# Tea Tree Gully Golf Course Desktop Hydrogeological Study

PIRSA RB 2000/00030

by

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**DEPARTMENT FOR WATER RESOURCES**
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# TEA TREE GULLY GOLF COURSE DESKTOP HYDROGEOLOGICAL STUDY

Nabil Z. Gerges and Chris D. Schuster

## BACKGROUND

The City of Tea Tree Gully is seeking to establish an Aquifer Storage and Recovery (ASR) project at the Tea Tree Gully Golf Course. The golf course is situated on section 5473 and part section 57, Hundred of Yatala in the suburb of Fairview Park which is approximately 20 km northeast of the city of Adelaide (Fig. 1). The application of ASR would enable the golf course to store treated effluent and storm water runoff in subsurface aquifers during annual wet periods, and retrieve it for irrigation purposes during dry periods. The source of the effluent will be the 160 mg/L per year produced in the nearby residential suburb of Banksia Park. This storage and retrieval will have beneficial effects on effluent and storm water management within the area, and on irrigation usage at the golf course.

The Groundwater section of the Department for Water Resources has been requested to undertake a desk top hydrogeological study on the potential of ASR utilising local aquifer systems in the golf course area.

## OBJECTIVES OF THE STUDY

The main objectives of this study were to:

- review existing available data and assess the potential for ASR at Tea Tree Gully Golf Course.
- review any licensing requirements.
- design and cost the estimated number of production and injection wells required, including piping, pumps and control systems.
- propose a costed detailed work plan to finalise the proposal.
- assess the need of a numerical model to predict likely impact of injection.

## HYDROGEOLOGICAL SETTING

The Tea Tree Gully Golf Course is located within the Golden Grove Embayment, which is a section of the St Vincent Basin that abuts the Adelaide Hills. The area is underlain by a thin sequence of sedimentary deposits of Tertiary age, which overlay Precambrian basement with an associated fractured rock aquifer system.

There are presently 5 production wells (6628 33 5340, 6628 33 5341, 6628 33 5342, 6628 33 5343 and 6628 33 12212) situated within the golf course, and all have been completed in the fractured rock aquifer system. These 5 wells, along with 2 SA Water observation wells (6628 33 11414 and 6628 33 11416) and a private well (6628 33 18500) which exist along the boundary of the golf course, will be used to describe the hydrogeological attributes of the area. A summary on the wells is presented in Table 1.

### TERTIARY AQUIFER SYSTEM

The Tertiary sediments comprise interbedded layers of sandy clay, clayey sand, well sorted fine sands and poorly sorted fine to coarse sands. These sediments have been correlated as belonging to the Tertiary North Maslin Sand unit. The average thickness of this sequence of sediments is 20 metres, but it varies regionally throughout the area. The sandy clays can be found throughout the sequence, but are concentrated in lenses along

sections of the contact boundary with the underlying Precambrian basement where it has incorporated into the clay rich weathered surface that has formed on siltstone and slate strata. The distribution of the weathered surface depends largely on the depositional environment of the Tertiary sediments, major structure, lithology of the basement rock and the general geological and hydrogeological history of the area.

The water table forms an unconfined aquifer system in the Tertiary sand layers within this sequence. The Tertiary sands aquifer is hydraulically connected to the fractured rock aquifer within the Precambrian basement where there are no clay lenses at the contact boundary, and is perched where the lenses exist and act as confining beds above the lower fractured rock aquifer. These attributes govern the depths to striking water and the volume in this aquifer system.

Geological logs of production and observation wells in the immediate vicinity of the Tea Tree Gully Golf Course suggest that the Tertiary sediments are either non detectable (well 6628 33 12212) or reach a maximum thickness of 18 metres (well 6628 33 11416). The well completion reports of the observation wells (6628 33 11414 and 6628 33 11416) also show that shallowest initial water cuts were only made within the Precambrian basement 20 metres down hole, where drilling through confining clays along the weathered surface of the basement produced a 5 metre head above the water cut in each well. This pressure head signifies that the water table aquifer would be hydraulically connected where clay lenses are not present between the two systems. Surface water would also recharge the connected systems.

Based on the above information, the water table aquifer within the Tertiary sediments in the vicinity of the golf course appears to have limited potential. This Tertiary aquifer could receive injected water, but due to its regional variation in thickness, poor consolidation and hydraulic connection to the fractured rock aquifer, injection would be more substantial in the Precambrian aquifer.

## PRECAMBRIAN FRACTURED ROCK AQUIFER SYSTEM

This aquifer system exists within fractures in Precambrian (Adelaidean) basement rock which forms the Adelaide Hills and underlies the St Vincent Basin. It consists predominantly of quartzite, dolomite, sandstone, tillite, slate, siltstone, and regionally metamorphosed versions of these rock types. Fractures with differing dimensions have either formed tectonically or by chemical dissolution within the rock units, and exist randomly throughout the basement rock. Those fractures that have been filled with surface recharge water over time have formed a fractured rock aquifer system. Groundwater volume and quality vary extensively throughout the system, depending on the dimensions of the fractures, the lithology of the rock, and the amount and type of infilling material within the fractures.

As stated for the Tertiary aquifer system, weathered surfaces have formed at the contact boundary between the Tertiary sediments and the basement rock. These zones of weathering exist at random and with variable thickness, which is dependant on the weathering susceptibility of the parent rock lithology. The clay lenses within these weathered surfaces are classified as Precambrian, as they are derived from altered basement rock that hasn't been transported and redeposited (unlike the Tertiary sands and clayey sands), while the sandy clays are classified as gradational contact material between the Tertiary and Precambrian. Where the clays exist in extensive lenses, they form confining beds between the Tertiary and fractured rock aquifers.

Geological logs of production and observation wells in the immediate vicinity of the Tea Tree Gully Golf Course indicate that the top of basement rock/weathered zone ranges from outcropping to 18 metres below ground level, and the weathered bedrock ranges between 10 and 20 metres thick. The predominant Precambrian rock types in this area are shale, slate, siltstone and quartzite units of the Proterozoic Saddleworth Formation. Quartzite veins, originating from hydrothermal fluids, usually exist within the other rock types in this area, and are closely associated with fractures within the rock. An east -west traversing geological cross section of the golf course is presented in Figure 2.

In production well 6628 33 5340 (TTG 1A), water cuts were intercepted at 33.6 m, 70.2 m and 97.9 m. These cuts are within the Precambrian weathered siltstone and parent siltstone/slate basement so are interpreted as fractures. The estimated accumulative yield from the water cuts during well construction was 1 L/sec, 5 L/sec and 10 L/sec respectively. The well is cased to 43 metres which has isolated the first water cut. This may have been done to prevent fine material entering the well, to prevent well collapse or because of the low yield

from the first fracture. The latest standing water level (SWL) for this well is 27.4 m (measured in 1995) and the latest salinity level is 1350 mg/L @ 25°C after 1 hour pumping (May 2000).

In production well 6628 33 12212 (TTG 1B), water cuts were intercepted at 59.0 m, 80.0 m, 126.0 m, 140.0 m and 154.0 m. These cuts are within Precambrian shale and slate fractures, and Tertiary sediments are not present in this wells log. White quartzite veining has also been recorded as being present within some of the fractures. The estimated accumulative yield from the water cuts during well construction was 2.25 L/sec, 5.62 L/sec, 7.5 L/sec, 11.25 L/sec and 11.25 L/sec respectively. This well is cased to 43.15 metres, and the latest SWL and salinity level are 27.4 m (95) and 1335 mg/L (86) respectively.

In well 6628 33 18500 (private), water cuts were intercepted at 76.0 m, 112.0 m and 149.0 m. These cuts are within Precambrian shale and slate fractures. The estimated accumulative yield from the water cuts during well construction was 0.1 L/sec, 3.8 L/sec and 7.5 L/sec respectively. This well is cased to 108.0 metres, and the latest SWL and salinity level are 37.3 m (96) and 921 mg/L (96) respectively.

Well completion reports for the 5 golf course wells, 2 observation wells and the private well are compiled in Appendix 1. Latest water analyses and well production information have also been listed in Appendices 2 and 3.

Based on the above information, the following fractured rock aquifer characteristics are anticipated at Tea Tree Gully Golf Course:

- depth to initial water cuts/fractures varies between 20 m and 70 m below the surface.
- standing water levels range between 15 and 40 m below the surface.
- supply is variable, ranging between 5 and 15 L/sec.
- aquifer material is mostly fractured siltstone and slate/shale, with associated quartz veining.

## TARGET AQUIFER FOR INJECTION OF TREATED EFFLUENT AND STORM WATER RUNOFF

It is understood that the Tea Tree Gully City Council plans to inject in excess of 160 mg/L/year (0.5 mg/L/day or 6 L/sec approx.) with an estimated total dissolved solids (TDS) level of 820 mg/L.

The Tertiary aquifer system does not present a favourable opportunity for storage. This system exists in relatively thin lenses and is low yielding, and hence would only receive water at a small injection rate.

The Precambrian fractured rock aquifer system will provide the most favourable options for injection, storage and recovery. Existing wells at the golf course have intercepted 1 to 5 fractures at depths of 20 to 155 metres from the surface. The fracture intervals range between 1–7 metres within the these wells, and the present maximum pressure head is approximately 27 metres below the surface (which is below the clay rich weathered surface of the basement rock). These aquifer parameters and the methods of well completion (open hole) are favourable.

Available lithological information on the fractured rock aquifer states that the Saddleworth Formation is poorly exposed in its type area, but reveals green, medium grey and dark grey laminated shale, slate and siltstone with less common dark grey dolomitic beds and laminated sandy siltstone to fine sandstone. In some beds lamination results from variations in grain size. Petrological descriptions indicate compositions of quartz, muscovite, biotite, dolomite, potassium feldspar, sodic plagioclase, carbonaceous matter, goethite and accessory tourmaline and zircon; the grain size averages 0.03 mm (after Forbes, B.G. and Preiss, W.V., 1987). The weathered surface is predominantly clay, with fine quartz sands and fragments of the underlying basement.

Groundwater salinity at the Tea Tree Gully Golf Course is expected to vary between 500 mg/L and 1500 mg/L with average pH 7.23 and temperature of 15–20°C. The salinity of the treated effluent/storm water is expected to be variable, and pH and average temperature are not known at this

stage. Mixing waters of variable quality, temperature and/or pH may cause clogging reducing well injection efficiency.

The ASR scheme involves injection into the aquifer whenever runoff water is available. Extraction is expected to be virtually continuous.

## GENERAL CONSIDERATIONS FOR ASR

Several issues must be addressed and these include:

- The turbidity and chemical/bacteriological information of treated effluent/storm water; their impact on the aquifer (including clogging potential) and the need for pre-treatment prior to injection.
- Continuous building of pressure head at the well head.
- Potential clogging of injection well.
- Dissolution and/or precipitation of aquifer material and relationship to clogging and/or increasing well efficiency.
- The issue of disposal of flushing water must be addressed.
- Injection head should be monitored so that the water level does not exceed a pre-designated level.

## RELEVANT LEGISLATION, LICENSING OBLIGATIONS AND APPROVAL PROCESS

The operation of an ASR scheme is subject to up to three pieces of legislation:

- Environment Protection Act, which is concerned with the quality of water stored and recovered,
- Water Resources Act 1997, which controls the construction of wells throughout South Australia and the recovery component in prescribed areas,
- Development Act, which may require approval before the EPA can issue a licence and may require Local Govt approval for some components of an ASR scheme eg, storage dam with a wall height in excess of 3 m.

The licensing conditions are related to the components of the ASR scheme, the size of the scheme, and its location.

The approval process licence conditions are in essence:

- a well construction permit is required for all wells (Water Resources Act)
- any water affecting activity within a catchment water management board boundary will require permitting from that board (Water Resources Act)
- EPA licensing is required for discharge from areas greater than 1 Ha to aquifers in the city of Mt Gambier and in the *Adelaide metropolitan area* (Environment Protection Act).

The construction of each new well (extraction and/or injection well) deeper than 2.5 m requires a permit under the Water Resources Act 1997. This requires an Application for Permit for Well Construction to be completed and lodged, with the appropriate fee, with the EPA Environment and Licensing unit. The permit will specify conditions for drainage, including the required monitoring regime. It may be valid for a specific period of time. Permits will also be required for any monitoring well(s).

However, such permits only authorise the construction or change of use of a well, not the taking/recovery of the water in areas prescribed under the Water Resources Act. In those areas, a licence from the EPA Environment and Licensing unit is also required.

Whilst no authorisation is required for taking of water outside prescribed wells areas, the Water Resources Act 1997 does allow the Minister to control and authorise use from specific wells, should there be a resource protection requirement. Where ASR is viewed as an opportunity to enhance the aquifer, the licence may stipulate the recovery of a maximum percentage of recharge.

Development approval is however required before the EPA can issue this Licence (Development Act).

# RECOMMENDED WORK PROGRAM – INVESTIGATION OF FRACTURED ROCK AQUIFER

The potential for stormwater/effluent wast harvesting at TTG site is dependent on the storage capacity of the fractured aquifer intersected. This should be evaluated before any further consideration is given to the scale of water harvesting that might be possible.

Existing production wells in TTG are not designed specifically for such an ASR project. Generally, injection wells are appropriately pressure cemented to minimise upward leakage between formation wall and the uncemented casing. This leakage can cause severe damage to an ASR operation in several ways such as:

1. Mobilising formation fines during the erratic movements of injection head which may cause aquifer clogging.

2. Upward leakage above ground surface could endanger the construction of the injection well and surrounding infrastructures.

For these reasons, construction of an appropriately designed injection well is important in the success of an ASR operation. Therefore it is recommended to drill the new injection well in close proximity to an existing production well to increase the possibility of interconnection between both wells intercepting the same fracture zone.

The following suggested work program targets the fractured rock aquifer system which will enable the thickness, lithology, fractures and hydraulic parameters to be estimated.

## STAGE 1: TESTING EXISTING PRODUCTION WELL/S

This stage should include:

- Conducting pump tests on TTG production wells (6628–12212 and 5341) and monitoring remaining TTG wells for drawdown.

- Sampling all wells for full chemical analysis.

- Conducting downhole geophysical logging on selected existing TTG production wells. This may enable to delineate and map the overburden (soil, Tertiary sediments and weathered bedrock). This involves removing and re-installing pumps.

- Examining in detail geophysical logs, chemical analyses and pump test results.

*Estimated costs for geophysical work:*

- Removal and re-installing 4 pumps @ $1800/well. $7200
- Geophysical logging 4 wells @ $900/well. $3600

*Total cost estimated at* *$10 800*

## Phase 1. Discharge testing of wells 6628–12212, 5340 and/or 5341

Although all wells in the golf course are targeted to supply the required quantity of groundwater, neither well has been pump tested. Available information suggests that, of the wells drilled to date in the TTG, wells 6628–12212, 5340 and 5341 offer the best prospect for long term extraction and injection tests.

Discharge tests are recommended for both wells 12212 and 5341. If the results are satisfactory (with high sustainable yields being proven), injection testing is recommended for either well (preferably 12212) with 5340 used as an observation well. This will be sufficient to trial the characteristics of the aquifer and monitoring any potential seepage above ground.

There is a problem with a supply of feedstock for the injection testing, and the easiest solution will be to utilise the water from the TTG dam or mains water.

### Discharge Test – Well 12212 using well 5340 as observation well

Conduct a constant discharge test for at least 3 days using TTG pump and equipment at the maximum yield. The discharge water will be stored in the dam. Monitor the drawdown in well 5340. *Additional costs will be incurred if access to water level monitoring is not available.*

*Estimated cost*

- Operations 3–4 days – Monitoring approximately 8h/d $1500
- Water chemical analysis, samples and FL 90 $400
- Hydrogeological supervision and reporting $700

*Total costs for Well 12212, stage 1 $2600*

### Discharge Test – Well 5341

Conduct a constant discharge test for at least 3 days using TTG pump and equipment at the maximum yield. The discharge water will be stored in the dam. Monitor the drawdown in other wells, if possible.

*Estimated cost*

- Operations 3–4 days (periodic drawdown measurements by field officer) $1500
- Water chemical analysis, samples and FL 90 $400
- Hydrogeological supervision and reporting $700

*Total costs for Well 5341, stage 1 $2600*

## Phase 2. Assessment of injection potential and pressure head build-up during injection

### Injection Test - Well 12212 or 5340

Conduct a field injection experiment using either well (12212 or 5340) as an injection well and previously extracted water from surface storage as injection water. This water may need to have a tracer element added to permit subsequent differentiation from non-injected water.

The work at this site involves the following:

- Conduct constant injection testing at the maximum possible pumping rate (possibly 10 L/sec)

- Monitor the pressure build up in the injection well and any sign of seepage above ground in the immediate vicinity of the injection well.

- Monitor the pressure build up in the observation well and the movement of water into it from the injection well.

- Assess the clogging potential.

- Monitor chemical changes over *residence period* of time for the injection well and observation well

*Estimated costs*

- Removing and installing pump $1800
- Injection tests 3–4 days, including hiring delivery pump $2500
- Water chemical analysis injected water and SOND observation well $1200
- Hydrogeological supervision and reporting $1500
- Monitoring chemical changes during residence period ~ $1000

*Total costs $8000*

### Recovery efficiency test - Well 12212 or 5340

- Conduct recovery efficiency testing for injection well using TTG pump.

- Monitor drawdown in injection well and observation well.

- Monitor chemical changes over the recovery period of time well

*Estimated cost*

- Constant discharge test $1500
- Water chemical analysis $1200
- Hydrogeological supervision and reporting $1500

*Total costs $4200*

**The total cost of stage 1 program (not including $10 800 costs of geophysical logging and associated work on TTG wells) is estimated to be $17 400 and detailed below:**

| | |
|---|---|
| Constant discharge test | $3000 |
| Removing and installing pump | $1800 |
| Injection testing | $2500 |
| Residence time monitoring | $1000 |
| Recovery efficiency test | $1500 |
| Water chemical analysis | $3200 |
| Hydrogeological supervision and reporting | $4400 |
| *Total costs* | *$17 400* |

# STAGE 2: DRILLING AND TESTING THE NEW INJECTION WELL

## Drilling the injection well

- Drilling one injection well to a total depth of approximately 160 m. The owners of the Tea Tree Gully Golf Course prefer that the drilling location of the new well is in close proximity to the production well TTG1 (6628–12212/5340) at a distance not exceeding 20 metres. The well should penetrate the full thickness of the Tertiary sediment aquifer (if there is any) and weathered surface clays, and be completed open hole in the fractured rock aquifer system. Hammer drilling will be needed in the basement rock. During drilling, lithological and structural logging will need to be undertaken by an on-site geologist to determine rock formations encountered, lithological boundaries and geological structures within the basement rock. This will include retrieving and recording cutting samples from the drilling.

- Conducting downhole geophysical logging on the well.

- Examining in detail cutting samples, geological logs and geophysical logs.

- Pressure cementing 204 mm PVC (Class 2) casing to approximately 50 m below ground level (below the Tertiary sediments and weathered surface clays).

- Developing the well.

- Sampling the well for full chemical analysis and examine chemical analyses.

- Gather chemical and temperature information of the groundwater.

