bedrock along the axis of the proposed dams. The frequency of bedrock outcrop suggests that any deeply weathered zones, if they occur at all, should be of relatively minor importance.

(3) *Superficial Deposits*

Both the consolidated and recent river deposits should be removed entirely along the toe of the dam. They are expected to be relatively thin and capable of being handled by normal earth-moving equipment. Some of the large precariously balanced blocks along the upper parts of the cliffs should be moved as they represent a distinct hazard during construction and thereafter.

The western abutment is covered by a thin veneer of talus and dolerite soil. A section along the dry creek bed just downstream from the lowest damsite indicates that this material varies from 0 to 5 feet in thickness and averages about 3 feet.

CONCLUSIONS

(1) No serious difficulties are envisaged in a dam up to 20 feet high in this locality.

(2) Geologically, the damsite furthest upstream is the most suitable, but all are possible.

(3) Some special treatment will be required to seal off open joints along the cliffs forming the eastern abutment.

(4) No major shear zones are expected to be encountered. Any weathered zones which may be located are expected to be relatively narrow and subject to normal treatment.

RECOMMENDATION

It is recommended that a further examination be made at a later stage when planning and clearing of the site is more advanced. More information should then be available as to the number and position of open joints which will require treatment. Lower flows in the river at this later date should allow a better examination of the river bed.