

TR12_116_118
**31. REPORT ON PRELIMINARY SITE
INVESTIGATIONS AT BEDLAM WALLS,
GAILSTON BAY AND AT FREESTONE
POINT, TRIABUNNA, TASMANIA**

by P. C. Stevenson

Two sites have been examined geologically, principally in order to determine—

- (a) the bearing strength and stability of the ground;
- (b) the problems of excavation;
- (c) possible quarry sites; and
- (d) the prospects for groundwater supplies.

BEDLAM WALLS

Geology

The area examined is rectangular and measures about 700 yards from SW to NE and about 600 yards from NW to SE. It is on an elevated promontory projecting into the Derwent estuary, bounded on the N by Shag Bay, on the W by the Derwent River and on the S by Geilston Bay.

The rocks present are fine light grey sandstone and siltstone of the Malbina Formation of Permian age. The sandstone forms hard, compact massive beds from one foot to six feet in thickness which alternate with siltstone beds generally less than two feet in thickness. The siltstone weathers more readily and so is readily distinguished in outcrop, but it is not markedly softer than the sandstone.

The rocks dip at low angles, up to 6° to the W, that is towards the Derwent. They possess vertical joints usually from nine inches to four feet apart although locally they may be as little as one inch or as far as six feet apart. Scattered isolated pebbles up to eight inches in diameter are present in the Formation.

Cliffs on the W side of the area plunge into the Derwent River. Along the foreshore in the NW corner are three shallow sea caves, about 30 feet along any diameter. Their floors are now about twenty feet above sea level. There has been some collapse.

No evidence of groundwater was seen either on the promontory or along the shoreline. The soil cover is a shallow silty grey loam overlying thin stony clay. This forms a podsolc profile up to eighteen inches, and usually less than one foot in thickness.

Comments

In view of the rock types present, the low angle of dip and the well drained nature of the rocks, the general stability of the area is not in doubt. Locally, the presence of the caves has been mentioned, but they are superficial features caused by marine erosion, and do not extend underground for any distance. Except on the steepest slopes, the rocks are adequate to support normal industrial structures.

Excavation will be assisted by the jointed and bedded nature of the rocks. Where there are large joint spacings explosives will be required but in the closely jointed areas heavy earth moving equipment will be sufficient. Blocks up to six feet in diameter could be quarried from the massive sandstone.

Groundwater supplies are not likely, and in any case would be limited in quantity to at the most 1,000 gallons per hour from a bore hole, and in quality by the proximity of sea water.

FREESTONE POINT

Geology

The area examined lies 1,300 yards N and 900 yards E of Freestone Point, which itself forms the E headland at the entrance to Spring Bay. Triabunna lies at the head of the bay just over three miles to the N.

Here a flat-topped promontory about 150 feet high ends in cliffs about 30 feet high on the W and S sides. The rocks present are compact white, brown-yellow or pink sandstone of Triassic age. They are horizontal or dip at very low (2°) angles to the S. Both coarsely false-bedded and massive types are present. Successive beds vary slightly in hardness and result in the sea cliffs being stepped and undercut. The sandstone is soft enough to be broken easily with a hammer but it has been used extensively as building-stone in the past. It is attractive for this purpose, because it is easily worked and is beautifully banded by iron-staining. Joints are often widely spaced at about 20 to 30 foot intervals, though some areas show joints at 2 to 4 or 5 to 8-foot intervals. Beds vary from 1 foot to 12 feet in thickness, most being between 2 feet and 6 feet. No interbedded shales were seen.

Slight faulting has caused small crush zones about six feet wide in two places.

The more low-lying areas are covered by up to ten feet of wind-blown sand. The whole is covered by poorly differentiated sandy soil derived from the rock and from wind-blown sand. Soil profiles are mostly 6 inches and never more than 18 inches deep. No evidence of groundwater was seen.

Comments

The rocks in the area are stable for normal industrial loadings except near the cliff line. Excavation may be difficult because of the unjointed nature of the rocks and the thickness of the beds, and explosives will be necessary below the soil layer.

Quarry material is readily obtainable all over the area, though the best sites are along the cliff line. A market exists for the ornamental varieties of the freestone, but two quarries better placed, near Hobart produced only about 750 cubic yards in 1966.

Groundwater prospects are poor both in quantity and quality. Less than 500 gallons per hour and more than 1,000 parts per million total dissolved solids are to be expected from bores in this area.