*Estimated costs*

| | |
|---|---|
| • Drilling operation | $25 000 |
| • Geophysical logging | $900 |
| • Water chemical analysis | $1200 |
| • Hydrogeological supervision and reporting | $3500 |
| *Total cost* | *$30 600* |

## Discharge Test – New Well

Conducting pump tests on the new injection well and monitoring drawdown in production wells in close proximity.

- Conducting step drawdown test. 3 stages each @ 100 minutes

- Conduct a constant discharge test for at least 3 days using DWR pump and equipment at the maximum yield. The discharge water will be stored in the dam. Monitor the drawdown in other wells, if possible.

- Examining in detail pump test results

*Estimated cost*

| | |
|---|---|
| • Operations 3–4 days includes hiring equipment (periodic drawdown measurements by field officer) | $6120 |
| • Installing and removing pump | $1800 |
| • Water chemical analysis, samples and FL 90 | $1200 |
| • Hydrogeological supervision and reporting | $700 |
| *Total cost* | *$9820* |

## Assessment of injection potential and pressure head build up during injection

### Injection Test – New Well

Conduct injection test using newly drilled well as injection well and previously extracted water from surface storage as injection water or mains water. This water may have to have a tracer element added to permit subsequent differentiation from non-injected water. Monitor build up of head in observation wells 12212 and 5340.

The work at this site involves the following:

- Conduct constant injection testing at the maximum possible pumping rate (possibly 10 L/sec)
- Monitor the pressure build up in the injection well and any sign of seepage above ground in the immediate vicinity of the injection well.
- Monitor the pressure build up in the observation well and the movement of water into it from the injection well.
- Assess the clogging potential.
- Monitor chemical changes over *residence period* of time for the injection well and observation well

*Estimated cost*

| | |
|---|---|
| • Injection operation | $2500 |
| • Water chemical analysis | $400 |
| • Hydrogeological supervision and reporting | $1500 |
| • Installing and removing pump | $1800 |
| • Monitoring chemical changes during residence period ~ | $1000 |

*Total cost $7200*

### Recovery efficiency test – new well

- Conduct recovery efficiency testing for injection well using DWR pump.
- Monitor drawdown in injection well and observation well.
- Monitor chemical changes over the recovery period of time well

*Estimated cost*

| | |
|---|---|
| • Constant discharge test | $1500 |
| • Water chemical analysis | $1200 |
| • Hydrogeological supervision and reporting | $1500 |

*Total costs $4200*

**The total cost of stage 2 program is estimated be $51 820 and detailed below:**

| | |
|---|---|
| Drilling operation | $25 000 |
| Geophysical logging | $900 |
| Test pumping operation, 3 stages and constant discharge test | $6120 |
| Injection testing | $2500 |
| Residence time monitoring | $1000 |
| Recovery efficiency test | $1500 |
| Water chemical analysis | $4000 |
| Hydrogeological supervision and reporting | $7200 |
| *Total costs* | *$51 820* |

## REFERENCES

Forbes, B.G. and Preiss, W.V., 1987. *Stratigraphy of the Burra Group.* The Adelaide Geosyncline, Bulletin 53, Geological Survey of South Australia, Chapter 6, page 110.

***Table 1*** *Summary of wells in the vicinity of the Tea Tree Gully Golf Course*

| **UNIT NUMBER** | 6628 5340 | 6628 5341 | 6628 5342 | 6628 5343 | 6628 12212 | 6628 11414 | 6628 11416 | 6628 18500 |
|---|---|---|---|---|---|---|---|---|
| **TTG Number or other I.D** | 1A | 2 | 3 | 4 | 1B | EWS Obs Well | EWS Obs Well | Private Well |
| **Date of Drilling** | 1963, 65 & 82? | 1965 | 1967 | 1920 & 1964 | 1982 | 1980 | 1980 | 1996 |
| **Total Depth (Drilled) (m)** | 98.2 (1963)<br>128.0 (1965)<br>159.6 (1982) | 97.6 (1965)<br>124.4 (1965) | 121.9 (1967)<br>127.0 (1967) | 45.75 (1920) | 161.0 (1982) | 36.0 (1980) | 49.5 (1980) | 158.7 (1996) |
| **Total Depth (Compl.) (m)** | 159.6? | 124.4 (1965) | 127.0 (1967) | 36.6 (1964) | 159.6 (1982) | 36.0 (1980) | 49.5 (1980) | 158.7 (1996) |
| **Casing Detail** | 210 mm steel to 4.2m (63)and 43m (65) | 210 mm steel to 100.8m | 210 mm steel to 29.8 m | 152 mm steel to ?? m | 210 mm steel to 43.15 m | 75 mm PVC to 30 m, 71 mm slotted steel to 36 m | 75 mm PVC to 43.5 m, 71 mm slotted steel to 49.5 m | 210 mm steel to 52.2 m, 155 mm PVC to 108 m |
| **Pressure Cementing (m)** | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| **Tested Interval(s) (m)** | 1. 33.6<br>2. 70.2<br>3. 97.9 | Unknown | Unknown | Unknown | 1. 59–66<br>2. 80–87<br>3. 126–133<br>4. 140–147<br>5. 154–161 | ? – 20? | ? – 20? | 1. 76–76.5<br>2. 113–114<br>3. 149–154 |

| **UNIT NUMBER** | 6628 5340 | 6628 5341 | 6628 5342 | 6628 5343 | 6628 12212 | 6628 11414 | 6628 11416 | 6628 18500 |
|---|---|---|---|---|---|---|---|---|
| **TTG Number or other I.D** | 1A | 2 | 3 | 4 | 1B | EWS Obs Well | EWS Obs Well | Private Well |
| **Construction of Tested Interval(s)** | All Open Hole | Unknown | Unknown | Unknown | All Open Hole | Unknown | Unknown | All Open Hole |
| **Water Cut(s) (m)** | 1. 33.6<br>2. 70.2<br>3. 97.9 | Unknown | Unknown | 1. 27.5<br>2. ?? | 1. 59<br>2. 80<br>3. 126<br>4. 140<br>5. 154 | 1. 20 (approx.) | 1. 20 (approx.) | 1. 79<br>2. 113<br>3. 149 |
| **Water Level (m) (accumulative water cuts and latest)** | 1. ?<br>2. 10.1<br>3. 21.4 (68)<br>4. 27.4 (1995) | 18.5 (1965)40.5 (1995) | 19.1 (1975)<br>27.6 (1995) | 22.3 (1975) | 24.38 (1992)<br>27.4 (1995) | 15.0 (1980) | 15.0 (1980) | 1. 37.3<br>2. 37.3<br>3. 37.3 (96) |
| **Salinity (mg/L) (accumulative water cuts during well construction and latest)** | 1. 571<br>2. 700<br>3. 554 (65)<br>4. 1040 (75)<br>5. 1350 @ 25$^{o}$C (2000) | 1125 (1986)<br>1237 @ 25$^{o}$C (2000) | 590 (1975)<br>could not sample in 2000 | 1457 (1951)<br>1224 @ 25$^{o}$C (2000) | 1335 (1986) | 620 (1980) | 980 (1980) | 1. 1700<br>2. 1200<br>3. 1000 (96)<br>Final 921 (96) |

| **UNIT NUMBER** | 6628 5340 | 6628 5341 | 6628 5342 | 6628 5343 | 6628 12212 | 6628 11414 | 6628 11416 | 6628 18500 |
|---|---|---|---|---|---|---|---|---|
| **TTG Number or other I.D** | 1A | 2 | 3 | 4 | 1B | EWS Obs Well | EWS Obs Well | Private Well |
| **Yield (L/sec)** **(accumulative water cuts and latest)** | 1. 1.0<br>2. 5.0<br>3. 10-11 (68)<br>4. 8.0 (1975) | 8.0 (1975) | 13.0 (1975) | 0.8 (1964) | 1. 2.25<br>2. 5.62<br>3. 7.5<br>4. 11.25<br>5. 11.25 (82) | 0.03 (1980) | 0.03 (1980) | 1. 0.1<br>2. 3.8<br>3. 7.5 (96) |
| **Pumping (L/sec)** | 4.5–4.8 (1995) | 14.0 (1995) | 2.2–2.4 (1995) | Unknown | 4.5–4.8 (1995) | Non Applicable | Non Applicable | Unknown |
| **Depth to fractures (m)** | Same as Water Cuts | Unknown | Unknown | Same as Water Cuts | Same as Water Cuts | Unknown | Unknown | Same as Water Cuts |
| **Aquifer** | Fractured Rock | Fractured Rock | Fractured Rock | Fractured Rock | Fractured Rock | Fractured Rock | Fractured Rock | Fractured Rock |

Figures

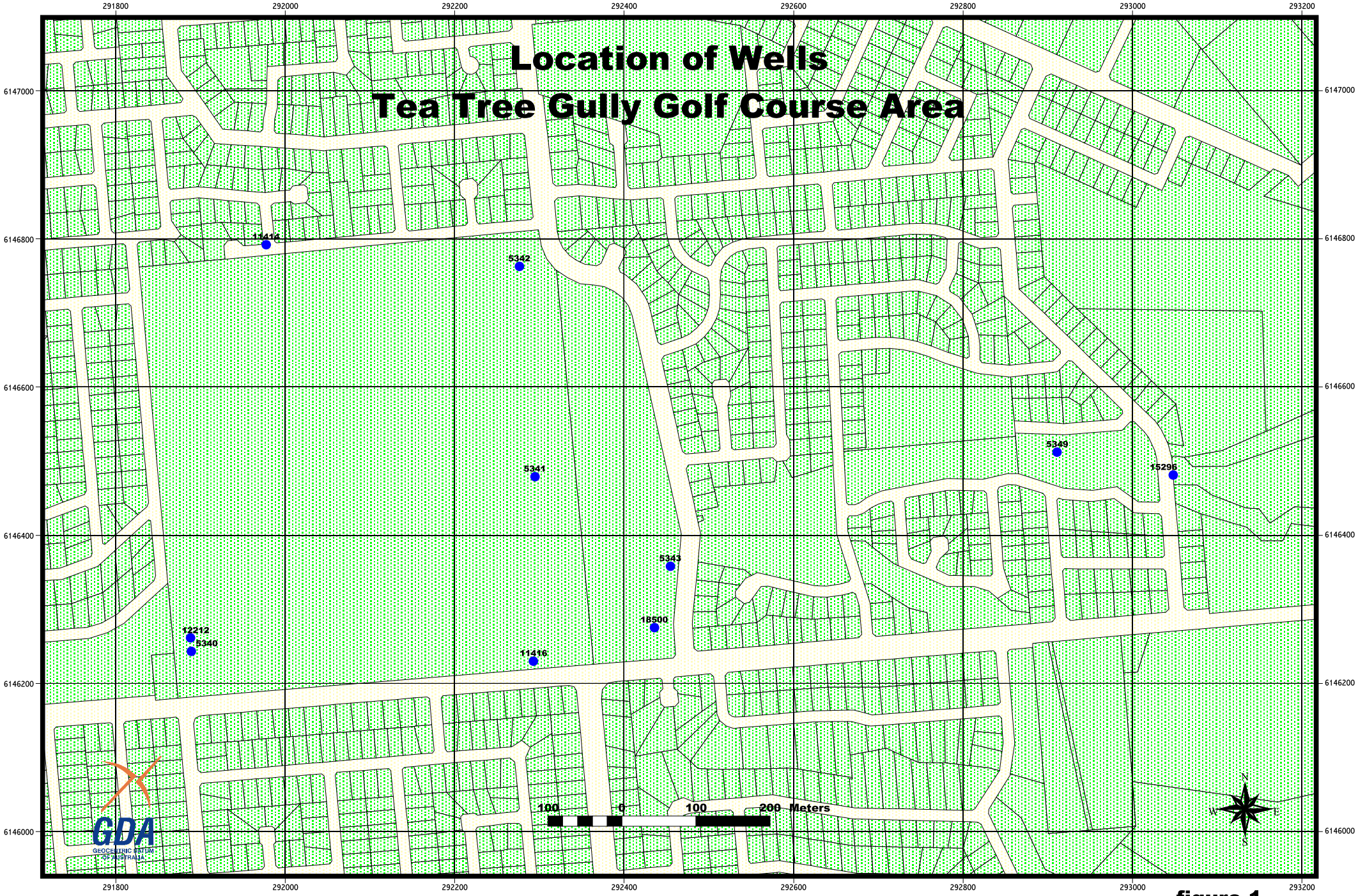

Location of Wells
Tea Tree Gully Golf Course Area
291800
292000
292200
292400
292600
292800
293000
293200
6147000
6146800
6146600
6146400
6146200
6146000
11414
5342
5341
5349
15296
5343
18500
12212
5340
11416
100
0
100
200 Meters
GDA
GEOCENTRIC DATUM OF AUSTRALIA
N
W
E
S

figure 1

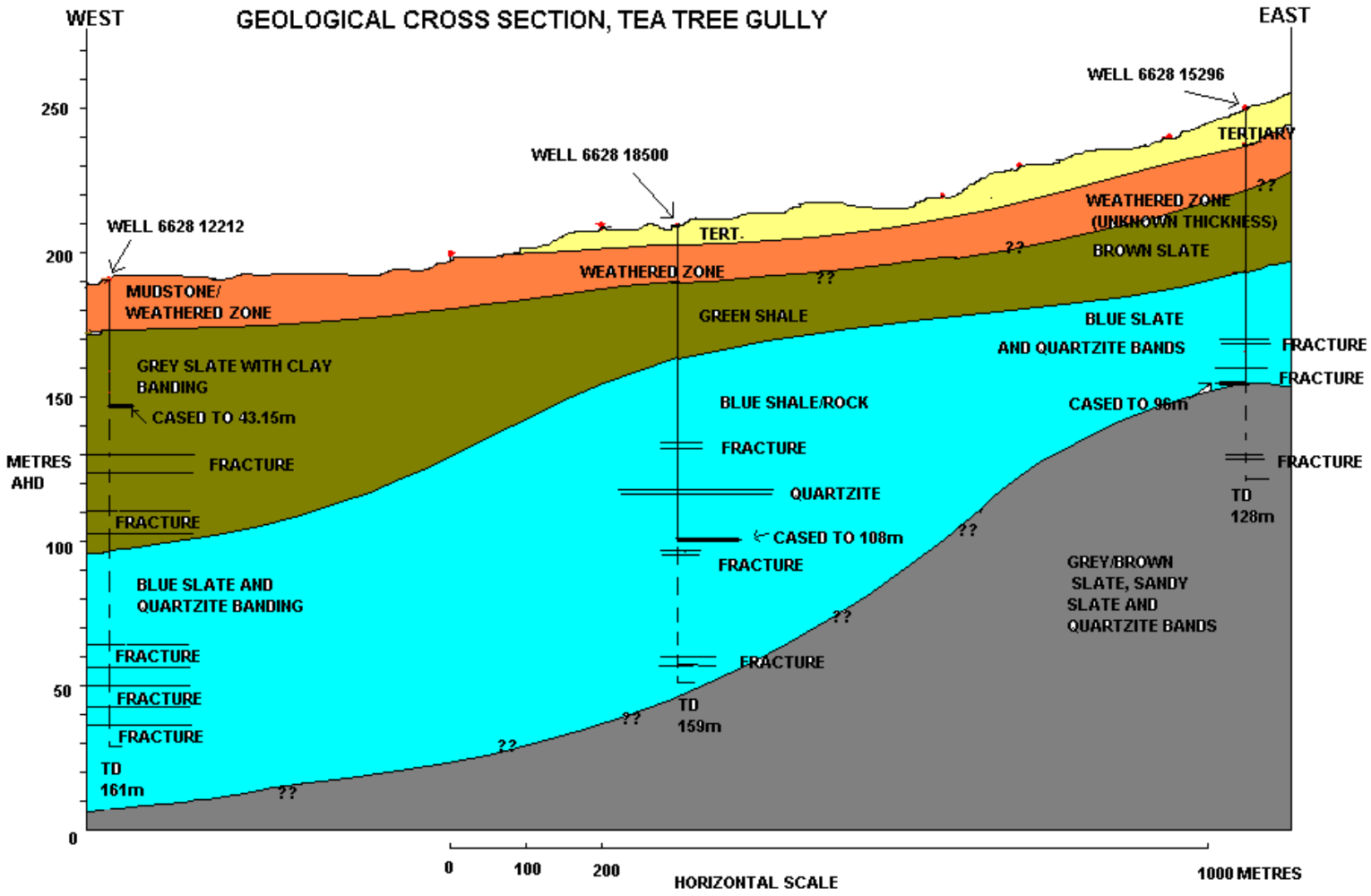



***Figure 2*** *Geological Cross Section, Tea Tree Gully*

# Appendix 1

## Completion details of the wells in the

## Tea Tree Gully Golf Course area

5340

S

[redacted]

Plan 11 East.

Not to be removed from Records Room

7.28547301

# BORE RECORDS—WATER BORING

DEPARTMENT OF MINES

D.M.—C24

Card No. 1

Hundred YATALA Section 5473 Block Bore No. A 01 R.L.

Name of Owner TEA TREE GULLY GOLF CLUB. MODBURY ESTATE P.L. SURREY FARM RD. M. 510/1963 Folder No. 360/4 Micro Film No.

MODBURY.

Date Drilling commenced 1965 Date Drilling completed 1965 Driller 042162

Depth 322 ft. 98.2m Tested/Estimated Output 14,5000 g.p.h. (15.3 L/sec) How Tested PRESS

Drawdown 98 123 c Duration of Test Plant No.

## ANALYSES OF WATERS CUT ~~(gr./gall.)~~

| Date | Depth Ft. | Static Level Ft. | Supply g.p.h. | Total Salts ~~gr./gall.~~ p.p.m. | Bi-Carbonates Ca. | Bi-Carbonates Mg. | Bi-Carbonates Na. | Sulphates Ca. | Sulphates Mg. | Sulphates Na. | Chlorides Ca. | Chlorides Mg. | Chlorides Na. | Nitrates Na. | Hardness Temp. | Hardness Perm. | Anal. No. | Micro Film No. pH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20/5/1963 | | | 2,000 | ATS 843 | | | | | | | | | | | | | 145/1118 | |
| 20/5/1963 | 110' → 33.6m | | 1,000 14/5 | ATS 571 | Start of pump test. | | | | | | | | | | | | 145/1394 & 5 | |
| 16/4/1964 | 230 | 35 → 10.1m | 14,000 | 715 | | | | | | | | | | | | | 155/1235 | |
| 27/1/1967 | 70.2m | 1140 | 5,000 | 5 L/s 700 | | | | | | | | | | | | | 177/32 | |
| 24/7/1968 | 321' | 70' | 10,000 | 10-11 554 | 198 | 85 | - | - | 31 | - | - | 35 | 205 | | 180 | 60 | 193/349 | |
| 9-10-75 | [redacted] 97.9m | – → 21.4m | [redacted] 8 L/s | GGC | | | | | | | | | | | | | 6041/75 | 7.5 |

### CASING LEFT IN BORE

| Diam., in. | From, ft. | To, ft. |
|---|---|---|
| 8" | Surface | 14'. 4.3m |

Remarks Photo 8871 En'Lgt. C/1. J. Templeton 16/4/1964. Pump 'Layle Bowler' (4½") installed at 227'. Submersible pump.

