UR1975_31

Notes on groundwater and dam sites in the Little Swanport River region, eastern Tasmania.

D.J. Sloane

The following notes have been compiled at the request of the Rivers and Water Supply Commission.

GENERAL GEOLOGY AND GROUNDWATER POTENTIAL

Detailed geological information regarding rock types and their distribution is not currently available for the Little Swanport area. Major rock types of the region would probably comprise Permian and Triassic sediments and Jurassic dolerite. Information is limited concerning groundwater prospects of the dolerite but Permian and Triassic sediments have generally been found to be fairly good aquifers. Groundwater in these rocks is commonly associated with joints and fractures and can be located by shallow bores generally no deeper than 30-50 m. Deeper bores tend to encounter closed fractures.

Bores have been sunk in Triassic or Tertiary sediments in the Grindstone Bay and Little Swanport areas, and in Permian sediments in the Whitefoord-Woodsdale area. These bores have produced fair to good quality water with yields of between 5-30 *l*/min. Coastal sands have proved to be good aquifers elsewhere but little is known about their potential in this region.

DAM SITES

These comments are based on the brief geological field examination of the proposed dam sites (fig. 1).

Little Swanport River and its tributaries

Site 1 [EP561060] is in medium-grained dolerite which crops out in the stream bed. Both abutments are in dolerite which has a thin cover of dolerite derived colluvium. Joints are generally widely spaced; some vertical joints are parallel to the creek direction. However, zones of closely spaced jointing are present with a joint spacing of approximately one centimetre.

Site 2a. Medium- to coarse-grained dolerite is exposed in the stream bed at this locality [EP547113] and in several places on the adjacent valley sides. Dolerite derived colluvial material mantles the abutment hill slopes while alluvial dolerite boulder deposits are present near the stream bed. These deposits are not considered to be of great thickness. Dolerite outcrops exhibit broad jointing with joint spacings of about one metre. Three main joint sets are present, one horizontal set and two vertical sets of which one is at an acute angle to and the other almost at right angles to the direction of the creek.

Site 2b. At this locality [EP542110], medium-grained feldspathic sandstone is bounded to the east and west by dolerite. The sandstone covers a horizontal distance of approximately 70 m in the centre of the proposed dam. The dolerite-sandstone contacts are well defined and run at right angles to the proposed dam centre line. Bedding and jointing in the sandstone is not determinable from the groundsurface. This would probably not be a good site as leakage could occur through the sandstone and along the sandstone-dolerite contacts. Further investigation would be required to determine the extent of such leakage.

Site 3 [EP542110] is in dolerite which crops out in the stream bed and on the south-eastern bank of the river. A thin veneer of alluvial gravel is

present on the north-western bank of the stream and dolerite derived colluvial material on the hillslope behind. The joints in the dolerite are generally widely spaced as at dam site 2a but occasional zones of closely spaced jointing are also present in which the vertical joints are generally at right angles to the stream direction.

Site 4. Medium-grained dolerite is exposed at this locality [EP636149], in the stream bed and on the adjacent banks. Joints in the dolerite are widely spaced as at Site 3 but there are also numerous zones of closely spaced joints which exhibit an irregular plumose pattern in plan. The interval between these joints is generally less than one centimetre. Alluvial dolerite-boulder deposits are also present on the stream bed but these are not considered to be of any great thickness.

The extent of the zones of closely spaced jointing in the dolerite may cause problems at this locality.

Site 5 [EP618187]. Dolerite is exposed to a minor extent in the stream bed at this locality. Joints appear to be widely spaced, as for dam site 2a, but lack of exposure prevents a good appraisal of the joint pattern. Dolerite derived colluvial material on the slopes adjacent to the stream is believed to cover dolerite at no great depth.

Site 6. Dolerite is exposed in both the stream bed and on the adjacent hill slopes at this locality [EP732126]. Joints in the dolerite are generally widely spaced with vertical sets nearly parallel to, and normal to the stream direction. Occasional zones of closely spaced vertical jointing are evident at an acute angle to the stream direction. The spacing between these closely spaced joints is about 2-3 cm. Minor amounts of dolerite derived colluvium and alluvium are evident at this locality.

Site 7. Fairly fine-grained dolerite with widely spaced joints is exposed at this locality [EP763129]. The interval between joints is about 0.5 m; there are three main sets, one horizontal and two vertical. The vertical joint sets are parallel to and normal to the creek direction. There are minor amounts of alluvium on the stream bed and of colluvium on the adjacent hill slopes.

Lisdillon Rivulet

Site 9 [EP758182] is also in dolerite which crops out in the stream bed. Vertical joints in the dolerite are often closely spaced with a joint interval of about one centimetre. Some vertical joints are almost at right angles to the stream direction while others are nearly parallel to it. The adjacent hill slopes are mantled by dolerite derived colluvium, probably of no great thickness.

