UR1976-08

1976/8. Investigation of a site for a pond, Alanvale Matriculation College, Launceston.

W.L. Matthews

The college authorities are planning to install a pond, around which ecological studies can be undertaken. Mr P. Manchester, a lecturer at the college, requested advice on the suitability of the site. The area examined is in the south-west corner of the college grounds [EQ103175].

The site is in a small open valley where surface water from the south-sloping college grounds and neighbouring properties would tend to concentrate. When first examined, there was a spring nearby and a drain had been dug to drain the college land.

The area is underlain by Tertiary sediments which consist mainly of dolerite boulder beds but with some clay. These deposits are probably underlain by Jurassic dolerite.

SEISMIC SURVEY

Three seismic spreads with a geophone interval of 3.1 m were fired in the area of the proposed pond to determine whether unweathered dolerite occurs near the surface. The approximate positions of these spreads are shown on Figure 1 and the results obtained are summarised below.

Spread	*First layer*		*Second layer*
	Velocity V_0 *(m/s)*	*Thickness (m)*	*Velocity* V_1 *(m/s)*
1	350	1.5-2.3	1950
2	365	1.5-2.1	1965
3	400	1.4-2.4	1905

The surface layer (V_0 = 350-400 m/s) is soil, dry clay and relatively loose material. The lower material (V_1 = 1905-1965 m/s) is either dolerite boulder beds or dolerite. Moore (1973) reported a layer under the college building with a seismic velocity of 1500-1800 m/s. When the foundations of the building were excavated, dolerite boulder beds were encountered below most of the site with *in situ* dolerite at one point. The material underlying the pond site has a similar velocity and may be of like material.

The second layer exhibited greater seismic velocities when each spread was fired from the south-east end (V_1 = 2285-2440 m/s) than when fired from the north-west end (1465-1615 m/s). This probably indicates that the upper layer thickens to the south-east.

The last three geophones on each spread fired from the north-west shot point showed higher seismic velocities (V_1 = >3050 m/s). This material is probably slightly weathered or jointed dolerite but is about 10 m below the surface and would not influence the digging of the pond.

Attempts to drill the site with a power auger failed to penetrate any deeper than about one metre; dolerite boulder beds or unweathered centres in weathered dolerite would prevent deeper drilling.

CONCLUSIONS

The seismic work suggests that the material underlying the site to the depth to be excavated is either dolerite boulder beds or weathered dolerite.

If the material is weathered dolerite, there may be small zones of unweathered rock that require blasting. Otherwise excavation should be comparatively easy. The permeability of the material at depth is unknown but is not expected to be high. If on excavation, there is some doubt on the holding capacity of the material the pond should be lined with the surface clay.

REFERENCE

MOORE, W.R. 1973. Seismic investigation of the proposed site of the Matriculation College, Newnham, Launceston. *Tech.Rep.Dep.Mines Tasm.* 15:67-68.

[8 March 1976]

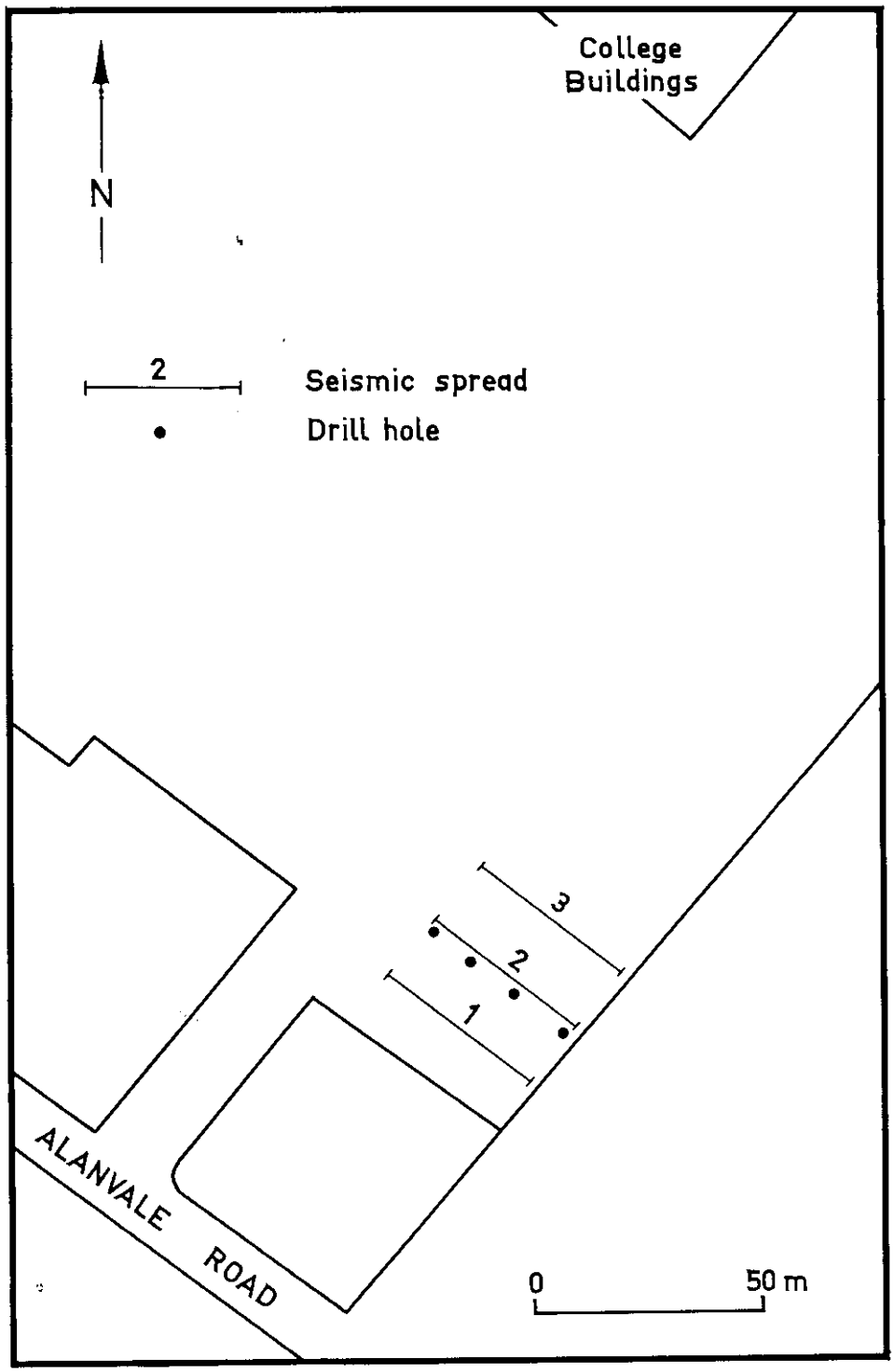

Figure 1. *Location of investigations.*

5 cm