PHOTO SURVEY 1251 NO 2 RUN 1 SCALE 1:20,000

TURBINE PUMP. WAGT 9-10-75

Checked

6628 5340

HD. YATALA SECTION 5473 BORE A.

# LOG OF BORE

| Depth From | Depth To | Nature of Strata |
|---|---|---|
| | | Small layer of sand. |
| | | clay, layers sandstone. |
| 30 | 100' | Slate. |
| 100' | + | Thin quartz bands at intervals between slate. |

Micro Film No.....

10M—7.63 1396

6628 5340

DM-C10

DEPARTMENT OF MINES, ADELAIDE

# BORE DETAILS RECORD

OFFICE USE ONLY
Sample No.
Reference

E 350/4

Occupier's Name

Postal Address

Location of Bore—

County

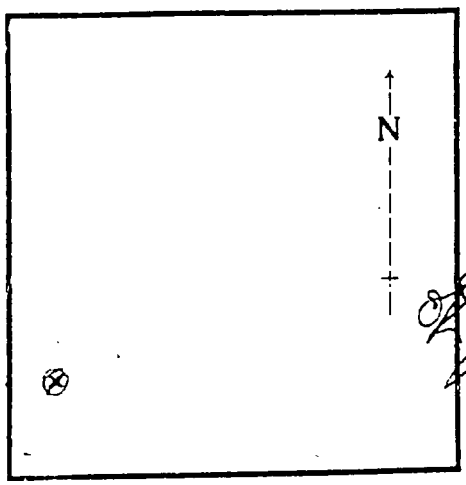
Hundred

Section No. 54-73.

Pastoral Lease (if out of hundreds)

SMALL C-

*Sketch plan, showing situation of bore in the section (indicate distance from any two sides of the section).*




Details of Bore—

Total depth of bore 375'

Water level (from surface) 70'

Depth at which water cut 321'

Supply in gallons per hour 10,000

Height of bore above sea level

Quality of Water—

Present analysis 554 parts/million

Previous analysis (total solids in grains/gall or parts/million)

Purposes for which water has been used and length of time used:—

Stock—

Sheep Combined. Pumping etc.

Horses

Cattle

Others

Irrigation—

Lucerne

Vegetables

Fruit trees

Others

Domestic—

Washing

Drinking

Boilers

Purposes for which the water is required

Casing Details—

Size of casing in inches

Casing commences at and extends to

Pumping equipment—

Type of pump

Size of pump barrel in inches

Depth below surface at which pump installed

Notes on Strata passed through—

RECORD CARD FILLED

Is bore situated in gully, level ground, ridge, or hill? (*Strike out whichever does not apply.*)

6628 5340

Reference 5/7571
W1235/64

# BORE DETAILS RECORD

Occupier's Name TEA TREE GULLY GOLF CLUB Clerk 360/4

Postal Address C/- MR M.C. PRATT, HAINES RD TEA TREE GULLY.

Location of Bore—

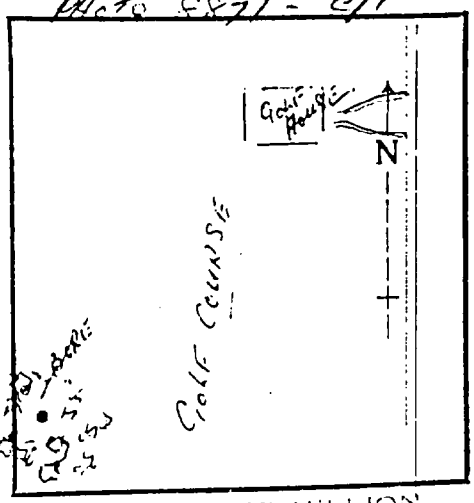
County

Hundred NATTLE

Section No. 54 73

Pastoral Lease (if out of hundreds)

*Sketch plan, showing situation of bore in the section (indicate distance from any two sides of the section).*




Details of Bore—

Total depth of bore 322'

Water level (from surface) 33'

Depth at which water cut 230'

Supply in gallons per hour 14 - 3500 (POSSIBLY)

Height of bore above sea level 670'

Quality of Water—

Previous analysis (total solids in oz./gall. or grains/gall.) 40 G/G. PARTS PER MILLION 715

Purposes for which water has been used and length of time used?— 50 g/d.

Stock—

Sheep

Horses

Cattle generally available

Others for grazing.

Irrigation—

Lucerne

Vegetables

Fruit trees

Others

Domestic—

Washing

Drinking

Boilers

NOTED 29/4/64.
SKETCH NO. 20 & Vicinity N91
SKETCH RECD.
PLOTTED 4
JOURNAL ENTY.

Purposes for which the water is required WATERING GOLF COURSE.

Casing Details—

Size of casing in inches 8"

Casing commences at 0" and extends to 14'

Pumping Equipment—

Type of pump LAYNE BOWLER.

Size of pump barrel in inches 4½ ?

Depth below surface at which pump installed 227'

Notes on Strata passed through—

SMALL LAYER OF SAND, CLAY, SAND STONE, SLATE AT 100'.
QUARTZ EVERY 12" OR SO, SLATE.

Is bore situated in ~~gully, level ground~~, ridge, or ~~hill~~ (*Strike out whichever does not apply.*)

Sample collected by J. TEMPLETON

HYDROLOGICAL SECTION

Signed J. Templeton

6628 5340

DEPARTMENT OF MINES, ADELAIDE

OFFICE USE ONLY
Sample No. 1394/63
Reference DM 516/63

# BORE DETAILS RECORD

3604

Occupier's Name Tea Tree Gully Golf Club

Postal Address C/- The M.C. Pratt, Hawe Road Tea Tree Gully

Location of Bore—

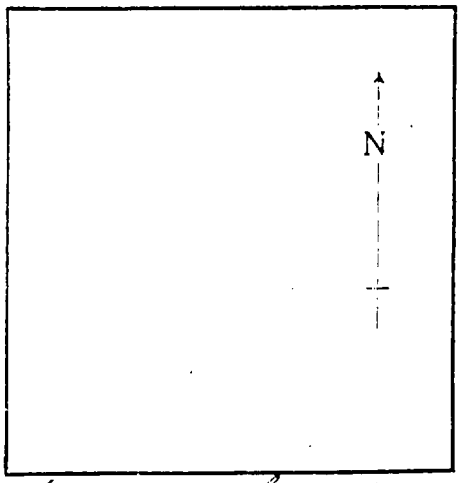
County Golf Course

Hundred of Tea Tree Gully

Section No. Various

Pastoral Lease (if out of hundreds) 5473

*Sketch plan, showing situation of bore in the section (indicate distance from any two sides of the section).*




Details of Bore—

Total depth of bore 322'

Water level (from surface)

Depth at which ~~water cut~~ sample taken 110 feet

Supply in gallons per hour 10,000 gph.

Height of bore above sea level

Quality of Water— Sample ① at start of pump test ~~feet~~ feet.

Previous analysis (total solids in oz./gall. or grains/gall.) 41 — 59 gpg. 110 feet.

Purposes for which water has been used and length of time used:—

Stock—

Sheep 1775 (40) 20-5-63

Horses

Cattle

Others

Irrigation— Suitable all general

Lucerne

Vegetables irrigation & domestic

Fruit trees purposes

Others 1965

Domestic—

Washing

Drinking

Boilers

Purposes for which the water is required Golf Course

Casing Details—

Size of casing in inches

Casing commences at and extends to

Pumping Equipment—

Type of pump

Size of pump barrel in inches

Depth below surface at which pump installed

Notes on Strata passed through— Carried

Is bore situated in gully, level ground, ridge, or hill? (*Strike out whichever does not apply.*)

Sample collected by

Signed

6628 5340

6628 5340

# BORE DATA SHEET – WATER

CHECK

Owner / Occupier Name TEE TREE GULLY GOLF COURSE Address TEE TREE GULLY Reference No. HA

01 UNIT NO. Hundred YATALA Hund. No. 725 Section 5 4 7 3 Bore 01 Bore Name

Latitude or East Longitude or North Card Type Zone Accur Elevation To Datum Accur. Unit

Basin 1 Situation of Bore

## QUALITY OF WATER

Water is required for

Water has been used for: sheep horses cattle poultry others (specify)

washing drinking domestic hot water service boilers others (specify)

Water has been used on: lucerne pastures vegetables fruit trees others (specify)

## REFERENCES

02 UNIT NO. Bore Folder No Common Property No. Security Rating 1

Departmental References

Aerial Photograph No Reference No. 44867 Driller's Name PRESS

## BORE DETAILS

03 UNIT NO. Date Drilling Completed Core Lab No Logged Status 06 Purpose 06 Rig Oper. by 01 Method Drilled Total Depth 1328 Unit M

Angle V Overall Casing: From 0000 To Unit Smallest Diameter 16 Unit I Screen / Slotted Casing

## MOST RECENT DATA

07 UNIT NO. Total Depth 1328 Unit M Date 06/11/1975 S.W.L. Unit Date

Conductivity / Salinity 1850 Code C pH 7.5 Date 06/11/1975 Supply 8 Unit L

Supply Method 3 Duration (hrs) Drawdown Date Tested

PUMP DETAILS: Type Diameter Depth Pump Set Pump Test Carried Out

Conductivity (field) 2550 µs at 25 °C A.M.D.E. Analysis No. Deptl. Analysis No. WB 6041/75

Remarks TURBINE PUMP

Compiled P. TONKIN 9-12-75

ACCURATE LOCALITY PLAN

6628 5340

## BORE DETAILS

04 (1 2) UNIT NO. Samples Obtained (21 24) ck Technical Logs Available (27 52) Analyses Available (55 64) QV

## LITHOLOGIC LOG

05 (1 2) UNIT NO. From (18 22) Unit (23) To (24 28) Description (29 32) Formation (33 35)

(37 41) (42) (43 47) (48 51) (52 54)

(56 60) (61) (62 66) (67 70) (71 73)

05 (1 2) UNIT NO. From (18 22) Unit (23) To (24 28) Description (29 32) Formation (33 35)

(37 41) (42) (43 47) (48 51) (52 54)

(56 60) (61) (62 66) (67 70) (71 73)

## AQUIFER DETAILS

06 (1 2) UNIT NO. Supply Method (18) Hrs (19 21)

| Water Cut (23 28 33) | Unit | Water Level (34 39 45 47 50) | Drawdown | Supply | Unit | Conductivity or Salinity (51 56 61) | Code | pH (62 67 73 75 78) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

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COMMENTS

PRIMARY INDUSTRIES AND RESOURCES SA

# Summary of Latest Water Information for Drillholes

6628 5340

| Unit No | Classification | Maximum Drilled Depth ( M ) | Original Drilled Date | Current Drilled Depth ( M ) | Current Drilled Date | Hundred | Section | Standing Water Level ( M ) | SWL Date | Well Yield ( L/sec ) | Well Yield Date | Total Dissolved Solids (mg/L) | Sample Date | pH | Permit | Cased To ( M ) | Full Chem Anal | Dril Log | Geol Log | Geo phys Log | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6628 33 0 5340 | Water Well | 128.00 | 01/65 | 128.00 | 10/75 | Yatala | S 5473 | 21.34 | 07/68 | 12.63 | 07/68 | 1040 | 10/75 | 8.00 | | | • | • | | | Operational |



The Department will not assume responsibility for any errors or omissions in the data provided

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

# Groundwater Sample

**Sample No:** 243031 **Unit No:** 6628 5340 **Obs No:** **Permit No:**

**Permit Holder:**

**Address:**

**Results To:**

**Address:**

**Collected By:**

**Remarks:**

**Date:** 09/10/1975 **Time:**

**Hundred:**

**Section:** **Lot No:**

**Depth:** M

**Collected:** Drilling / Monitoring / Pumping Test / [Unknown]

**Method:** [Pump] / Airlift / Flowing / Bailer

**Source:** [Well] / Tank / Dam / River / Spring

**EC:** 1850

**TDS:** 1040

**pH:** 7.50



Printed By Schuster C

6628 5340

PRIMARY INDUSTRIES AND RESOURCES SA

# Detailed Analysis Results

**Unit No:** 6628 5340 **Drillhole Name:**

**Sample No:** 88357 **Source:** Drillhole **Other Sample No:**

**Max Drilled Depth:** 128.00 M **Depth Date:** 09/10/1975

**Sample Depth:** **Collected Date:** 01/01/1969

**Comments:** Loaded from Historical SAS Chem Data: Year=1969 ,Name=98 ,Sample_date_meth=JY

**Standard Chemistry**

| | | |
|---|---|---|
| **TDS Calc:** 554 mg/l | **HCO3:** 220.00 mg/l | **Br:** |
| **TDS EC:** | **SO4:** 25.0 mg/l | **TKN(N):** |
| **EC:** | **Cl:** 150.0 mg/l | **NO3(N):** |
| **pH:** | **Fe:** | **NOX(N):** |
| **Ca:** 49.0 mg/l | **ALK:** | **PO4:** |
| **Mg:** 29.0 mg/l | **Carb:** | |
| **Na:** 81.0 mg/l | **NonCarb:** | |
| **K:** | **F:** | |



The Department will not assume responsibility for any errors or omissions in the data provided

5341.

6628 5341

Not to be removed from Records Room

DEPARTMENT OF MINES

D.M.—C 24

# BORE RECORDS—WATER BORING

State No. 7285473C2 Card No.

Hundred YATTALA Section 5473 Block Bore No. C2 R.L.

Name of Owner TEE TREE GULLY GOLF COURSE D.M. Folder No. G 72 042163

Date Drilling commenced 1965 Date Drilling completed 1965 Driller PRESS Micro Film No.

Depth 97·56m ~~Tested~~/Estimated Output 8 L/S How Tested

Drawdown Duration of Test Plant No.

## ANALYSES OF WATERS CUT

| Date | Water Cut | Static level ft. | Supply g.p.h. | Total Salts p.p.m. | Bi-Carbonates Ca. | Bi-Carbonates Mg. | Bi-Carbonates Na. | Sulphates Ca. | Sulphates Mg. | Sulphates Na. | Chlorides Ca. | Chlorides Mg. | Chlorides Na. | Nitrates K. Cl. Na. | Hardness Temp. | Hardness Perm. | Anal. No. | pH. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-10-75 | | 18·5CM | 8 L/S | - | | | | | | | | | | | | | - | - |

## CASING LEFT IN BORE

| Diam., in. | From, ft. | To, ft. |
|---|---|---|
| 8" | G.L. | — |

Remarks PHOTO: SURVEY 1291 NO 8 RUN 1 SCALE 1:20,000

SUBMERSIBLE PUMP FITTED

USED 9-10-75

Checked

6628 5341

# BORE DATA SHEET – WATER

NEW

Reference No. 4A.68

Owner / Occupier Name TAS. TREE GROWERS CO-OP. CO. Address TAS. TREE GROWERS

01 UNIT NO. Hundred YATARA Hund. No. 728 Section 54713 Bore 0a Bore Name

Latitude or East Longitude or North Card Type Zone Accur Elevation To Datum Accur. Unit

Basin 1 Situation of Bore

## QUALITY OF WATER

Water is required for

Water has been used for: sheep horses cattle poultry others (specify)

washing drinking domestic hot water service boilers others (specify)

Water has been used on: lucerne pastures vegetables fruit trees others (specify)

## REFERENCES

02 UNIT NO. Bore Folder No Common Property No. Security Rating 1

Departmental References

Aerial Photograph No Reference No. 4A.68 Driller's Name PAUL

## BORE DETAILS

03 UNIT NO. Date Drilling Completed Core Lab. No Logged Status C Purpose C/S Rig Oper. by Method Drilled Total Depth 9756 Unit M

Angle V Overall Casing From To Unit Smallest Diameter 8 Unit I Screen / Slotted Casing

## MOST RECENT DATA

07 UNIT NO. Total Depth 9756 Unit M Date S.W.L 1385 Unit M Date

Conductivity / Salinity Code pH Date Supply 8 Unit L

Supply Method 3 Duration (hrs) Drawdown Date Tested Pump Test Carried Out

PUMP DETAILS: Type Diameter Depth Pump Set

Conductivity (field) µs at °C I.N.D.E.L Analysis No. Depth Analysis No.

Remarks SUBMERSIBLE PUMP FITTED Compiled P

PRIMARY INDUSTRIES AND RESOURCES SA

# Summary of Latest Water Information for Drillholes

6628 5341

| Unit No | Classification | Maximum Drilled Depth ( M ) | Original Drilled Date | Current Drilled Depth ( M ) | Current Drilled Date | Hundred | Section | Standing Water Level ( M ) | SWL Date | Well Yield ( L/sec ) | Well Yield Date | Total Dissolved Solids (mg/L) | Sample Date | pH | Permit | Cased To ( M ) | Full Chem Anal | Drll Log | Geol Log | Geo phys Log | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6628 33 0 5341 | Water Well | 97.56 | 01/65 | 97.56 | 01/65 | Yatala | S 5473 | 18.50 | 10/75 | 8.00 | 10/75 | 1125 | 12/86 | 8.00 | | | | | | | Operational |



The Department will not assume responsibility for any errors or omissions in the data provided

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

# Groundwater Sample

**Sample No:** 243032 **Unit No:** 6628 5341 **Obs No:** **Permit No:**

**Permit Holder:** **Date:** 09/12/1986 **Time:**

**Address:** **Hundred:**

**Results To:** **Section:** **Lot No:**

**Address:**

**Collected By:** **Depth:** M

**Remarks:**

**Collected:** Drilling / Monitoring / Pumping Test / [Unknown]

**Method:** [Pump] / Airlift / Flowing / Bailer

**Source:** [Well] / Tank / Dam / River / Spring

**EC:** 2000

**TDS:** 1125

**pH:** 7.50



Printed By Schuster C

6628 5341

5342 → Geophysics Job N° 4569.

GSB 5342

Not to be removed from Records Room

DEPARTMENT OF MINES

D.M.—C 24

# BORE RECORDS—WATER BORING

State No. 7285473 03 Card No.

Hundred YATALA Section 5473 Block Bore No. 03 R.L.

Name of Owner TEA TREE GULLY GOLF COURSE D.M. Folder No. 042164

Date Drilling commenced 1967 Date Drilling completed 1967 Driller PRICE Micro Film No.

Depth 121.95 m Tested/Estimated Output 13 l/s How Tested

Drawdown Duration of Test Plant No.

