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PROPOSED BRIDGE OVER TAMAR RIVER AT WHIRLPOOL REACH

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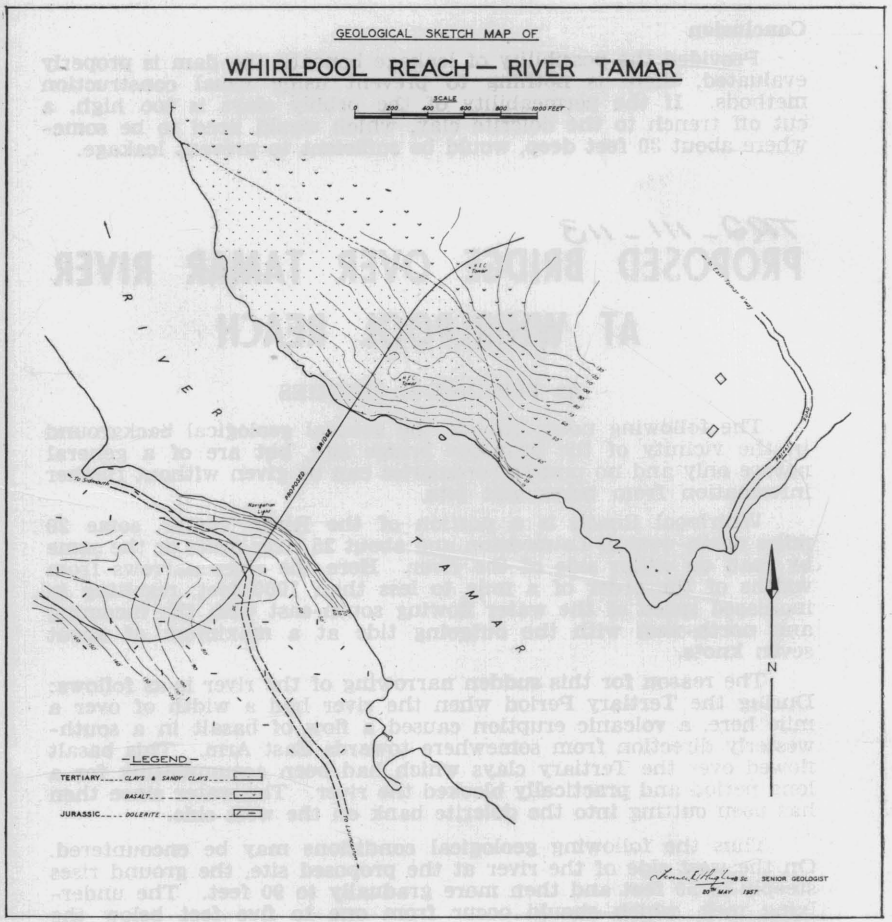
The following notes provide the general geological background in the vicinity of the proposed bridge site, but are of a general nature only and no precise boundaries can be given without further information from bores and pits.

Whirlpool Reach is a portion of the River Tamar, some 20 miles north-west of Launceston and about 25 river miles or the same by road on either side of the river. Here the river narrows from widths of the order of a mile to less than 1000 feet, resulting in increased speed of the water flowing south-east with the incoming and north-west with the outgoing tide at a maximum of about seven knots.

The reason for this sudden narrowing of the river is as follows: During the Tertiary Period when the river had a width of over a mile here, a volcanic eruption caused a flow of basalt in a south-westerly direction from somewhere towards East Arm. This basalt flowed over the Tertiary clays which had been accumulating for a long period and practically blocked the river. The water since then has been cutting into the dolerite bank on the west side.

Thus the following geological conditions may be encountered. On the west side of the river at the proposed site, the ground rises steeply to 50 feet and then more gradually to 90 feet. The underlying rock, which should occur from one to five feet below the surface, is dolerite. This is a very solid rock and should be well suited for any foundation work. There is only one aspect of dolerite which may cause some worry. That is that although this rock appears hard, compact, solid and unaltered, care must be taken in locating joint planes in which weathering can and does occur to depths of hundreds of feet. The rock may appear completely unweathered and suddenly pass into several inches of clay. Thus a careful boring campaign will be necessary to determine the extent of the weathering along major joints. Fortunately the joint pattern can be observed near the river bank and holes should be


GEOLOGICAL SKETCH MAP OF
WHIRLPOOL REACH — RIVER TAMAR
SCALE
0 200 400 600 800 1000 FEET
RIVER
TAMAR
PROPOSED BRIDGE
N
-LEGEND-
TERTIARY..... CLAYS & SANDY CLAYS
BASALT.....
JURASSIC..... DOLERITE
SENIOR GEOLOGIST
20TH MAY 1957

5 cm

Plate 28

sited to intersect this joint pattern at the best angles. Thus before definite diamond drilling is commenced a further consultation should be had to fix the sites.

On the eastern bank of the river, however, very different geological conditions exist. It has been mentioned that basalt flowed over the Tertiary clays in a general westerly direction. The edge of the basalt reached an area corresponding generally to the eastern bank of the river. The front of this lava flow was not, of course, a straight line, so that the boundary between the clay and basalt cannot be accurately drawn. It appears that this basalt reached the position of the present river bank at a point roughly 800 feet south of the bridge site and curved back to a point about 800 feet from the river at the Hydro-Electric Commission transmission line. It reached the site of the river bank also further to the north of the site. Thus the eastern approach to the bridge is underlain by Tertiary clays to a depth that has been proved to 30 feet, or about 18 feet below high-water mark and may well extend to more than 100 feet. The clay has suffered some compaction and in places is relatively hard. Mixed with the clay are narrow beds containing volcanic ash.

It would thus appear at this stage that the western shore would be very suitable for the type of structure envisaged but that all sorts of problems would arise in relation to the eastern approaches. Further boring and pit-sinking are of course necessary.

A point about 100 feet to the north of the 300 feet peg has been pegged as a site for a possible bore. There are many boulders of basalt on the surface and basalt may underlie this area. This however, is extremely doubtful.