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18. Geophysical surveys, Scamander River.

D.E. Leaman

PART 1. RESISTIVITY SURVEY

In common with many rivers in northern and eastern Tasmania the course of the Scamander River shows many peculiarities, particularly near Scamander, which appear to suggest former course changes. The potential leads and survey locations are indicated in Figure 31.

SURVEY DETAILS

A series of resistivity depth probes (Schlumberger configuration) was used in each case. The electrode line was positioned across the course of the suspected lead.

Figure 31 shows the location of probes, and the probable interpretation of results, for surveys across the ridge between the present course of the river and the Tasman Highway; and on an alluvial plain 3 km upstream.

In each case 50-60 m of lead fill is inferred. A complete profile was obtained in the case of the ridge area but not on the alluvial flat. This is probably due to the limited power source used (hand-cranked Yew) and the more conductive alluvial sediments.

CONCLUSION

Old filled channels have been definitely established away from the present course and it appears certain that the Scamander River once passed to the Tasman Sea at a point nearer Falmouth than Scamander. In view of the limited equipment used for this survey and the gentle break-back of the curve on the underlying slates the depth estimates may be in error by 20%. To confirm the profiles and establish the nature of base material seismic work should be undertaken.

PART 2. SEISMIC SURVEY

The resistivity survey revealed a deep lead adjacent to the present course of the Scamander River. This has been examined by a seismic refraction survey in the region of the ridge between Scamander River and lagoon.

SURVEY DETAILS

A single 180 m spread was fired across the centre of the ridge area (between resistivity probes 63 and 64, figure 31). The geophone spacing was 15 m.

The seismic velocities recorded were:

First layer: 1,200 m/sec (Tertiary sand and gravel)
Second layer: 1,980 m/sec (weathered slate etc.)
Third layer: 6,000 m/sec (unweathered slate etc.)

The first layer decreased in thickness from over 70 m near depth probe 63 to only 50 m at depth probe 64.

CONCLUSION

The seismic spread has confirmed the presence and depth of the filled valley. It may be noted that while there is a very marked resistivity increase at the Tertiary sand/weathered slate interface the velocity change is very slight. Resistivity methods are very useful under such conditions.

The velocity observed for the filling material is quite low and it is probably a water-bearing sand with a minor clay content as it is not unusual for Tertiary clays to have seismic velocities of more than 1,600 m/sec.

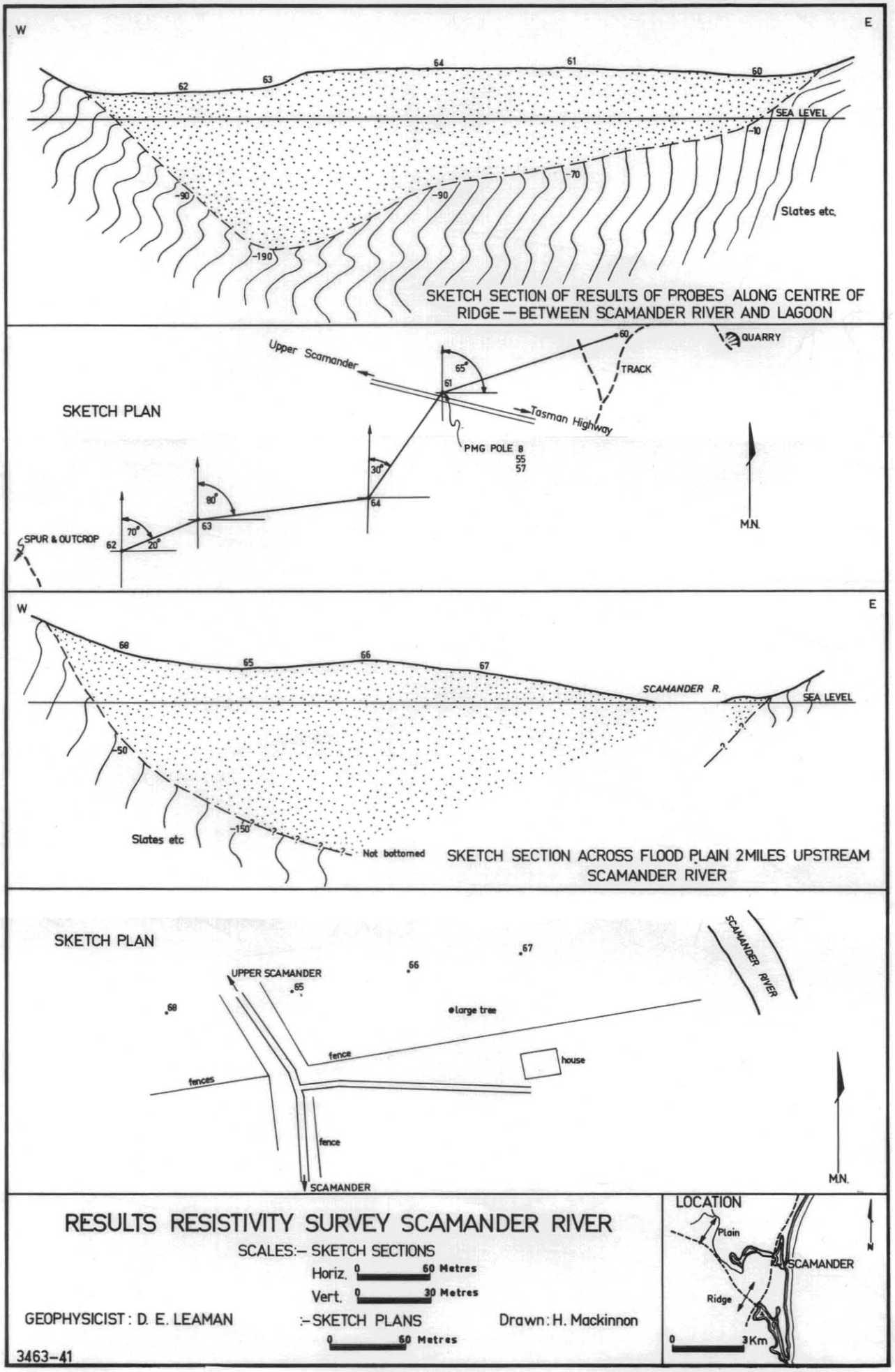

Figure 31.

5 cm

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