## ANALYSES OF WATERS CUT

| Date | Water Cut | Static level ft. | Supply g.p.h. | Total Salts p.p.m. | Bi-Carbonates Ca. | Bi-Carbonates Mg. | Bi-Carbonates Na. | Sulphates Ca. | Sulphates Mg. | Sulphates Na. | Chlorides Ca. | Chlorides Mg. | Chlorides Na. | Nitrates K. Cl. Na. | Hardness Temp. | Hardness Perm. | Anal. No. | pH. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9-10-75 | | 19.10 m | 13 l/s | 560 | | | | | | | | | | | | | 6042/75 | 7.0 |

## CASING LEFT IN BORE

| Diam., in. | From, ft. | To, ft. |
|---|---|---|
| 8" | G.L. | — |

Remarks PHOTO: SURVEY 1291 NO 8 RUN 1 SCALE 1:20,000

SUBMERSIBLE PUMP FITTED

UA69 -9-10-75

Checked

6628

6628 5342

# BORE DATA SHEET – WATER

NEW

Reference No. 44469

Owner / Occupier Name TEE TREE GULLY GOLF CLUB Address TEE TREE GULLY

01 UNIT NO. (1 2) (3–16) Hundred YATALA Hund. No. 7238 (17 19) Section 5473 (20 23) Bore 03 (24 25) Bore Name (26 27)

Latitude or East (40 46) Longitude or North (47 54) Card Type (55) Zone (56 57) Accur. (58) Elevation (59 65) To (66) Datum (67) Accur. (68) Unit (69)

Basin 1 (70 71) Situation of Bore

## QUALITY OF WATER

Water is required for

Water has been used for: sheep horses cattle poultry others (specify)

washing drinking domestic hot water service boilers others (specify)

Water has been used on: lucerne pastures vegetables fruit trees others (specify)

## REFERENCES

02 UNIT NO. (1 2) Bore Folder No (18 23) Common Property No. (24 33) Security Rating 1 (35)

Departmental References (37 66)

Aerial Photograph No. (67 71 74) Reference No. 44469 (75 80) Driller's Name PRIESS

## BORE DETAILS

03 UNIT NO. (1 2) Date Drilling Completed (21 28) Core Lab. No. (30 35) Logged 3 (37) Status OC (39 40) Purpose OC (42 43) Rig Oper. by (45 46) Method Drilled (48 51) Total Depth 42.0 (52 57) Unit M (58)

Angle V (59) Overall Casing: From 0 (60 65) To (66 71) Unit (72) Smallest Diameter 2 (73 76) Unit I (77) Screen / Slotted Casing (78)

## MOST RECENT DATA

07 UNIT NO. (1 2) Total Depth 42.0 (17 21) Unit M (22) Date 9/10/1975 (23 30) S.W.L. 19.5 (31 35) Unit M (36) Date 9/10/1975 (37 44)

Conductivity / Salinity (45 50) Code C (51) pH 7.6 (52 54) Date 9/10/1975 (55 62) Supply 1.3 (63 67) Unit L (68)

Supply Method 3 (69) Duration (hrs) (70 72) Drawdown Date Tested (73 80)

PUMP DETAILS: Type Diameter Depth Pump Set Pump Test Carried Out

Conductivity (field) µs at °C A.M.D.E.L Analysis No. Dept. Analysis No. 42.6042/75

Remarks SUBMERSIBLE PUMP

Compiled R. TONKIN

6628 5342

## BORE DETAILS

04 (1 2) UNIT NO. Samples Obtained (21 24) Technical Logs Available (27 52) Analyses Available (55 64)

## LITHOLOGIC LOG

05 (1 2) UNIT NO. From (18 22) Unit (23) To (24 28) Description (29 32) Formation (33 35)

(37 41) (42) (43 47) (48 51) (52 54)

(56 60) (61) (62 66) (67 70) (71 73)

05 (1 2) UNIT NO. From (18 22) Unit (23) To (24 28) Description (29 32) Formation (33 35)

(37 41) (42) (43 47) (48 51) (52 54)

(56 60) (61) (62 66) (67 70) (71 73)

## AQUIFER DETAILS

06 (1 2) UNIT NO. Supply Method (18) Hrs (19 21)

06 (1 2) (23 28 33) (34 39 45 47 50) (51 56 61) (62 67 73 75 78)

06 (1 2) (23 28 33) (34 39 45 47 50) (51 56 61) (62 67 73 75 78)

Water Cut | Unit | Water Level | Drawdown | Supply | Unit | Conductivity or Salinity | Code | pH | Water Cut | Unit | Water Level | Drawdown | Supply | Unit | Conductivity or Salinity | Code | pH

## COMMENTS

PRIMARY INDUSTRIES AND RESOURCES SA

# Summary of Latest Water Information for Drillholes

6628 5342

| Unit No | Classification | Maximum Drilled Depth ( M ) | Original Drilled Date | Current Drilled Depth ( M ) | Current Drilled Date | Hundred | Section | Standing Water Level ( M ) | SWL Date | Well Yield ( L/sec ) | Well Yield Date | Total Dissolved Solids (mg/L) | Sample Date | pH | Permit | Cased To ( M ) | Full Chem Anal | Dril Log | Geol Log | Geo phys Log | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6628 33 0 5342 | Water Well | 121.95 | 01/67 | 121.95 | 10/75 | Yatala | S 5473 | 19.10 | 10/75 | 13.00 | 10/75 | 590 | 10/75 | 7.00 | | | | | | • | Operational |



The Department will not assume responsibility for any errors or omissions in the data provided

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

# Groundwater Sample

**Sample No:** 243033 **Unit No:** 6628 5342 **Obs No:** **Permit No:**

**Permit Holder:** **Date:** 09/10/1975 **Time:**

**Address:** **Hundred:**

**Results To:** **Section:** **Lot No:**

**Address:**

**Collected By:** **Depth:** M

**Remarks:**

**Collected:** Drilling / Monitoring / Pumping Test / [Unknown] **EC:** 1080

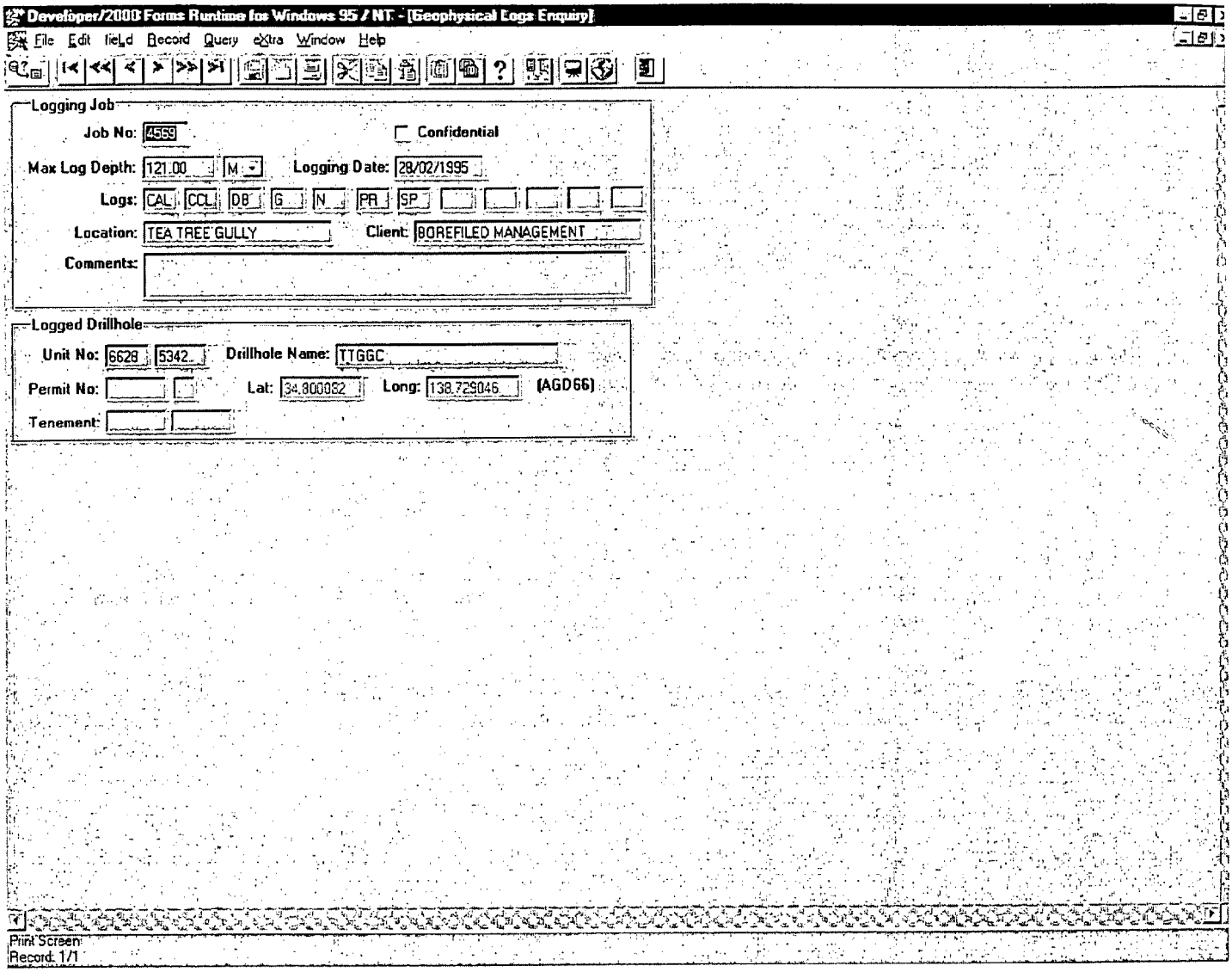
**Method:** [Pump] / Airlift / Flowing / Bailer **TDS:** 590

**Source:** [Well] / Tank / Dam / River / Spring **pH:** 7.00



Printed By Schuster C

6628 5342


Developer/2000 Forms Runtime for Windows 95 / NT - [Geophysical Logs Enquiry]
File Edit Field Record Query eXtra Window Help
Logging Job
Job No: 4559
Confidential
Max Log Depth: 121.00 M
Logging Date: 28/02/1995
Logs: CAL CCL DB G N PR SP
Location: TEA TREE GULLY
Client: BOREFILED MANAGEMENT
Comments:
Logged Drillhole
Unit No: 6628 5342
Drillhole Name: TTGGC
Permit No:
Lat: 34.900082
Long: 138.729046
(AGD66)
Tenement:
Print Screen
Record: 1/1

6628 5342

5343

5324 + Oil field plan

PLAN 11

EAST

6628 5343

Not to be removed from Records Room

728005701

# BORE RECORDS—WATER BORING

DEPARTMENT OF MINES 042233 Card No.

Hundred YATALA Section 57 Block Bore No. A R.L.

Name of Owner [redacted] D.M. 23/52 Folder No. 105/4 Micro Film No.

TEA TREE GOLF CLUB. TEA TREE GULLY.

Date Drilling Commenced Date Drilling Completed 1920 Driller

Depth 45 75 → 152' 120' ± 37m (36.6m) Tested/Estimated Output 7 50 How Tested

16-4-64.

Drawdown Duration of Test Plant No.

## ANALYSES OF WATERS CUT (gr./gall.)

| Date | Depth Ft. Intr Cut | Static Level Ft. | Supply g.p.h. | Total Salts gr./gall. | Carbonates Ca. | Carbonates Mg. | Carbonates Na. | Sulphates Ca. | Sulphates Mg. | Sulphates Na. | Chlorides Ca. | Chlorides Mg. | Chlorides Na. | Nitrates Na. | Hardness Temp. | Hardness Perm. | Anal. No. | Micro Film No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3-12-1952 | 90 (27.5m) | (15.3m) 50 | 750 | [illegible] 102 | | | | | | | | | | | | | 53/2872 | |
| 16-4-64 | | | 800 | — | | | | | | | | | | | | | | |
| 9-10-75 | | 22.34 | 0.8 gpm L/sec | | | | | | | | | | | | | | | |

### CASING LEFT IN BORE

| Diam., in. | From, ft. | To, ft. |
|---|---|---|
| 6" | G.L. | |

Remarks with 1" pipe Supply originally 3000 with compressor.

Bore originally 200' but silted up.

HYDROLOGICAL SECTION
FIELD SURVEY

PHOTO ENLGT 8871 C/2 J. TEMPLETON 16/4/64

W/MILL EXISTING, BUT MAY BE REMOVED AT LATER DATE.

UNABLE TO OBTAIN SAMPLE - PUMP NOT OPERATING.

Checked

BORE NOT USED UA66 9-10-75

PHOTO 1251 NOB RUN 1 SCALE 1:20,000

HD. YATALA SECTION 57 BORE A

## LOG OF BORE

| Depth From | Depth To | Nature of Strata |
|---|---|---|
| | | Sandstone probably |
| | | Drift sand came in at the bottom and filled it from 200' to 150' |

Micro Film No.

10m—3.58 0110

6628 5343

DM-C10

DEPARTMENT OF MINES, ADELAIDE

OFFICE USE ONLY
Sample No. 1
Reference E 1.5/4

# BORE DETAILS RECORD

Occupier's Name TEA TREE GOLF CLUB

Postal Address C/- Mr M.C. PRATT, HAINES RD, TEA TREE GULLY

Location of Bore—

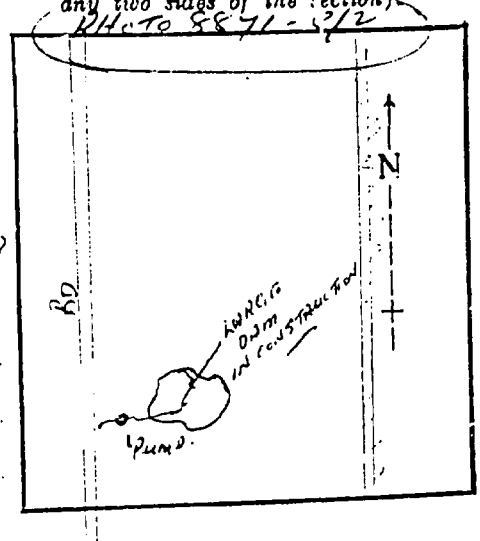
County

Hundred YATALA

Section No. 57

Pastoral Lease (if out of hundreds)

*Sketch plan, showing situation of bore in the section (indicate distance from any two sides of the section)*




Details of Bore—

Total depth of bore 320' (AT PRESENT)

Water level (from surface) —

Depth at which water cut —

Supply in gallons per hour Soc at MOMENT. 15,000 PREVIOUSLY.

Height of bore above sea level

Quality of Water—

Previous analysis (total solids in oz./gall. or grains/gall.)

Purposes for which water has been used and length of time used:—

Stock—

Sheep PREVIOUS OWNERS — MR VERRALL & DR E HAMILTON.

Horses

Cattle

Others

Irrigation— BORE HAS U/M STRUCTURE + BLADES - (IN GOOD CONDITION) BUT NO PUMP PLANT.

Lucerne SECTION. WATER IS BEING PUMPED

Vegetables BY A SOUTHERN CROSS PUMP - DRIVEN BY

Fruit trees PETROL MOTOR.

Others

Domestic— BORE WAS DRILLED DEEPER - BUT SEVERAL

Washing LENGTHS OF PIPING + PUMP FELL INTO THE

Drinking BORE - + WORKING DEPTH IS NOW CONSIDERED AS ABOVE

Boilers

Purposes for which the water is required GOLF COURSE WATERING.

Casing Details—

Size of casing in inches

Casing commences at and extends to

Pumping Equipment—

Type of pump SOUTHERN CROSS.

Size of pump barrel in inches

Depth below surface at which pump installed

Notes on Strata passed through—

UNABLE TO OBTAIN SAMPLE — PUMP NOT OPERATING AT PRESENT.

Is bore situated in gully, level ground, ridge, or hill? (*Strike out whichever does not apply.*)

Sample collected by

NOTED 27/4/64.
SKETCH No. 20 A. Vol. 1 Fol. No 11
SKETCH RECD.
PLOTTED
ORIGINAL ENTY.

6628 5343

# BORE DATA SHEET – WATER

CHECK

Reference No. 4A66

Owner / Occupier Name TEE TREE GULLY GOLF COURSE Address TEE TREE GULLY

01 UNIT NO. Hundred YATALA Hund. No. 728 Section 501517 Bore 91 Bore Name

Latitude or East Longitude or North Card Type Zone Accur. Elevation To Datum Accur. Unit

Basin 1 Situation of Bore

## QUALITY OF WATER

Water is required for

Water has been used for: sheep horses cattle poultry others (specify)

washing drinking domestic hot water service boilers others (specify)

Water has been used on: lucerne pastures vegetables fruit trees others (specify)

## REFERENCES

02 UNIT NO. Bore Folder No. Common Property No. Security Rating 1

Departmental References

Aerial Photograph No. 1291 8 Reference No. 4A66 Driller's Name

## BORE DETAILS

03 UNIT NO. Date Drilling Completed 1920 Core Lab. No. Logged Status 94 Purpose Rig Oper. by Method Drilled Total Depth Unit

Angle V Overall Casing: From 0100 To Unit Smallest Diameter 6 Unit I Screen / Slotted Casing

## MOST RECENT DATA

07 UNIT NO. Total Depth Unit Date S.W.L. 22134 Unit M Date 09/11/1961715

Conductivity / Salinity Code pH Date Supply Unit

Supply Method Duration (hrs) Drawdown Date Tested

PUMP DETAILS: Type Diameter Depth Pump Set Pump Test Carried Out

Conductivity (field) µs at °C A.M.D.E.L. Analysis No. Deptl. Analysis No.

Remarks NOT USED

Compiled P. TONNA 9-10-75

ACCURATE LOCALITY PLAN

6628 5343

DEPARTMENT OF MINES, ADELAIDE

OFFICE USE ONLY
Sample No. 102 A
Reference

# BORE DETAILS RECORD

DM 230/52

Occupier's Name E.R. McKELL

Postal Address Box. 3 Tea Tree Gully

Location of Bore—

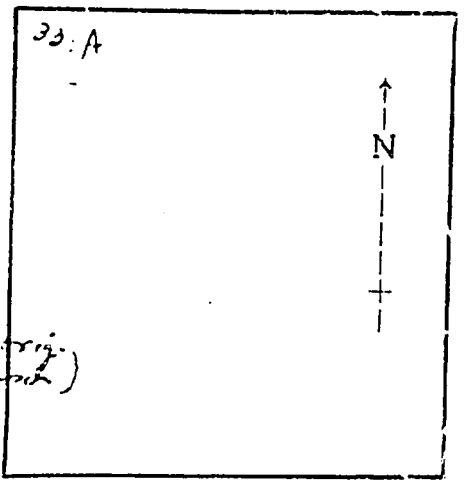
County Adelaide

Hundred Yatala

Section No. 51

Pastoral Lease (if out of hundreds)

*Sketch plan, showing situation of bore in the section (indicate distance from any two sides of the section).*




Details of Bore—

Total depth of bore 150. (was 200' but silted up)

Water level (from surface) 50. approx

Depth at which water cut 90.

Supply in gallons per hour 750 gals/hr (was 3000 trig. 1" pipe & compressed)

Height of bore above sea level

Quality of Water—

Previous analysis (total solids in oz./gall. or grains/gall.) 102.

Purposes for which water has been used and length of time used:—

W2872/58 ATS 57

Stock—

Sheep

Horses Many

Cattle

Others poultry

Irrigation—

Lucerne

Vegetables ✓ all kinds.