Buxton River

Site 11. At this locality [EP806225], medium-grained dolerite crops out both in the stream bed and in the cliffs up to 15 m in height on either side of the creek. Joints in the dolerite are generally widely spaced with a joint interval of about 0.75 m. Occasional closely jointed zones are also present. Vertical joints are both normal to and parallel to the stream direction. A third joint set lies in a horizontal plane.

SUMMARY

All dam sites except Site 2b are located on Jurassic dolerite and should prove very suitable. Vertical joints are generally parallel or sub-

parallel to the stream direction at each locality. Further investigation is required to determine the extent of such jointing as regards the prevention of leakage from proposed dams. The weathering of the dolerite is considered to be minimal but this should be confirmed by drilling. The thickness of dolerite derived colluvium, present on the hill slopes at several localities should also be further investigated but it is not likely to be very great.

[18 April 1975]

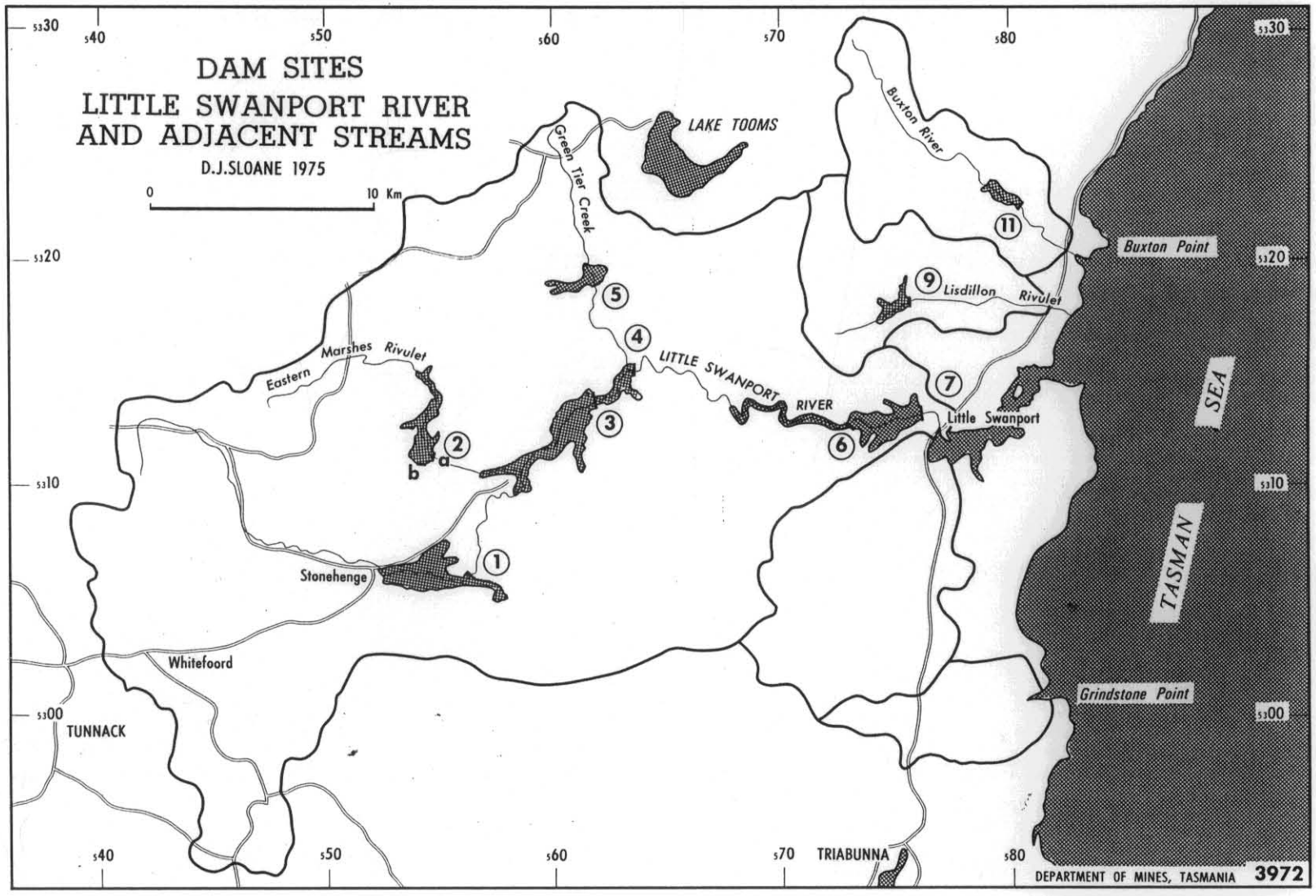
DAM SITES
LITTLE SWANPORT RIVER
AND ADJACENT STREAMS
D.J.SLOANE 1975
0
10 Km
LAKE TOOMS
Green Tier Creek
Buxton River
Buxton Point
Lisdillon Rivulet
Eastern Marshes Rivulet
LITTLE SWANPORT RIVER
Little Swanport
SEA
TASMAN
Stonehenge
Whitefoord
TUNNACK
TRIABUNNA
Grindstone Point
DEPARTMENT OF MINES, TASMANIA
3972
5 cm

Figure 1.