RB 36/20

Preliminary Report

on

PROPOSED DRAINAGE BORE IN FREBURG'S BRICKWORKS

CLAYPIT.

BEVERLY.

Hd. of Yatala

Section 394

by

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GEOLOGIST

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DM 1601/53

DEPARTMENT OF MINES
SOUTH AUSTRALIA

DRAINAGE BORE IN FREBURG'S BRICKWORKS CLAY PIT BEVERLY.

In response to letters from Mr. W. Freburg, Secretary, Freburgs Brickworks Ltd., and Mr. H. S. Dean, Consulting Engineer, Department of Industry, I accompanied Mr. T. A. Barnes, Deputy Director of Mines, on a visit to the clay-pit of the above company at Beverly.

The pit is worked in fairly uniform red-brown ferruginous clay to an average depth of 22 feet, the depth of working being influenced by the groundwater table which, in normal seasons lies about 24 feet below the surface. The best clay for brickmaking purposes is a 3 ft. thick horizontal layer 20 feet below the surface.

There is much evidence that in recent years the general groundwater level in the vicinity of the clay pit has risen. The tram rails have been raised twice in the past two years and the desirable 3 ft. lower layer has to be left underfoot. In a small, corrugated galvanised iron structure once used as a shelter the water surface is now level with the seat. According to Mr. W. Freburg the water level invariably rises to its maximum height early in November, but the general level is now 6" higher than it was in November last year, i.e. about 21 feet below the surface. The floor of the clay-pit is somewhat irregular and the water appears to rest at slightly different levels in different parts of the pit, indicating that some of the water at least is residual from the recent heavy rains.

The water is remarkably clean, the clay suspension apparently settling out rapidly and completely. This might be due to the flocculating effect of the salts in solution in the water. One pump has been badly corroded by this water and a water analysis has been requested by Mr. A. Freburg.

The nearest bore to the site of the clay pit is G. Weymouth's Bore, but as can be seen on the accompanying bore records, there is no record of the strata passed through by this bore from 0 to 370 ft. depth.

The next nearest bore is Government Bore No. 14 and the record

shows that two horizons suitable for drainage occur in the vicinity of this bore, viz., at 110 feet and at 182 feet, but the capacity of the lower horizon is doubtful.

Government Bore No. 67, known as the Beverly Bore, situated on the north side of the Beverly Reserve is the next closest bore to the clay-pits and this bore revealed an unusual number of sand and gravel strata for this area. Altogether, this bore intersected five horizons which might be suitable for drainage, viz., at 76 ft., 106 ft., 169 ft., 224 ft., and at 241 ft., the last being doubtful.

It cannot be too strongly emphasized, however, that the marked lenticular habit of these strata renders prediction of what a bore will encounter impossible. Records of adjacent bores are useful onl as a general guide to conditions and do not enable any specific horizon to be aimed at. Bearing this in mind, it is suggested that an experimental bore be sunk at the site selected (some 25 feet below the surface) and that the bore be carried to a maximum depth of 160 feet (185 feet below the surface) and stopped at a shorter distance if sufficient suitable strata be encountered. The proposed diameter of the bore is 6". The boring should proceed with extreme caution and every endeavour should be made to obtain the maximum amount of information regarding strata encountered, water levels, pressures, capacities, etc. Should suitable strata be encountered it is proposed that at least one additional bore of 8" diameter be put down to the best of these horizons and the casing in the 6" bore withdrawn to one of the remaining suitable horizons.

Attention is drawn to the very coarse grit and gravel layer from 222 ft. to 228 ft. in Government Bore No. 14 and which yielded a flow of 15,000 gallons per hour with a water level of 22 ft. below the surface. This horizon is to be avoided by all means.

Should the boring be successful every precaution should be taken to ensure that only clear water is allowed to drain down the bores since any fine clay in suspension would soon blind any porous strata being used as drains. A large areaadjacent to the proposed bore site is ideally situated to act as a settling pond and it is suggested that all water should be drained into this for settling and

the clear water decanted off to pass down the bores. As an additional precaution it is suggested that perforated standpipes be erected at the collars of the bores and that finely crushed brick waste be packed around these standpipes to act as filters.

29:7:53.
AAG:JLB.

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RECORD OF BORES *

G. Weymouth's Bore (Index No. 162) Hd. Yatala, Section 394, R.L.148.5'

Depth From	Depth To	Description of Strata Passed Through.	Depth at which water was cut	Water Level (below Surface)	Output gal/hr.
0	370'	No record			
370'	390'	Bars of limestone and clay			
390'	400'	White limestone with marl partings.			
400'	402'	Blue-grey limestone			
402'	430'	Grey sand and shells	402'-430'	28'	5,000

Government Bore No. 14 (Index No. 14) Hd. Yatala, Section 394, R.L.147'

0	110'	Brown and yellow clay (gravel at 30'	30'	30'	200
110'	115'	Coarse sand and gravel	110'	60'	1,000
115'	205'	Brown-red to yellow clay (little gravel at 182'	182'	60'	300
205'	222'	Brown sand and clay	222'	22'	15,000
222'	228'	Very coarse grit and gravel			
228'	305'	Particlay			
305'	315'	Brown sand			
315'	390'	Clay with hard limestone bars			
390'	400'	Blue clay			
400'	573'	Grey to yellow white fossiliferous sand	513'-573'	31'	16,000

*Geol. Surv. of S. Aust. Bull No. 27 "Geology and Water Resources of the Adelaide Plains Area." by Keith R. Miles, D.Sc., F.G.S.

Government Bore No. 67 (Index No. 41) Hd. Yatala, Section 395 RL141'

Depth From	Depth To	Description of Strata Passed Through.	Depth at which water was cut	Water Level (below surface)	Output gal/hr.
0 -	62	Sandy clays	24'	24'	200
62 -	71	Coarse gravel	62'	24'	200
71' -	75'	Clay			
75' -	97'	Sandy wash and coarse gravel	76'	58'	small
97' -	156'	Clays, sandy clay	106'	47'	600
156' -	158'	Coarse sand	155'	36'	1,000
158' -	170'	Clay			
170' -	176'	Coarse gravel and sand	169'	47'	600
176' -	224'	Clays			
224' -	228'	Coarse sand and gravel wash	224'	98'	400
228' -	241'	Sandy clays			
241' -	250'	Fine sand	241'	-	100
250' -	264'	Sandy clay			
264' -	274'	Coarse sand	264'	26'	2,000
274' -	290'	Gravelly clay			
290' -	293'	Fine sand			
293' -	334'	Clays			
334 -	339'	Coarse sand, gravel, grading to fine sand.			
339' -	352'	Sandy limestone.			
352' -	382'	Fine sands with shell fragments			
382' -	391'	Grey-black sands, shells, some clay.			
391' -	393'	Limestone	392'-443'	26'	9,000
393' -	400'	Grey-black sands, shells, some clay			
400' -	402'	Limestone			
402' -	443'	Grey-black sands, shells, some clay.			