Fruit trees

Others

Domestic—

Washing

Drinking

Boilers

Purposes for which the water is required

Casing Details—

Size of casing in inches

Casing commences at and extends to

Pumping Equipment—

Type of pump

Size of pump barrel in inches 1"

Depth below surface at which pump installed

Notes on Strata passed through—

sandstone probably —
drift and conglomerate
the bottom is full of from 200 to 102'

Is bore situated in gully, ~~level ground~~, ridge, or hill? *(Strike out whichever does not apply.)*

Sample collected by

6628 5343

PRIMARY INDUSTRIES AND RESOURCES SA

# Summary of Latest Water Information for Drillholes

6628 5343

| Unit No | Classification | Maximum Drilled Depth ( M ) | Original Drilled Date | Current Drilled Depth ( M ) | Current Drilled Date | Hundred | Section | Standing Water Level ( M ) | SWL Date | Well Yield ( L/sec ) | Well Yield Date | Total Dissolved Solids (mg/L) | Sample Date | pH | Permit | Cased To ( M ) | Full Chem Anal | Dril Log | Geol Log | Geo phys Log | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6628 33 0 5343 | Water Well | 36.58 | 01/20 | 36.58 | 04/64 | Yatala | S 57 | 22.34 | 10/75 | 1.01 | 01/64 | 1457 | 12/51 | | | | | • | | | |



The Department will not assume responsibility for any errors or omissions in the data provided

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

# Groundwater Sample

**Sample No:** 243034 **Unit No:** 6628 5343 **Obs No:** **Permit No:**

**Permit Holder:** **Date:** 07/12/1951 **Time:**

**Address:** **Hundred:**

**Results To:** **Section:** **Lot No:**

**Address:**

**Collected By:** **Depth:** M

**Remarks:**

**Collected:** Drilling / Monitoring / Pumping Test / [Unknown] **EC:** 2574

**Method:** [Pump] / Airlift / Flowing / Bailer **TDS:** 1457

**Source:** [Well] / Tank / Dam / River / Spring **pH:**



Printed By Schuster C

6628 5343

6628 - 11414

DMC 103

Bore Serial No. 934 130

Bore No. A 17

Docket DM 134 179

# YATALA

# BORE FOLDER—WATER AND DRAINAGE

Type of Bore Water Investigation

Hirer E & W.S. Dept

Locality Golden Grove, Hope Valley Area

UNIT NO. 6628 330 OW 11414

PERMIT NO. 6987

SEC. NO. 5473

BORE FOLDER MOVEMENT

| Section | | Action | Officer | Date | Section | | Action | Officer | Date |
|---|---|---|---|---|---|---|---|---|---|
| Drilling Clerk | 1 | Plant No. 8 | | | Typist | | Typing Log and letter | | |
| | 2 | Bore Commenced | | 5-2-53 | | | | | |
| | 3 | Bore Completed | | 5-5-53 | Corresp. | | Checking | | |
| | 4 | Bore Report | | 5-7-53 | | | | | |
| | 5 | Footage Area Book | | 5-7-53 | Geologist | | Checking | | |
| Geologist | | Logging Bore | | | C.S.D. | | Xerox Copying | | |
| C.S.D. | 1 | Accession Book | | | Corresp. | | Distribution | | |
| | 2 | Drafting | | | | | | | |
| | 3 | Sketch No. | | | T.I.O. | | Signature | | |
| | 4 | Sketch Received | | | C.S.D. | 1 | Plotted | | |
| Corresp. | | Analysis | | | | 2 | Journal Entry | | |
| | | | | | Records | 1 | Indexing | | |
| | | | | | | 2 | Record Card | | |
| | | | | | | 3 | File | | |

6628 11414

SCHEDULE EIGHT—FORM FOUR
GOVERNMENT OF SOUTH AUSTRALIA
*Water Resources Act*, 1976

# DRILLERS WELL CONSTRUCTION REPORT

Official Well No. A 7

1. PERMIT No. 6987

2. LOCATION OF WELL: FAIRVIEW PARK
Hundred or Pastoral Lease No. YATALA
Section 948 Lot No. ..... Site No. .....
Name of Property .....

As the person responsible for the work carried out on this well I advise that it has been completed as described below:

Name of Driller A. STUMMER Licence No. 247
Name of plant operator if under supervision .....

Permit holder or land occupier E. & W. S.
Postal Address V.E. - SQUARE
Postcode 5010

5. SUMMARY

Date work commenced 8-5-80 Date completed 8-5-80
Work carried out: New well ☒, Existing well, deepen ☐, enlarge ☐, rehabilitate ☐, backfill ☐ (tick appropriate boxes)
Final Depth 36 m Final standing water level 15 m Final yield 20 l/sec. & HR -
Was well abandoned? ..... If yes, state method .....

6. DRILLING DETAILS If not a drilled well please complete paragraphs 6.2, 9, 10, 11, 12 and 13 as necessary

6.1 CONSTRUCTION DETAILS

| From (m) | To (m) | Diam. (mm) | Drilling Method Cable Tool, Rotary Auger, Etc. | Fluid Used (Air, Water, Mud Type) |
|---|---|---|---|---|
| 0 | 36 | 140mm | ROTARY | MUD |

6.2 WATERS CUT (measurements from natural surface to nearest 0·1 m)

| Date | Water Cut From (m) | Water Cut To (m) | Standing Level (m) | Estimated Yield l/sec. | Hole Depth at Test (m) | Casing at Test (m) | Test Method | Salinity mg/l or Taste |
|---|---|---|---|---|---|---|---|---|
| 8-5-80 | | 20 | 15 | 20 | 36 | 36 | AIRBLOW | S |

7. CASING LEFT IN WELL

7.1 DIMENSIONS / 7.2 TYPE

| From (m) | To (m) | Internal Diam. | Swell Joint, Welded Collar, Steel, Plastic, Etc. |
|---|---|---|---|
| 0 | 30 | 60.5 | CLASS 9 U.C. |
| 30 | 36 | 60.5 | SLOTTED - STEEL |

7.3 CASING SHOE / 7.4 CASING PRESSURE CEMENTED

| Shoe Yes | Shoe No | Diam. (mm) | Cemented Yes | Cemented No | Pressure Cemented Yes | Pressure Cemented No | From (m) | To (m) | Cement (bags) | Water (litres) | Other Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | CEMENT - TOP - OF - WELL | | | | |
| ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |
| ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |
| ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |

8. CONSTRUCTION AT PRODUCTION LEVEL

8.1 METHOD

☐ Open Hole
☐ Screen(s) ☐ Slotted Casing
☐ Other, give details .....

8.2 SCREEN OR SLOTTED CASING (*If variable aperture screen used give limits)

| Type | From (m) | To (m) | Aperture* (mm) | Inner Diam. (mm) | Outer Diam. (mm) | Material | Trade Name | Completion of Base |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

8.3 LINER SEAL (packer)

| Material | Depth (m) | Diam. (mm) |
|---|---|---|
| RUBBER | M. | 140mm |

8.4 GRAVEL PACKING

| Method of Placement | Gravel Passing Mesh Size | From (m) | To (m) |
|---|---|---|---|
| ATTACHMENT TO CASING | | | |

9. IF NOT A DRILLED WELL (i.e. hand dug, etc.)

| Method | Depth (m) | Length (m) | Width (m) | Diam. (m) |
|---|---|---|---|---|
| | | | | |

| Lining Material | From (m) | To (m) |
|---|---|---|
| | | |

10. DEVELOPMENT State methods and times taken

11. PUMP TEST (measurements from natural surface to nearest 0·1 m)

| Interval Tested From (m) | Interval Tested To (m) | Water Level Stabilised at End ? | Test Method | Depth of Pump (m) | Discharge Rate l/sec. | Method of Measuring Discharge | No. of Hours Pumped | Draw Down (m) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

12. SAMPLES WATER - SAMPLE - OBTAINED
The provisions of the Water Resources Act and Regulations thereto require that strata and water samples must be obtained. If any samples have not been obtained state reasons:—

*Signature of Licensed Driller* A. M. Stummer Date 9/5/80

13. FORMATION LOG

| From (m) | To (m) | Description of Material |
|---|---|---|
| 0 | 6 | FINE - SAND |
| 6 | 9 | CLAY + SAND |
| 9 | 12 | YELLOW CLAY + SLATE |
| 12 | 18 | CLAY + SLATE |
| 18 | 36 | HARD - GREY - SLATE |

Driller to forward this Copy, within 14 days of completion to:
The Director of Mines,
Department of Mines,
191 Greenhill Road,
Parkside, S.A. 5063

14675-5.78 C5538 SL 21

Form 1207

6628 11414

DEPARTMENT OF MINES

DM—C12

# PERCUSSION DRILLER'S WEEKLY REPORT AND TIMESHEET

Bore No. A17 Plant No. R.D.8 Week ending 9-5-80

Name of Hirer E.S.W.S. Section No. 948 Hundred YATALA

Address VIC-SQUARE or Pastoral Lease No. PERMIT Nº 6987

| Classification | Name | Hours Worked M. | T. | W. | Th. | F. | S. | Su. |
|---|---|---|---|---|---|---|---|---|
| DRILLER. | A. STUMMER. | | | | 9 | | | |
| ASSISTAND | P. NEALE. | | | | 9 | | | |
| ASSISTAND | L. TONKIN | | | | 9 | | | |

Hours worked certified correct

Hirer's Signature

Cheques to HEM-ADRESS C/ F

## STATE NATURE OF WORK AND TIME OCCUPIED FOR EACH DAY

| | | Total |
|---|---|---|
| Monday | | |
| Tuesday | | |
| Wednesday | | |
| 8-5-80 Thursday | 2 HR. PACK-UP - 1 HR. SHIFTING - 1 HR. SET-UP - 2 HR. DRILLING - 2 HR. RUNN - CASING - 1 HR. CLEAN - UP. | 9 HR. |
| Friday | | |
| Saturday | | |
| Sunday | | |
| | Total | |

| | Distance Drilled Metres | From Metres | To Metres | Casing Depth Size | Depth at which Change occurs From Metres | To Metres | Strata passed through |
|---|---|---|---|---|---|---|---|
| Monday | | | | | | | |
| Tuesday | | | | | | | |
| Wednesday | | | | | | | |
| 9-5-80 Thursday | 36 | 0 | 36 | 140mm. | 0 | 6 | FINE - SAND |
| Friday | | | | | 6 | [illegible] | CLAY + SAND |
| Saturday | | | | | 9 | 12 | YELLOW CLAY + SLATE |
| Sunday | | | | | 12 | 18 | CLA + SLATE |
| | | | | | 18 | 36 | HARD - GREY - SLATE |

Water struck at 20

Water stands at from surface 15

Estimated quantity 20 G.P.H.

Pump or bailer test No. of hours AIR-BLOW

Water samples taken OBTAINED

Is water for domestic purposes, irrigation or stock? INVESTIGATION

Casing left in bore at completion – Depth 36

Size 3"

Bore started 5-5-80

Completed 5-5-80

Depth [illegible] 36

LINERTEX AT 12 METERS.

30 METERS CLASS 9. VC 3"

6 METERS - STEEL SLOTTED

TOP - CEMENTED OF!

Date 9-5-80

Signature of Driller C. N. [illegible]

Signature of C.D. and M. Engineer

-DC 8/4/100-2.75 F1438 St. 55

PRIMARY INDUSTRIES AND RESOURCES SA

# Summary of Latest Water Information for Drillholes

6628 11414

| Unit No | Classification | Maximum Drilled Depth ( M ) | Original Drilled Date | Current Drilled Depth ( M ) | Current Drilled Date | Hundred | Section | Standing Water Level ( M ) | SWL Date | Well Yield ( L/sec ) | Well Yield Date | Total Dissolved Solids (mg/L) | Sample Date | pH | Permit | Cased To ( M ) | Full Chem Anal | Dril Log | Geol Log | Geo phys Log | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6628 33 0 11414 | Water Well | 36.00 | 05/80 | 36.00 | 05/80 | Yatala | S 5473 | 15.00 | 05/80 | 0.03 | 05/80 | 620 | 08/80 | 9.00 | 6987 | 36.00 | | • | | • | |



The Department will not assume responsibility for any errors or omissions in the data provided

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

# Groundwater Sample

**Sample No:** 246390 **Unit No:** 6628 11414 **Obs No:** **Permit No:**

**Permit Holder:** **Date:** 21/08/1980 **Time:**

**Address:** **Hundred:**

**Results To:** **Section:** **Lot No:**

**Address:**

**Collected By:** **Depth:** M

**Remarks:**

**Collected:** Drilling / Monitoring / Pumping Test / Unknown

**Method:** Pump / Airlift / Flowing / Bailer

**Source:** Well / Tank / Dam / River / Spring

**EC:** 1130

**TDS:** 620

**pH:** 8.70



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6628 11414

6628 - 11416

Bore No. A 19

Docket DM 134 179

Geophysical log - bore 1 Job No unknown

# YATALA

## BORE FOLDER—WATER AND DRAINAGE

Type of Bore Water Investigation

Hirer E & W.S. Dept

Locality Golden Grove. Hope Valley area

UNIT. NO. 6628 330 OW 11416

PERMIT. NO. 6989.

SEC. NO. 5473

### BORE FOLDER MOVEMENT

| Section | | Action | Officer | Date | Section | | Action | Officer | Date |
|---|---|---|---|---|---|---|---|---|---|
| Drilling Clerk | 1 | Plant No. S | | | Typist | | Typing Log and letter | | |
| | 2 | Bore Commenced | | 9-5-80 | | | | | |
| | 3 | Bore Completed | | [illegible] | Corresp. | | Checking | | |
| | 4 | Bore Report | | [illegible] | | | | | |
| | 5 | Footage Area Book | | [illegible] | Geologist | | Checking | | |
| Geologist | | Logging Bore | | | C.S.D. | | Xerox Copying | | |
| C.S.D. | 1 | Accession Book | | | Corresp. | | Distribution | | |
| | 2 | Drafting | | | | | | | |
| | 3 | Sketch No. | | | T.I.O. | | Signature | | |
| | 4 | Sketch Received | | | C.S.D. | 1 | Plotted | | |
| Corresp. | | Analysis | | | | 2 | Journal Entry | | |
| | | | | | Records | 1 | Indexing | | |
| | | | | | | 2 | Record Card | | |
| | | | | | | 3 | File | | |

SCHEDULE EIGHT—FORM FOUR
GOVERNMENT OF SOUTH AUSTRALIA
*Water Resources Act*, 1976

# DRILLERS WELL CONSTRUCTION REPORT

Official Well No. A 7

1. PERMIT No. 6989

2. LOCATION OF WELL: FAIRVIEW PARK
Hundred or Pastoral Lease No. YATALA
Section 948 Lot No. ..... Site No. .....
Name of Property .....

As the person responsible for the work carried out on this well I advise that it has been completed as described below;

Name of Driller A. STUMMER License No. 247
Name of plant operator if under supervision .....

Permit holder or land occupier E. S. W. & S.
Postal Address V.E. QUARE
Postcode 5240

## 5. SUMMARY

Date work commenced 9-5-80 Date completed 9-5-80
Work carried out: New well ☑, Existing well, deepen ☐, enlarge ☐, rehabilitate ☐, backfill ☐ (tick appropriate boxes)
Final Depth 49.5 m Final standing water level 15 m Final yield 20 ~~l~~/sec. G.P.M.
Was well abandoned? ..... If yes, state method .....

## 6. DRILLING DETAILS If not a drilled well please complete paragraphs 6.2, 9, 10, 11, 12 and 13 as necessary

### 6.1 CONSTRUCTION DETAILS

| From (m) | To (m) | Diam. (mm) | Drilling Method Cable Tool, Rotary Auger, Etc. | Fluid Used (Air, Water, Mud Type) |
|---|---|---|---|---|
| 0 | 49.5 | 127.5 | ROTARY | AIR HAMMER |

### 6.2 WATERS CUT (measurements from natural surface to nearest 0·1 m)

| Date | Water Cut From (m) | Water Cut To (m) | Standing Level (m) | Estimated Yield l/sec. | Hole Depth at Test (m) | Casing at Test (m) | Test Method | Salinity mg/l or Taste |
|---|---|---|---|---|---|---|---|---|
| 9-5-80 | | 20 | 15 | 20 GPM | 49.5 | 49.5 | AIR-LIFT | F |

## 7. CASING LEFT IN WELL

### 7.1 DIMENSIONS / 7.2 TYPE

| From (m) | To (m) | Internal Diam. | Swell Joint, Welded Collar, Steel, Plastic, Etc. |
|---|---|---|---|
| 0 | 43.5 | 60.5 | CLASS P.V.C. |
| 43.5 | 49.5 | 60.5 | STEEL - SLOTTED |

### 7.3 CASING SHOE / 7.4 CASING PRESSURE CEMENTED

| 7.3 Yes | 7.3 No | Diam. (mm) | Cemented Yes | Cemented No | 7.4 Yes | 7.4 No | From (m) | To (m) | Cement (bags) | Water (litres) | Other Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | TOP OF WELL CEMENTED | | | | |
| ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |
| ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |
| ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |

## 8. CONSTRUCTION AT PRODUCTION LEVEL

### 8.1 METHOD

☐ Open Hole
☐ Screen(s) ☐ Slotted Casing
☐ Other, give details .....

### 8.2 SCREEN OR SLOTTED CASING (*If variable aperture screen used give limits)

| Type | From (m) | To (m) | Aperture* (mm) | Inner Diam. (mm) | Outer Diam. (mm) | Material | Trade Name | Completion of Base |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |

### 8.3 LINER SEAL (packer) / 8.4 GRAVEL PACKING

| Material | Depth (m) | Diam. (mm) | Method of Placement | Gravel Passing Mesh Size | From (m) | To (m) |
|---|---|---|---|---|---|---|
| RUBBER | 18 | 127.5 | ATTACHMENT TO CASING | | | |

## 9. IF NOT A DRILLED WELL (i.e. hand dug, etc.)

| Method | Depth (m) | Length (m) | Width (m) | Diam. (m) |
|---|---|---|---|---|
| | | | | |

| Lining Material | From (m) | To (m) |
|---|---|---|
| | | |

## 10. DEVELOPMENT State methods and times taken

.....

