

D.L. 1707/53.

REPORT ON UNDERGROUND DRAINAGE.
HEADING PUBLIC SCHOOL AND RESERVE.

Sec. 3486, Hd. Kaitpo.

An inspection of Heading Public School and precincts was made on 22/9/53.

Requirements.

The Architect-in-Chief has asked advice as to the possibility of disposal underground of effluent from a septic tank which it is proposed to instal at the School. The number of children in attendance is approximately 70.

Location, Topography etc.

The school is on the South-eastern corner of a reserve originally forming portion of Sec. 3486, and is on the lower part of a gentle westerly slope from a rise running approximately north and south. The block is bounded on the south and east by roadways, while public reserves including the local sports ground adjoin the other two sides. The sports ground is at a slightly lower elevation than the school yard, the levelling of the area having entailed a cutting several feet deep into the slope by the school fence near the present lavatory blocks. The floor of the excavated section has watercress growing on it in places near the bank, and it is apparent that surface runoff has no very good getaway underground. At the date of inspection, water was lying on the surface in several places.

Mean Annual rainfall for the township is 35-2/3 inches.

Geological Hydrology.

See
Rocks of Tertiary age underlie the school reserve, disappearing under the plain some half mile to the westward, where they are overlain by Tertiary strata. No outcrops were found from which an accurate dip and strike could be obtained, though from an examination of the material exposed in small

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road cuttings and in spoil from local wells, it is apparent that ^{the} rocks have a general dip to the eastward, and comprise a series of silty slates and phyllites, which tend to form a heavy clay subsoil. Wells within the township ^{have} usually obtained limited supplies of water at depths up to 60 feet, although at least one located 10 chains north of the school, along the approximate line of strike, penetrated parti-coloured limonitic clays for 57 feet without obtaining any water.

Several domestic septic tank installations exist, but effluent disposal by shallow soakage presents difficulties even for the small quantities handled by these. In the case of the projected school installation, disposal by shallow soakage either in a pit or in trenches appears out of the question, because of the depth and clayey nature of the subsoil. Any attempt at disposal by such means may be expected quickly to result in clogging up of the system, and overflow into the adjacent sports ground.

There is an existing bore beside the road about 2½ chains north of the north eastern corner of the school block. This bore is stated to be 270' deep, and to yield about 2500 gallons per hour. A supply of 700-800 Gallons per hour was obtained at a depth of approximately 100 feet. The bore is understood to have penetrated slates below the clay subsoil.

There is also a newly constructed bore near the northern boundary of Sec. 520 which yielded 2000 gallons per hour from dense black slate at 151 feet. Less than half a mile east of the school, however, & located on a ridge, another bore is reported to have penetrated the slates to a depth of some 480 feet without obtaining more than a good stock supply of water at a much shallower depth than that finally reached.

The general geological picture is therefore of a thick impervious clay mantle, overlying a series of silty slates which are apparently sufficiently jointed to permit of the reasonably free passage of water at depth. It is possible there-

Here that disposal of effluent into the jointed slates might be achieved by means of a bore to a depth of perhaps 300 feet maximum, fully cased but with the casing slotted for the full thickness of the slates below the overlying clays. The cost of such a bore to 300 feet would probably be of the order of £750.

It has been found that trouble commonly arises in disposal down such a bore of a mixture of septic tank effluent and ablutions water, apparently because soap curd from the latter tends to seal off the voids in the rock. It is strongly recommended therefore that if a bore is constructed, the ablutions water be disposed of separately, and not mixed with the septic tank effluent.

Conclusions and Recommendations.

The depth of clay subsoil precludes the possibility of disposing of septic tank effluent in shallow soakage pits or trenches.

Disposal of septic tank effluent only can probably be satisfactorily achieved by means of a bore to a maximum depth of 300 feet, fully cased and slotted, estimated cost being £750.

Ablutions water, should be disposed of separately, probably by being allowed to run away down slope on the surface.

If a bore is decided on, it be constructed and tested for drainage capacity before any other expenditure is undertaken.

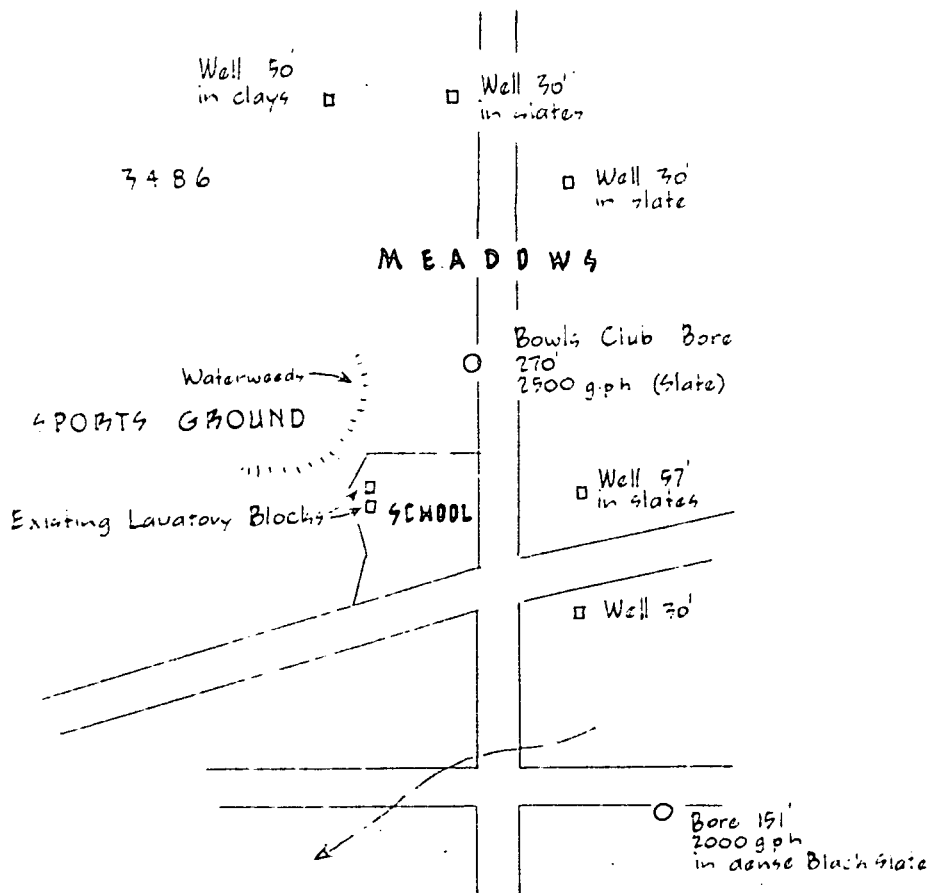
The bore should be located as far to the southwest as possible to minimize the possibility of pollution of the present Lewis Club bore, which is not used for ablutions or drinking.

25/9/53.
RPO: A: H. C.

W. J. Russell
SENIOR GEOLOGIST.
IN CHARGE.

28/9/53

H P H U I T P O



SCALE: 5 CHN. TO 1 IN.

To accompany Report by E.O'Driscoll.

DEPT OF MINES

UNDERGROUND WATER
SURVEY
MEADOWS PUBLIC SCHOOL
DRAINAGE INVESTIGATION

Scale 50' to 1 inch

S 830
Halo

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