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Groundwater prospects at Lactos Pty Ltd factory, Burnie.

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Lactos Pty Ltd, cheese manufacturers of Burnie [DQ083508] require a filtered water supply for their plant, which the Burnie Council are unable to supply at present, and are looking at groundwater prospects as a possible alternative source. About 1140 kl/d are required to supply the factory. The plant is situated about 4.5 km south-east of Burnie near Old Surrey Road; the company owns about 100 ha of land between Old Surrey Road and the Emu River. The Emu Bay Railway line runs through the northern part of the property and forms the western boundary in the southern part of the property.

GEOLOGY AND RELIEF

The Emu River is deeply incised and the land owned by the company is generally steep to very steeply sloping. The factory is about 145 m above sea level, while the level of the Emu River just to the east is about 10 m. The south-western part of the property rises to about 195 m above sea level. The width of the property increases to the south and slope angles tend to be lower than in the north in most areas. Cascade Creek runs through the middle of the property in a generally west to east direction.

The higher part of the land owned by the company is underlain by Tertiary basalt whereas Precambrian slate and quartzite occur at lower levels. The basalt flowed over an uneven surface cut into the Precambrian rocks. Indications of this unevenness can be seen around the slopes towards the Emu River but talus cover often makes it difficult to locate the base of the basalt precisely. The top of the basalt was probably originally relatively flat but subsequent erosion has dissected this plateau. Towards the top of the plateau, the basalt is deeply weathered but in and around the steeper parts of Cascade Creek, cliffs have developed in unweathered basalt. The Precambrian rocks are exposed in the railway cuttings and below them in the north and in other parts on the steeper slopes above river level. In these exposures slate appears to predominate over quartzite.

HYDROLOGY

The basalt, if it is favourably situated, can supply appreciable quantities of water, from the weathered and also from jointed, unweathered sections. The fact that large quantities of water are stored in the basalt is evidenced by the strong springs issuing from near the base of the basalt near, and to the north of, Cascade Creek. There is probably a low in the pre-basalt surface in this area. It would be difficult to collect all this water in a bore because the property only takes in the plateau edge. In any case it would probably be more feasible to collect the spring water but this would probably require filtration, as would other surface sources.

The slate and quartzite beds are a possible source of groundwater although there are no known bores in these rocks in the Burnie district. Similar, although younger rocks in the north-east of Tasmania have yielded quantities up to 330 kl/d from bores. Water in rocks of this type would be stored in joints and bedding planes. Folding has produced abundant joints in these rocks.

As the factory site and much of the land owned by the company is elevated or steeply sloping, there is little point in commencing drilling in these areas as the chances of obtaining permanent supplies of groundwater in the slate and quartzite will only begin at about river level. If drilling

is attempted then it would be advisable to start drilling as near to the river level as possible (but above flood level). A depth of 45-60 m should be sufficient to test the potential yield. If water was obtained in a bore near the river pumping it to the factory at an appropriate pressure would be expensive.

The quality of any water obtained from the slate and quartzite (and also from the basalt) should be good. The company land is about 2 km upstream from the tidal part of the Emu River and it is unlikely that salt water contamination due to sea water would occur unless much larger quantities than anticipated were obtained, and even then the risk of contamination would be slight.

CONCLUSIONS

Useful quantities of water may be obtained from the slate and quartzite beds near river level. Bores in similar rocks in north-eastern Tasmania have produced water at the rate of about one third of that required. Continuous long term pumping effects are unknown however. If water was obtained, pumping costs would be high.

The quality of any water obtained is expected to be good and it is unlikely that salt water contamination would occur even if unexpectedly large quantities of water could be obtained and were actually pumped over long periods.

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