## 11. PUMP TEST (measurements from natural surface to nearest 0·1 m)

| Interval Tested From (m) | Interval Tested To (m) | Water Level Stabilised at End? | Test Method | Depth of Pump (m) | Discharge Rate l/sec. | Method of Measuring Discharge | No. of Hours Pumped | Draw Down (m) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

## 12. SAMPLES

The provisions of the Water Resources Act and Regulations thereto require that strata and water samples must be obtained. If any samples have not been obtained state reasons:—
WATER SAMPLE OBTAINED

*Signature of Licensed Driller* A. Stummer Date 9/5/80

## 13. FORMATION LOG

| From (m) | To (m) | Description of Material |
|---|---|---|
| 0 | 6 | CLAY |
| 6 | 9 | COARSE SAND |
| 9 | 18 | FINE SAND + GRAVEL |
| 18 | 22.5 | CLAY |
| 22.5 | 29.5 | SILTY CLAY |
| 29.5 | 49.5 | SLATE |

**Driller to forward this Copy, within 14 days of completion to:**
The Director of Mines,
Department of Mines,
191 Greenhill Road,
Parkside, S.A. 5063

1M675—5.76 G5538 St. 21

Form 1207

6628 11416

DEPARTMENT OF MINES DM—C12

# PERCUSSION DRILLER'S WEEKLY REPORT AND TIMESHEET

Bore No. A 9 Plant No. 8 Week ending 9-5-80

Name of Hirer E W S Section No. 948 Hundred YATALA

Address P.O. or Pastoral Lease No. PERMIT N° 6989

| Classification | Name | Hours Worked M. | T. | W. | Th. | F. | S. | Su. |
|---|---|---|---|---|---|---|---|---|
| DRILLER | A. STUMMER | | | | | 9 | | |
| ASSISTANT | P. NEALE | | | | | 9 | | |
| " | L. TONKIN | | | | | 9 | | |

Hours worked certified correct

Hirer's Signature

Cheques to HOME ADDRESS

## STATE NATURE OF WORK AND TIME OCCUPIED FOR EACH DAY

| | | Total |
|---|---|---|
| Monday | | |
| Tuesday | | |
| Wednesday | | |
| Thursday | | |
| Friday 9-5-80 | 2 HRS DEVELOP WELL N° A7 – 1 HR PACK UP 1 HR CLEAN UP 1 HR SHIFTING 1 HR SET UP 3 HRS DRILLING | 9 |
| Saturday | | |
| Sunday | | |
| | Total | |

| | Distance Drilled Metres | From Metres | To Metres | Casing Depth Size | Depth at which Change occurs From Metres | To Metres | Strata passed through |
|---|---|---|---|---|---|---|---|
| Monday | | | | | | | |
| Tuesday | | | | | 0 | 6 | ~~0 6m~~ CLAY |
| Wednesday | | | | | 6 | 9 | ~~6 9~~ COARSE SAND |
| Thursday | | | | | 9 | 18 | FINE SAND & GRAVELS |
| Friday 9-5-80 | 49.5 | 0 | 49.5 | | 18 | 22.5 | CLAY |
| Saturday | AIR DRILLING HAMMER | | | | 22.5 | 28.5 | SILTY CLAY |
| Sunday | | | | | 28.5 | 49.5 | SLATE |

Water struck at 20 m

Water stands at from surface 15 m.

Estimated quantity 2 GPH

Pump or bailer test No. of hours

Water samples taken OBTAINED

Is water for domestic purposes, irrigation or stock? INVESTIGATION

Casing left in bore at completion—Depth 49.5

Size

Bore started 9-5-80

Completed 9-5-80

Depth 49.5 m

LINATEX AT 18M

CEMENT OFF TOP OF NEAT

43.5 M CLASS 9 P.V.C.

6 M SLOTTED STEEL CASING

Signature of Driller A. STUMMER

Date

Signature of C.D. and M. Engineer

6628 11416

PRIMARY INDUSTRIES AND RESOURCES SA

# Summary of Latest Water Information for Drillholes

6628 11416

| Unit No | Classification | Maximum Drilled Depth ( M ) | Original Drilled Date | Current Drilled Depth ( M ) | Current Drilled Date | Hundred | Section | Standing Water Level ( M ) | SWL Date | Well Yield ( L/sec ) | Well Yield Date | Total Dissolved Solids (mg/L) | Sample Date | pH | Permit | Cased To ( M ) | Full Chem Anal | Dril Log | Geol Log | Geo phys Log | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6628 33 0 11416 | Water Well | 49.50 | 05/80 | 49.50 | 05/80 | Yatala | S 5473 | 15.00 | 05/80 | 0.03 | 05/80 | 980 | 09/80 | 7.00 | 6989 | 49.50 | | • | | • | |



The Department will not assume responsibility for any errors or omissions in the data provided

Developer/2000 Forms Runtime for Windows 95 / NT - [Drillers Well Construction Report (Schedule 8) Maintenance]

File Edit field Record Query eXtra Window Help

# DRILLERS WELL CONSTRUCTION REPORT

1. PERMIT No: 6628 | Unit No: 6628 | 11416
Obs No:
Drillhole No: 58385

Number of Completions for this Drillhole: 1

2. LOCATION OF WELL
Hundred: YATALA
Section: 5473 Lot No:

Name of Driller:

Permit Holder: E&WS DEPT
Address: ADELAIDE 5000

5. SUMMARY

Date Completed: 09/05/1980

Work carried out: ☐ rehabilitate ☐ backfill ☐ Well Inspectors Report ☐ flowing ☐ dry

Total Depth: 49.50 m Final Depth: m Final Standing Water Level: m Final Yield: l/sec

Was Well abandoned? No Comments:

6. DRILLING DETAILS

6.1 Construction Details

| From (m) | To (m) | Diam (mm) | Drill Meth |
|---|---|---|---|
| 0.00 | 49.50 | | RTA |
| | | | |
| | | | |
| | | | |

6.2 Waters Cut

| Date | Water Cut From (m) | Water Cut To (m) | Standing Level (m) | Estimated Yield (l/sec) | Hole Depth at Test (m) | Casing at Test (m) | Test Method | Full Chem Sample No | Salinity Sample No | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

7. CASING LEFT IN WELL

7.1 Dimensions / 7.2 Type / 7.3 Casing Shoe

| From (m) | To (m) | Diam (mm) | Swell Joint, Welded Collar, Steel, Plastic, Etc. | Shoe Yes | Shoe No | Shoe Diam (mm) | Cemented Yes | Cemented No |
|---|---|---|---|---|---|---|---|---|
| 0.00 | 49.50 | 61 | | ○ | ● | | ○ | ● |
| | | | | ○ | ○ | | ○ | ○ |
| | | | | ○ | ○ | | ○ | ○ |
| | | | | ○ | ○ | | ○ | ○ |

7.4 Casing Pressure Cemented

| Yes | No | From (m) | To (m) | Comments |
|---|---|---|---|---|
| ○ | ● | | | |
| ○ | ○ | | | |
| ○ | ○ | | | |
| ○ | ○ | | | |

Print Screen
Record: 1/1 List of Values

6628 11416

Developer/2000 Forms Runtime for Windows 95 / NT - [Drillers Well Construction Report (Schedule 8) Maintenance]

File Edit fieLd Record Query eXtra Window Help

## 7. CASING LEFT IN WELL

| 7.1 Dimensions | | | 7.2 Type | 7.3 Casing Shoe | | | | 7.4 Casing Pressure Cemented | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| From (m) | To (m) | Diam (mm) | Swell Joint, Welded Collar, Steel, Plastic, Etc. | Yes | No | Diam (mm) | Cemented Yes | Cemented No | Yes | No | From (m) | To (m) | Comments |
| 0.00 | 49.50 | 61 | | ○ | ● | | ○ | ● | ○ | ● | | | |
| | | | | ○ | ○ | | ○ | ○ | ○ | ○ | | | |
| | | | | ○ | ○ | | ○ | ○ | ○ | ○ | | | |
| | | | | ○ | ○ | | ○ | ○ | ○ | ○ | | | |

## 8. CONSTRUCTION AT PRODUCTION LEVEL

**8.1 Method**

- ☐ Open Hole
- ☑ Screen(s)
- ☐ Slotted Casing
- ☐ Other

**8.2 Screen or Slotted Casing**

| Type | From (m) | To (m) | Aperture (mm) | Inner Diam (mm) | Material | Comments |
|---|---|---|---|---|---|---|
| S | | | | | | |
| | | | | | | |

**8.3 Liner Seal (packer)**

| Material | Depth (m) | Diam (mm) |
|---|---|---|
| | | |
| | | |

**8.4 Gravel Packing**

| From (m) | To (m) |
|---|---|
| | |
| | |

**13 Formation Log**

| From (m) | To (m) | Description of Material |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

## 9. IF NOT A DRILLED WELL (ie hand dug etc)

| Method | Depth (m) | Diam (mm) |
|---|---|---|
| | | |

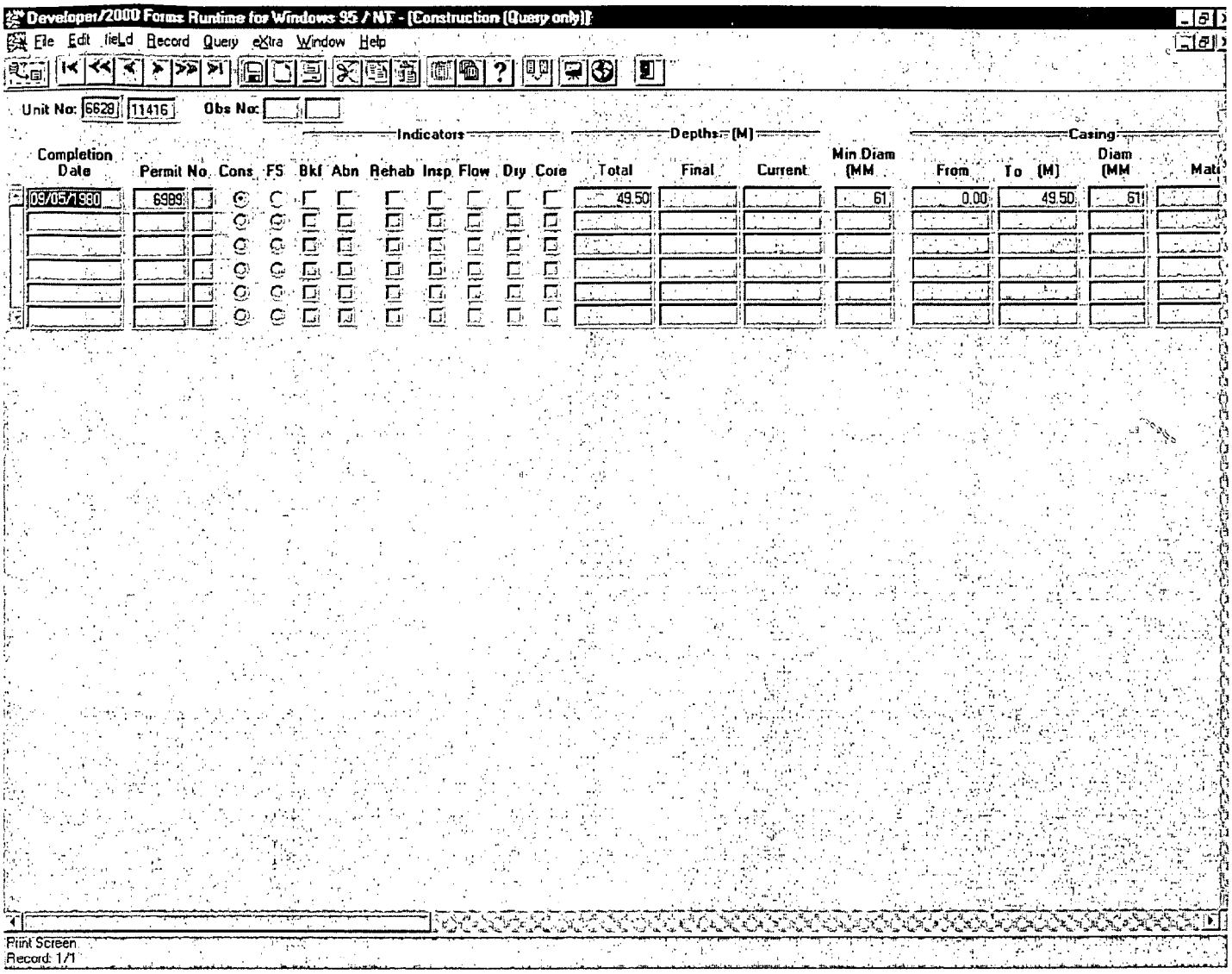
| Lining Material | From (m) | To (m) |
|---|---|---|
| | | |

## 10. DEVELOPMENT

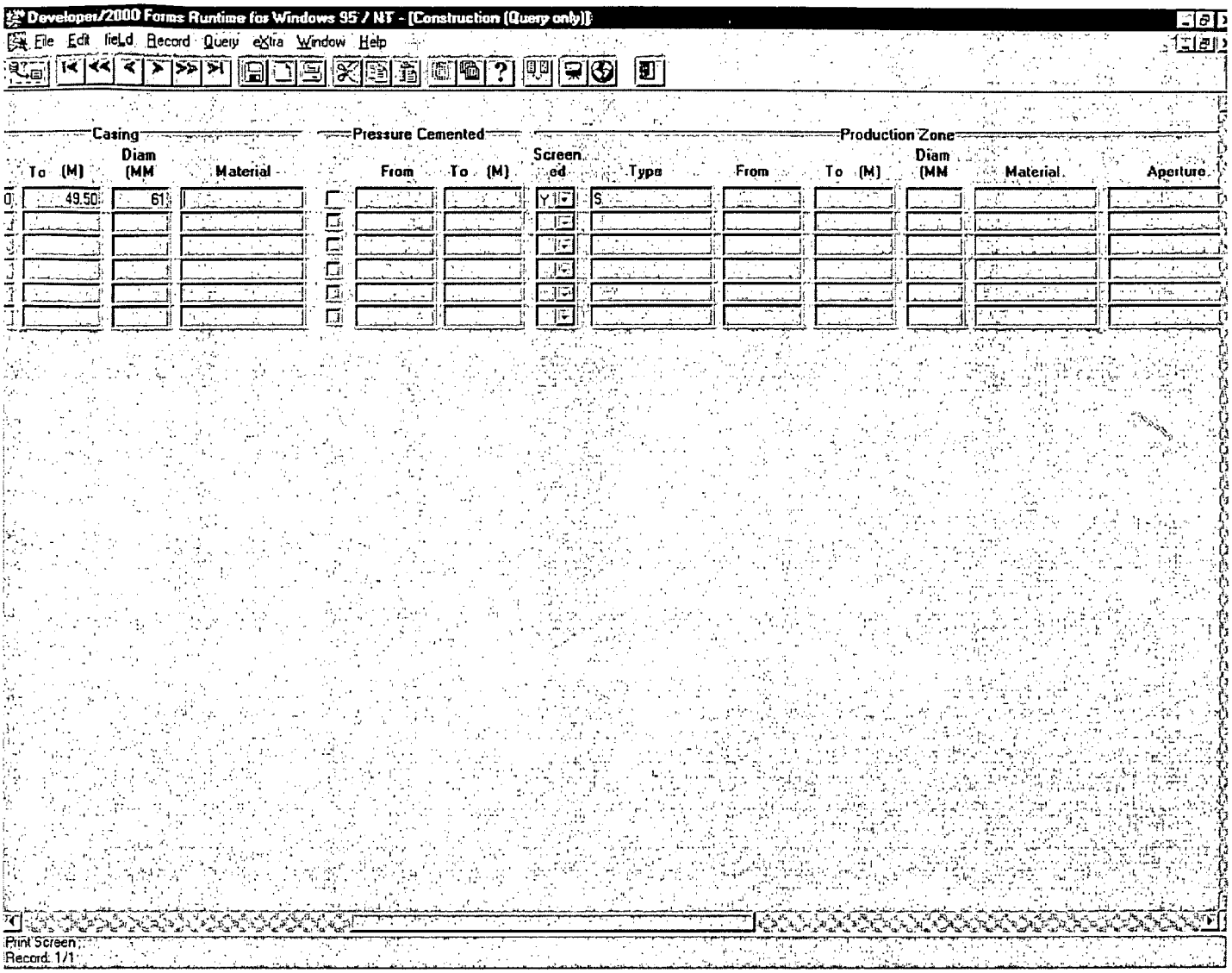
| Method | Time (hours) | Time (mins) | Comments |
|---|---|---|---|
| | | | |
| | | | |

Print Screen
Record: 1/1

6628 11416


Developer/2000 Forms Runtime for Windows 95 / NT - [Construction (Query only)]
File Edit Field Record Query eXtra Window Help
Unit No: 6628 11416 Obs No:
Indicators
Depths - (M)
Casing
Completion Date
Permit No
Cons
FS
Bkf
Abn
Rehab
Insp
Flow
Dry
Core
Total
Final
Current
Min Diam (MM
From
To (M)
Diam (MM
Mati
09/05/1980
6989
49.50
61
0.00
49.50
61
Print Screen
Record: 1/1

6628 11416


Developer/2000 Forms Runtime for Windows 95 / NT - [Construction (Query only)]
File Edit Field Record Query eXtra Window Help
Casing
Pressure Cemented
Production Zone
To (M)
Diam (MM
Material
From
To (M)
Screened
Type
From
To (M)
Diam (MM
Material
Aperture
49.50
61
Y
S
Print Screen
Record: 1/1

6628 11416

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

# Groundwater Sample

**Sample No:** 246391 **Unit No:** 6628 11416 **Obs No:** **Permit No:**

**Permit Holder:** **Date:** 11/09/1980 **Time:**

**Address:** **Hundred:**

**Results To:** **Section:** **Lot No:**

**Address:**

**Collected By:** **Depth:** M

**Remarks:**

**Collected:** Drilling / Monitoring / Pumping Test / Unknown **EC:** 1750

**Method:** Pump / Airlift / Flowing / Bailer **TDS:** 980

**Source:** Well / Tank / Dam / River / Spring **pH:** 7.40



Printed By Schuster C

6628 11416

12212 6628-12212

SCHEDULE SIX—FORM TWO

# GOVERNMENT OF SOUTH AUSTRALIA

Water Resources Act, 1976

## WELL CONSTRUCTION PERMIT

Reference No. 11546

WELL No.
(Where Applicable)

Subject to full compliance with all the procedures, specifications and limitations contained or referred to, in the conditions set out below, permission is hereby granted to:—

of TEA TREE GULLEY GOLF CLUB INC
PO BOX 51
ST AGNES 5097

to undertake within 12 months of the date hereof:—

TO CONSTRUCT A WATER SUPPLY WELL - Irrigation

in accordance with sound water well drilling practices to the satisfaction of the Minister at the location specified on the attached plan within:—

Allot. No. or Block No. Section 5473 Hundred of YATALA
Pastoral Lease No.

CONDITIONS

1. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE ENCLOSED GENERAL SPECIFICATIONS.
2. THE WORK MAY ONLY BE UNDERTAKEN BY THE HOLDER OF A CLASS 2 WELL DRILLERS LICENCE.
3. IF THE WELL IS CONSIDERED UNSATISFACTORY, IT MUST BE BACKFILLED AND A REPLACEMENT WELL MAY THEN BE CONSTRUCTED.
4. WATER SAMPLES ARE REQUIRED FROM ALL WELLS DRILLED IN RESPECT OF THIS PERMIT.
5. STRATA SAMPLES ARE NOT REQUIRED.
6. THE LICENSED WELL DRILLER MUST FORWARD WITH HIS REPORT A PLAN OBTAINED FROM THE PERMIT HOLDER, WHO MUST MARK THEREON THE LOCATION OF ALL WELLS DRILLED IN RESPECT OF THIS PERMIT.

Issued for and on behalf of the Minister of Water Resources

Date 11/12/82

DIRECTOR GENERAL AND ENGINEER-IN-CHIEF

6628 12212

SCHEDULE EIGHT—FORM FOUR
GOVERNMENT OF SOUTH AUSTRALIA
*Water Resources Act, 1976*

# DRILLERS WELL CONSTRUCTION REPORT

Official Well No.

1. PERMIT No. 11546

2. LOCATION OF WELL:
Hundred or Pastoral Lease No. JOTAD
Section 5473 Lot No. ..... Site No. .....
Name of Property .....

As the person responsible for the work carried out on this well I advise that it has been completed as described below:

Name of Driller E.R. Walsh Licence No. 112
Name of plant operator if under supervision .....

Permit holder or land occupier Iga Tree Golf Course
Postal Address P.O. Box 51
ST AGNES Postcode 5097

5. SUMMARY

Date work commenced 14-12-82 Date completed 19-12-82
Work carried out: New well ✓, Existing well, deepen ☐, enlarge ☐, rehabilitate ☐, backfill ☐ (tick appropriate boxes)
Final Depth 161 m Final standing water level 24.38 m Final yield 11.25 l/sec.
Was well abandoned? NO If yes, state method .....

6. DRILLING DETAILS If not a drilled well please complete paragraphs 6.2, 9, 10, 11, 12 and 13 as necessary

6.1 CONSTRUCTION DETAILS

| From (m) | To (m) | Diam. (mm) | Drilling Method Cable Tool, Rotary Auger, Etc. | Fluid Used (Air, Water, Mud Type) |
|---|---|---|---|---|
| 0 | 6 | 331 | Rot Ham | Air |
| 6 | 122 | 254 | " " | Air |
| 122 | 161 | 203 | " " | Air |

6.2 WATER CUT (measurements from natural surface to nearest 0·1 m)

| Date | Water Cut From (m) | Water Cut To (m) | Standing Level (m) | Estimated Yield l/sec. | Hole Depth at Test (m) | Casing at Test (m) | Test Method | Salinity mg/l or Taste |
|---|---|---|---|---|---|---|---|---|
| 15/12/82 | 59 | 66 | – | 2.25 | 66 | | Air | |
| " | 80 | 87 | – | 5.62 | 87 | | " | |
| 19/12/82 | 126 | 133 | – | 7.50 | 133 | | " | |
| " | 140 | 147 | – | 11.25 | 147 | | " | |
| " | 154 | 161 | – | 11.25 | 161 | | " | |

7. CASING LEFT IN WELL

7.1 SECTIONS

| From (m) | To (m) | Internal Diam. |
|---|---|---|
| -03 | 4.15 | 203 |

7.2 TYPE

| Swell Joint, Welded Collar, Steel, Plastic, Etc. |
|---|
| Welded Steel |

7.3 CASING SHOE

| Yes | No | Diam. (mm) |
|---|---|---|
| ☑ | ☐ | 203 |
| ☐ | ☐ | |
| ☐ | ☐ | |
| ☐ | ☐ | |

7.4 CASING PRESSURE CEMENTED

| Cemented Yes | Cemented No | Yes | No | From (m) | To (m) | Cement (bags) | Water (litres) | Other Additives |
|---|---|---|---|---|---|---|---|---|
| ☐ | ☑ | ☐ | ☑ | | | | | |
| ☐ | ☐ | ☐ | ☐ | | | | | |
| ☐ | ☐ | ☐ | ☐ | | | | | |
| ☐ | ☐ | ☐ | ☐ | | | | | |

8. CONSTRUCTION AT PRODUCTION LEVEL

8.1 METHOD
☑ Open Hole
☐ Screen(s) ☐ Slotted Casing
☐ Other, give details .....

8.2 SCREEN OR SLOTTED CASING (*If variable aperture screen used give limits)

| Type | From (m) | To (m) | Aperture* (mm) | Inner Diam. (mm) | Outer Diam. (mm) | Material | Trade Name | Completion of Base |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |

8.3 LINER SEAL (packer)

| Material | Depth (m) | Diam. (mm) |
|---|---|---|
| | | |
| | | |

8.4 GRAVEL PACKING

| Method of Placement | Gravel Passing Mesh Size | From (m) | To (m) |
|---|---|---|---|
| | | | |
| | | | |

9. NOT A DRILLED WELL (i.e. hand dug, etc.)

| Method | Depth (m) | Length (m) | Width (m) | Diam. (m) |
|---|---|---|---|---|
| | | | | |

| Lining Material | From (m) | To (m) |
|---|---|---|
| | | |

10. DEVELOPMENT State methods and times taken .....

11. PUMP TEST (measurements from natural surface to nearest 0·1 m)

| Interval Tested From (m) | Interval Tested To (m) | Water Level Stabilised at End? | Test Method | Depth of Pump (m) | Discharge Rate l/sec. | Method of Measuring Discharge | No. of Hours Pumped | Draw Down (m) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

12. SAMPLES
The provisions of the Water Resources Act and Regulations thereto require that strata and water samples must be obtained. If any samples have not been obtained state reasons:—
No STRATA SAMPLES REQUESTED

Signature of Licensed Driller ..... Date 10/1/83

Driller to forward this Copy, within 14 days of completion to:
The Director of Mines,
Department of Mines,
191 Greenhill Road,
Parkside, S.A. 5063

13. FORMATION LOG

| From (m) | To (m) | Description of Material |
|---|---|---|
| 0 | 7 | shaley moisture |
| 7 | 10 | " " |
| 10 | 17 | shaley marl, trace shaley slate |
| 17 | 24 | slate |
| 24 | 31 | grey fine slate, low yield, slate |
| 31 | 32 | same with bit of clay |
| 32 | 80 | grey fine slate |
| 80 | 97 | grey slate & white quartz |
| 97 | 94 | grey slate |
| 94 | 102 | yellow slate |
| 102 | 115 | fine slate some sandstone |
| 115 | 126 | black light grey slate white quartz |
| 126 | 161 | blue slate & white quartz |

Form 1287

IMP.S-5,75 G5538 St. 21

6628 12212

DM C133

Department of Mines and Energy-South Australia

WATER SAMPLE ANALYSIS ADVICE

Bore Reference. 6628-33 12212 Analysis No. WS2544/86

Hundred . . . . . Section . . . . .

Sample collected by . . . SH . . . Date . 9-12-86 .

Depth sample taken . . m Name TEA TREE GULLY GOLF COURSE

Dept. Mines Results Address . . . . . .

Conductivity 2370 µS at 25°C . . . . . .

Salinity. . 1335 . mg/l To AMDEL for analysis. . . . . .

pH . . . 7.81 . . AMDEL No. . . . . .

Remarks . . . (102) . . . . . .

. . . . . .

. . . . . Bore Folder No. . . . . .

Unit No. . . . . .

6628 12212

PRIMARY INDUSTRIES AND RESOURCES SA

# Summary of Latest Water Information for Drillholes

6628 12212

| Unit No | Classification | Maximum Drilled Depth ( M ) | Original Drilled Date | Current Drilled Depth ( M ) | Current Drilled Date | Hundred | Section | Standing Water Level ( M ) | SWL Date | Well Yield ( L/sec ) | Well Yield Date | Total Dissolved Solids (mg/L) | Sample Date | pH | Permit | Cased To ( M ) | Full Chem Anal | Drill Log | Geol Log | Geo phys Log | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6628 33 0 12212 | Water Well | 161.00 | 12/82 | 161.00 | 12/82 | | | 24.38 | 12/82 | 11.25 | 12/82 | 1335 | 12/86 | 8.00 | 11546 | 43.15 | • | • | | | |



The Department will not assume responsibility for any errors or omissions in the data provided

Developer/2000 Forms Runtime for Windows 95 / NT - [Drillers Well Construction Report (Schedule 8) Maintenance]

File Edit Field Record Query eXtra Window Help

# DRILLERS WELL CONSTRUCTION REPORT

1. PERMIT No: 11546 Unit No: 6628 12212
Obs No:
2. LOCATION OF WELL Drillhole No: 59181

Number of Completions for this Drillhole: 1

Hundred: YATALA
Section: 5473 Lot No:

Name of Driller:

Permit Holder: TEA TREE GULLEY GOLF CLUB INC
Address: PO BOX 51
ST AGNES 5097

## 5. SUMMARY

Date Completed: 19/12/1982

Work carried out: rehabilitate backfill Well Inspectors Report flowing dry

Total Depth: 161.00 m Final Depth: m Final Standing Water Level: m Final Yield: l/sec

Was Well abandoned? No Comments:

## 6. DRILLING DETAILS

### 6.1 Construction Details

| From (m) | To (m) | Diam (mm) | Drill Meth |
|---|---|---|---|
| 0.00 | 161.00 | | RTA |
| | | | |
| | | | |
| | | | |

### 6.2 Waters Cut

| Date | Water Cut From (m) | Water Cut To (m) | Standing Level (m) | Estimated Yield (l/sec) | Hole Depth at Test (m) | Casing at Test (m) | Test Method | Full Chem Sample No | Salinity Sample No | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

## 7. CASING LEFT IN WELL

### 7.1 Dimensions

| From (m) | To (m) | Diam (mm) |
|---|---|---|
| 0.03 | 43.15 | 203 |
| | | |
| | | |
| | | |

### 7.2 Type

Swell Joint, Welded Collar, Steel, Plastic, Etc.

### 7.3 Casing Shoe

| Yes | No | Diam (mm) | Cemented Yes | Cemented No |
|---|---|---|---|---|
| ○ | ◉ | | ○ | ◉ |
| ○ | ○ | | ○ | ○ |
| ○ | ○ | | ○ | ○ |
| ○ | ○ | | ○ | ○ |

### 7.4 Casing Pressure Cemented

| Yes | No | From (m) | To (m) | Comments |
|---|---|---|---|---|
| ○ | ◉ | | | |
| ○ | ○ | | | |
| ○ | ○ | | | |
| ○ | ○ | | | |

Print Screen
Record: 1/1 List of Values

6628 12212

Developer/2000 Forms Runtime for Windows 95 / NT - [Drillers Well Construction Report (Schedule 8) Maintenance]

File Edit field Record Query extra Window Help

## 8. CONSTRUCTION AT PRODUCTION LEVEL

### 8.1 Method

- [ ] Open Hole
- [ ] Screen(s)  [ ] Slotted Casing
- [x] Other

### 8.2 Screen or Slotted Casing

| Type | From (m) | To (m) | Aperture (mm) | Inner Diam (mm) | Material | Comments |
|---|---|---|---|---|---|---|
| UKN | 43.15 | 161.00 | | | | |

### 8.3 Liner Seal (packer)

| Material | Depth (m) | Diam (mm) |
|---|---|---|
| | | |

### 8.4 Gravel Packing

| From (m) | To (m) |
|---|---|
| | |

## 9. IF NOT A DRILLED WELL (ie hand dug etc)

| Method | Depth (m) | Diam (mm) |
|---|---|---|
| | | |

| Lining Material | From (m) | To (m) |
|---|---|---|
| | | |

## 10. DEVELOPMENT

| Method | Time (hours) | Time (mins) | Comments |
|---|---|---|---|
| | | | |

## 11. PUMP TEST

| From (m) | To (m) | Test Method | Depth of Pump (m) | Discharge Rate l/sec | Method of Measuring Discharge | No of Hours Pumped | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

PURPOSE

## 13 Formation Log

| From (m) | To (m) | Description of Material |
|---|---|---|
| | | |

Print Screen
Record: 1/1

6628 12212

PRIMARY INDUSTRIES AND RESOURCES SA

# Detailed Analysis Results

**Unit No:** 6628 12212 **Drillhole Name:**

**Sample No:** 89383 **Source:** Drillhole **Other Sample No:**

**Max Drilled Depth:** 161.00 M **Depth Date:** 19/12/1982

**Sample Depth:** **Collected Date:**

**Comments:** Loaded from Historical SAS Chem Data: Year= ,Name= ,Sample_date_meth=

## Standard Chemistry

| | | |
|---|---|---|
| **TDS Calc:** 1190 mg/l | **HCO3:** 411.00 mg/l | **Br:** |
| **TDS EC:** 1310 mg/l | **SO4:** 42.0 mg/l | **TKN(N):** |
| **EC:** 2300 us/cm | **Cl:** 520.0 mg/l | **NO3(N):** 0.10 mg/l |
| **pH:** 7.4 | **Fe:** | **NOX(N):** |
| **Ca:** 130.0 mg/l | **ALK:** 337.00 mg/l | **PO4:** |
| **Mg:** 100.0 mg/l | **Carb:** 736.00 mg/l | |
| **Na:** 180.0 mg/l | **NonCarb:** | |
| **K:** 11.0 mg/l | **F:** | |

## Non Standard Chemistry

| Chem | Value Unit | Chem | Value Unit |
|---|---|---|---|
| DST | 5.0000 % | RESIST | 4.4000 ohm/m |
| ADSORP | 34.3000 RATIO | | |



The Department will not assume responsibility for any errors or omissions in the data provided

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

# Groundwater Sample

**Sample No:** 246749 **Unit No:** 6628 12212 **Obs No:** **Permit No:**

**Permit Holder:** **Date:** 09/12/1986 **Time:**

**Address:** **Hundred:**

**Results To:** **Section:** **Lot No:**

**Address:**

**Collected By:** **Depth:** M

**Remarks:**

**Collected:** Drilling / Monitoring / Pumping Test / [Unknown] **EC:** 2370

**Method:** Pump / Airlift / Flowing / Bailer **TDS:** 1335

**Source:** [Well] / Tank / Dam / River / Spring **pH:** 7.80



Printed By Schuster C

6628 12212

Developer/2000 Forms Runtime for Windows 95 / NT - [Constiuction (Query only)]

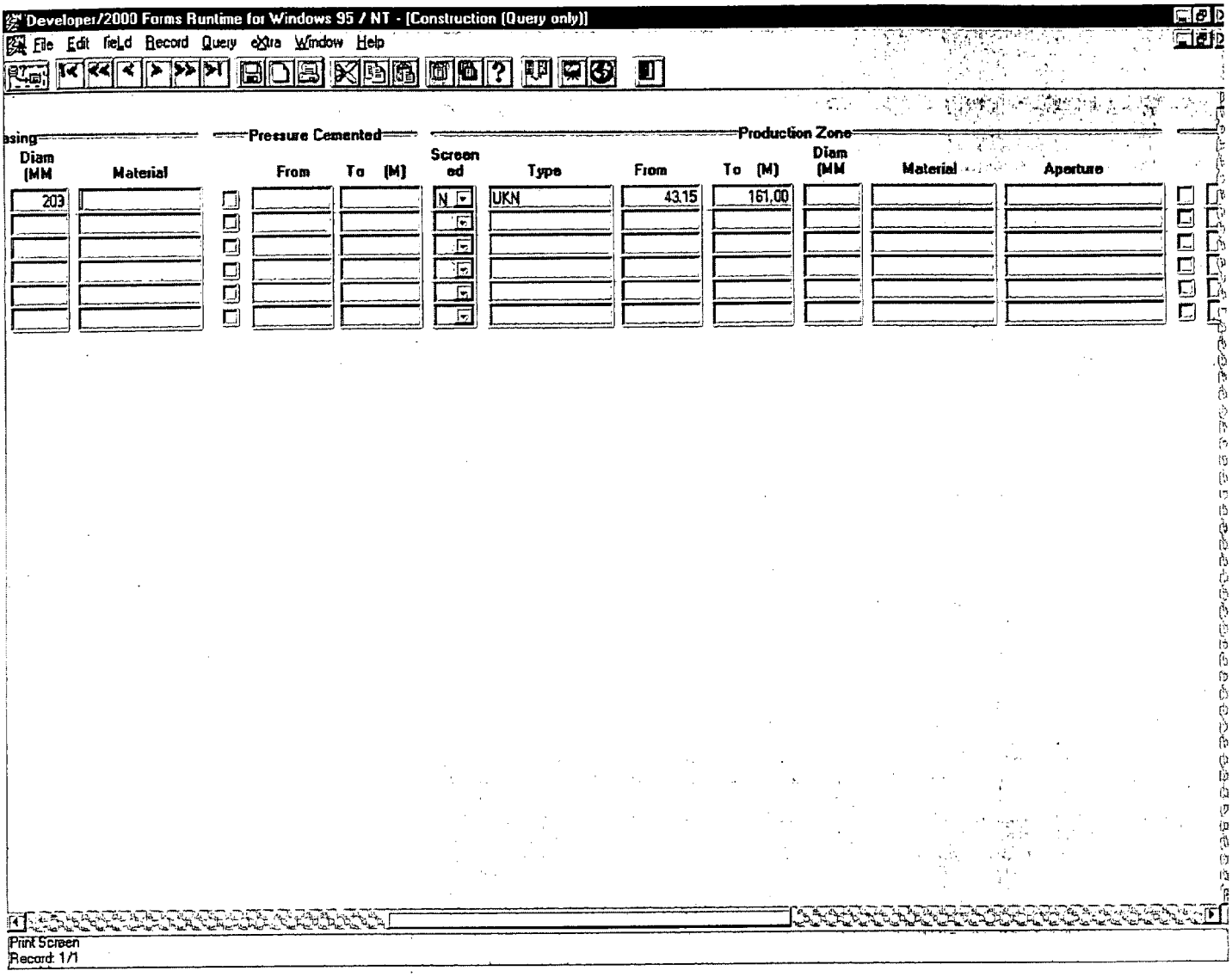
File Edit fieLd Record Query eXtra Window Help

Unit No: 6628 12212 Obs No:

| Completion Date | Permit No | Cons | FS | Indicators: Bkf | Abn | Rehab | Insp | Flow | Dry | Core | Depths (M): Total | Final | Current | Min Diam (MM | Casing: From | To (M) | Diam (MM | Mati |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 19/12/1986 | 11546 | ◉ | ○ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | 161.00 | | | 203 | 0.03 | 43.15 | 203 | |
| | | ○ | ○ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | | | | | |
| | | ○ | ○ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | | | | | |
| | | ○ | ○ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | | | | | |
| | | ○ | ○ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | | | | | |
| | | ○ | ○ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | | | | | | | | |

Print Screen
Record: 1/1

6628 12212


Developer/2000 Forms Runtime for Windows 95 / NT - [Construction (Query only)]
File Edit Field Record Query eXtra Window Help
asing
Pressure Cemented
Production Zone
Diam (MM
Material
From
To (M)
Screened
Type
From
To (M)
Diam (MM
Material
Aperture
203
N
UKN
43,15
161,00
Print Screen
Record: 1/1

6628 12212

7H1H4

| 6628 33 | WW | 15296 |
| --- | --- | --- |
| MAP NUMBER | MAP CLASS | UNIT NUMBER |

13 JUL 1990

6628 15296

7H1H4

SCHEDULE SIX — FORM TWO

# GOVERNMENT OF SOUTH AUSTRALIA

Water Resources Act, 1976

# WELL CONSTRUCTION PERMIT

No. 24184

WELL No.
(Where Applicable)

Subject to full compliance with all the procedures, specifications and limitations contained or referred to, in the conditions set out below, permission is hereby granted to:—

of FABRIZIO G
13 TAWORRI RD
FAIRVIEW PK 5126

TO UNDERTAKE WITHIN 12 MONTHS OF THE DATE HEREOF:--

TO CONSTRUCT A WATER SUPPLY WELL DOMESTIC

in accordance with sound water well drilling practices to the satisfaction of the Minister at the location specified on the attached plan within:—

Allot. No. 117 Section 58 Hundred of YATALA
or Block No. Pastoral Lease No.

CONDITIONS

1. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH THE ENCLOSED GENERAL SPECIFICATIONS.
2. THE WORK MAY ONLY BE UNDERTAKEN BY THE HOLDER OF A CLASS 2 WELL DRILLERS LICENCE.
3. IF THE WELL IS CONSIDERED UNSATISFACTORY, IT MAY BE ABANDONED AND A REPLACEMENT WELL MAY THEN BE CONSTRUCTED PROVIDED THAT THE ABANDONED WELL IS BACKFILLED PRIOR TO THE DRILL RIG LEAVING THE SITE.
4. WATER SAMPLES ARE REQUIRED FROM ALL WELLS DRILLED IN RESPECT OF THIS PERMIT.
5. STRATA SAMPLES ARE REQUIRED FROM ALL WELLS DRILLED IN RESPECT OF THIS PERMIT.
6. THE LICENSED WELL DRILLER MUST FORWARD WITH HIS REPORT A PLAN OBTAINED FROM THE PERMIT HOLDER, WHO MUST MARK THEREON THE LOCATION OF ALL WELLS DRILLED IN RESPECT OF THIS PERMIT.
7. ALL WELLS MUST BE DRILLED VERTICAL UNLESS WRITTEN PERMISSION IS OBTAINED FROM THE MINISTER OF WATER RESOURCES
8. ALL FLOWING WELLS MUST BE PRESSURE CEMENTED AND THE DEPARTMENT OF MINES AND ENERGY GROUNDWATER DRILLING INSPECTOR MUST BE NOTIFIED

NOTE.
1. THIS PERMIT IS NOT TRANSFERABLE

Issued for and on behalf of the Minister of Water Resources

Date 20/04/90

CHIEF EXECUTIVE OFFICER

6628 15296

DMC-17

SCHEDULE EIGHT - FORM FOUR
GOVERNMENT OF SOUTH AUSTRALIA
*Water Resources Act, 1976*

# DRILLERS WELL CONSTRUCTION REPORT

Official Well No.

1. PERMIT No. 24184

2. LOCATION OF WELL:
Hundred or Pastoral Lease No. YATALA
Section 58 Lot No. 117 Site No.
Name of Property

As the person responsible for the work carried out on the well I advise that it has been completed as described below:

Name of Driller S.V. NITSCHKE Licence No. 213
Name of plant operator if under supervision

Permit holder or land occupier C. FABRIZIO
Postal Address 13 TALIORI ROAD
FAIRVIEW PARK Postcode 5126

5. SUMMARY
Date work commenced 3 - 5 - 90 Date completed 9 - 5 - 90
Work carried out: New well ☑, Existing well, deepen ☐, enlarge ☐, rehabilitate ☐, backfill ☐ (tick appropriate boxes)
Final Depth 128 m Final standing water level 61 m Final yield 3·2 l/sec.
Was well abandoned? If yes, state method

6. DRILLING DETAILS If not a drilled well please complete paragraphs 6.2, 9, 10, 11, 12 and 13 as necessary

6.1 CONSTRUCTION DETAILS

| From (m) | To (m) | Diam. (mm) | Drilling Method Cable Tool, Rotary Auger, Etc. | Fluid Used (Air, Water, Mud Type) |
|---|---|---|---|---|
| 0 | 96 | 200 | ROTARY | AIR |
| 96 | 128 | 150 | ROTARY | AIR |
| | | | | |
| | | | | |

6.2 WATER CUT (measurements from natural surface to nearest 0·1 m)

| Date | Water Cut From (m) | Water Cut To (m) | Standing Level (m) | Estimated Yield l/sec. | Hole Depth at Test (m) | Casing at Test (m) | Test Method | Salinity mg/l or Taste |
|---|---|---|---|---|---|---|---|---|
| 3-5-90 | 82 | 84 | 61 | ·10 | 84 | | AIR | 1500 |
| " | 90 | 96 | 61 | ·60 | 96 | 96 | AIR | 1050 |
| " | | | | | | | AIR | |
| 7-5-90 | 118 | 122 | 61 | 2·2 | 125 | 96 | AIR | 1100 |

7. CASING LEFT IN WELL

7.1 DIMENSIONS / 7.2 TYPE / 7.3 CASING SHOE / 7.4 CASING PRESSURE CEMENTED

| From (m) | To (m) | Internal Diam. | Swell Joint, Welded Collar, Steel, Plastic, Etc. | Shoe Yes | Shoe No | Shoe Diam. (mm) | Cemented Yes | Cemented No | Pressure Yes | Pressure No | From (m) | To (m) | Cement (bags) | Water (litres) | Other Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 405 | 96 | 152 | STEEL WELDED | ☐ | ☑ | | ☐ | ☐ | ☐ | ☑ | | | | | |
| | | | | ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |
| | | | | ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |
| | | | | ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |

8. CONSTRUCTION AT PRODUCTION LEVEL

8.1 METHOD
☐ Open Hole
☐ Screen(s) ☑ Slotted Casing
☐ Other, give details CASING SLOTTED FROM 54m TO 96m

8.2 SCREEN OR SLOTTED CASING (*If variable aperture screen used give limits)

| Type | From (m) | To (m) | Aperture* (mm) | Inner Diam. (mm) | Outer Diam. (mm) | Material | Trade Name | Completion of Base |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |

8.3 LINER SEAL (packer)

| Material | Depth (m) | Diam. (mm) |
|---|---|---|
| | | |

8.4 GRAVEL PACKING

| Method of Placement | Gravel Passing Mesh Size | From (m) | To (m) |
|---|---|---|---|
| | | | |

9. IF NOT A DRILLED WELL (i.e. hand dug, etc.)

| Method | Depth (m) | Length (m) | Width (m) | Diam. (m) |
|---|---|---|---|---|
| | | | | |

| Lining Material | From (m) | To (m) |
|---|---|---|
| | | |

10. DEVELOPMENT State methods and times taken
AIR 2 HRS

11. PUMP TEST (measurements from natural surface to nearest 0·1 m)

| Interval Tested From (m) | Interval Tested To (m) | Water Level Stabilised at End? | Test Method | Depth of Pump (m) | Discharge Rate l/sec. | Method of Measuring Discharge | No. of Hours Pumped | Draw Down (m) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |

12. SAMPLES
The provisions of the Water Resources Act and Regulations thereto require that strata and water samples must be obtained. If any samples have not been obtained state reasons

*Signature of Licensed Driller* S.V. NITSCHKE Date 7.5.90

Driller to forward this Copy, within 14 days of completion to:
The Director-General
Department of Mines and Energy
191 Greenhill Road
Parkside, S.A. 5063

13. FORMATION LOG

| From (m) | To (m) | Description of Material |
|---|---|---|
| 0 | 4 | SANDY GRAVELS & CLAYS |
| 4 | 12 | WEATHERED SANDSTONE |
| 12 | 56 | BROWN SLATES WEATHERED WITH QTZ BANDS. |
| 56 | 62 | BLUE SLATES. |
| 62 | 72 | SOFT WEATHERED SLATES & CLAYS |
| 72 | 84 | BLUE SLATES |
| 84 | 96 | SANDSTONE, |
| 96 | 125 | GREY BROWN SLATES AND SANDY SLATES WITH QTZ BANDS. |

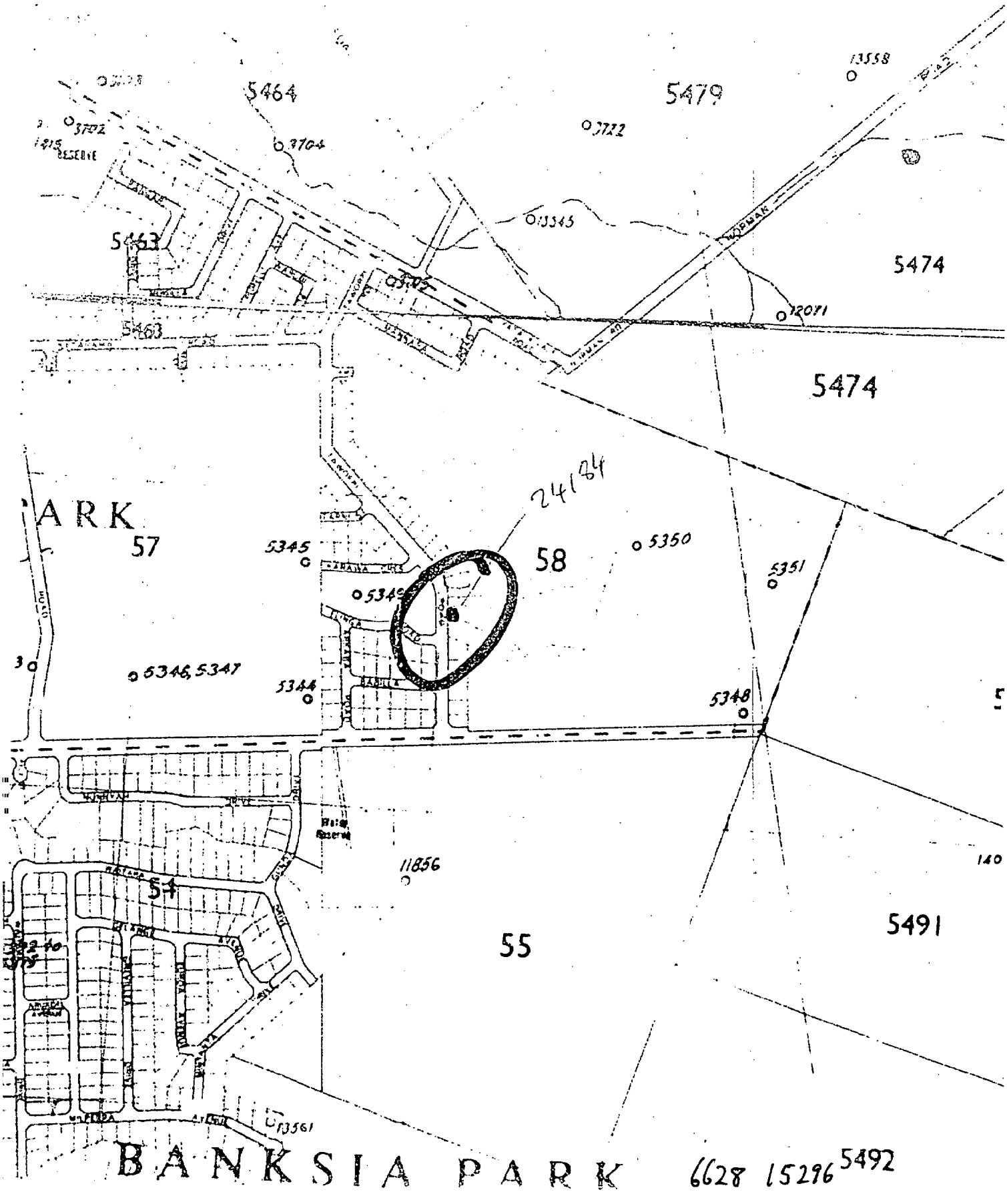
Form 1207

9673F

6628 15296

PERMIT NO. 24184 MAP NO. 6628-33
NAME: FABRIZIO G

LOCATION: LOT 117 SECT. 59
HUNDRED OF YATALA



PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

## Groundwater Sample

**Sample No:** 247844 **Unit No:** 6628 15296 **Obs No:** **Permit No:**

**Permit Holder:** **Date:** 09/05/1940 **Time:**

**Address:** **Hundred:**

**Results To:** **Section:** **Lot No:**

**Address:**

**Collected By:** **Sample Depth From:** **To:** **M**

**Remarks:**

**Collected:** Drilling / Final Sample / Monitoring / Pump Test / [Unknown] **EC:** 2097

**Method:** Airlift / Bail / Flow / Pump **TDS:** 1177

**Source:** Tank / [Well] / Dam / River / Spring **pH:** 7.90

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

## Groundwater Sample

**Sample No:** 292628 **Unit No:** 6628 15296 **Obs No:** **Permit No:**

**Permit Holder:** **Date:** 29/06/1990 **Time:**

**Address:** **Hundred:**

**Results To:** **Section:** **Lot No:**

**Address:**

**Collected By:** **Sample Depth From:** 0.00 **To:** **M**

**Remarks:**

**Collected:** [Drilling] / Final Sample / Monitoring / Pump Test **EC:** 2131

**Method:** Airlift / Bail / Flow / Pump **TDS:** 1178

**Source:** Tank / [Well] / Dam / River / Spring **pH:**



6628 15296

18500

DMC-17

Official Well No

SCHEDULE EIGHT—FORM FOUR
GOVERNMENT OF SOUTH AUSTRALIA
*Water Resources Act 1976*

# DRILLERS WELL CONSTRUCTION REPORT

As the person responsible for the work carried out on this well I advised that it has been completed as described below:

1. PERMIT No. 35235

2. LOCATION OF WELL
Hundred or Pastoral Lease No. Yankalilla
Section 5473 Lot No ..... Site No .....
Name of Property .....

Name of Driller CRAIG G. TREGALE Licence No 2105
Name of plant operator if under supervision .....

Permit holder or land occupier STEVENS B
Postal Address RSD 675
McLAREN VALE Postcode 5171

5. SUMMARY
Date work commenced 30/9/96 Date completed 3/10/96
Work carried out: New well ☒ Existing well, deepen ☐, enlarge ☐, rehabilitate ☐, backfill ☐ (tick appropriate boxes)
Final Depth 158.7 m Final standing water level 37.3 m Final yield 7.5 l/sec
Was well abandoned? ..... If yes, state method .....

6. DRILLING DETAILS If not a drilled well please complete paragraphs 6.2, 9, 10, 11, 12 and 13 as necessary

6.1 CONSTRUCTION DETAILS

| From (m) | To (m) | Diam. (mm) | Drilling Method Cable Tool, Rotary Auger, Etc. | Fluid Used (Air, Water, Mud Type) |
|---|---|---|---|---|
| 0 | 52.2 | 254 | ROTARY | BIO-VIS |
| 52.2 | 158.7 | 190 | ROTARY | HAMMER |

6.2 WATER CUT (measurements from natural surface to nearest 0.1 m)

| Date | Water Cut From (m) | Water Cut To (m) | Standing Level (m) | Estimated Yield l/sec. | Hole Depth at Test (m) | Casing at Test (m) | Test Method | Salinity mg/l or Taste |
|---|---|---|---|---|---|---|---|---|
| 2/10 | 76 | 76.5 | 37.3 | 0.1 | 80 | 52.2 | AIR | 1700 |
| 2/10 | 113 | 114 | 37.3 | 3.8 | 120 | 52.2 | AIR | 1200 |
| 2/10 | 149 | 154 | 37.3 | 7.5 | 158 | 52.2 | AIR | 1050 |

7. CASING LEFT IN WELL

7.1 DIMENSIONS / 7.2 TYPE / 7.3 CASING SHOE / 7.4 CASING PRESSURE CEMENTED

| From (m) | To (m) | Internal Diam. | Swell Joint, Welded Collar, Steel, Plastic, Etc. | Shoe Yes | Shoe No | Shoe Diam. (mm) | Cemented Yes | Cemented No | Pressure Cemented Yes | Pressure Cemented No | From (m) | To (m) | Cement (bags) | Water (litres) | Other Additives |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 52.2 | 210 | WELDED | ☒ | ☐ | 210 | ☐ | ☒ | ☐ | ☒ | | | | | |
| 0 | 108 | 155 | PVC CLIP | ☐ | ☒ | | ☐ | ☒ | ☐ | ☒ | | | | | |
| | | | | ☐ | ☐ | | ☐ | ☐ | ☐ | ☐ | | | | | |

8. CONSTRUCTION AT PRODUCTION LEVEL

8.1 METHOD
☒ Open Hole
☐ Screen(s) ☐ Slotted Casing
☐ Other, give details .....

8.2 SCREEN OR SLOTTED CASING (*If variable aperture screen used give limits)

| Type | From (m) | To (m) | Aperture* (mm) | Inner Diam. (mm) | Outer Diam. (mm) | Material | Trade Name | Completion of Case |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |

8.3 LINER SEAL (packer)

| Material | Depth (m) | Diam. (mm) |
|---|---|---|
| | | |
| | | |

8.4 GRAVEL PACKING

| Method of Placement | Gravel Passing Mesh Size | From (m) | To (m) |
|---|---|---|---|
| | | | |
| | | | |

9. IF NOT A DRILLED WELL (i.e. hand dug, etc.)

| Method | Depth (m) | Length (m) | Width (m) | Diam. (m) |
|---|---|---|---|---|
| | | | | |

| Lining Material | From (m) | To (m) |
|---|---|---|
| | | |

10. DEVELOPMENT State methods and times taken

11. PUMP TEST (measurements from natural surface to nearest 0.1 m)

| Interval Tested From (m) | Interval Tested To (m) | Water Level Stabilised at End? | Test Method | Depth of Pump (m) | Discharge Rate l/sec. | Method of Measuring Discharge | No. of Hours Pumped | Draw Down (m) |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

12. SAMPLES
The provisions of the Water Resources Act and Regulations thereto require that strata and water samples must be obtained. If any samples have not been obtained state reasons—
.....
.....

*Signature of Licensed Driller* ..... Date 5/10/96

Driller to forward this Copy, within 14 days of completion to:
The Director-General
Department of Mines and Energy
191 Greenhill Road
Parkside, S.A. 5063

SFSA 95/641

13. FORMATION LOG

| From (m) | To (m) | Description of Material |
|---|---|---|
| 0 | 0.5 | TOP SOIL & GRAVEL |
| 0.5 | 7 | CLAY |
| 7 | 24 | GRAVEL & SHALES |
| 24 | 34 | CLAY |
| 34 | 41 | GREEN CLAY |
| 41 | 45.5 | GREEN SHALE |
| 45.5 | 52.2 | HARD BLUE SHALE |
| 52.2 | 92 | BLUE ROCK |
| 92 | 93 | QUARTZITE |
| 93 | 149 | BLUE ROCK |
| 149 | 154 | BROKEN ROCK |
| 154 | 158.7 | BLUE ROCK |

6628-18500

Form 1207

6628 18500

PRIMARY INDUSTRIES AND RESOURCES SA

# Summary of Latest Water Information for Drillholes

6628 18500

| Unit No | Classification | Maximum Drilled Depth ( M ) | Original Drilled Date | Current Drilled Depth ( M ) | Current Drilled Date | Hundred | Section | Standing Water Level ( M ) | SWL Date | Well Yield (L/sec ) | Well Yield Date | Total Dissolved Solids (mg/L) | Sample Date | pH | Permit | Cased To ( M ) | Full Chem Anal | Dril Log | Geol Log | Geo phys Log | Status |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6628 33 0 18500 | Water Well | 158.70 | 10/96 | 158.70 | 10/96 | Yatala | S 57 F | 37.30 | 10/96 | 7.50 | 10/96 | 921 | 10/96 | | 38238 | 108.00 | | • | | | |



The Department will not assume responsibility for any errors or omissions in the data provided

Developer/2000 Forms Runtime for Windows 95 / NT - [Drillers Well Construction Report (Schedule 8) Maintenance]

File Edit field Record Query eXtra Window Help

# DRILLERS WELL CONSTRUCTION REPORT

1. PERMIT No: 88288 Unit No: 6628 18500

Obs No:

Drillhole No: 164860

Number of Completions for this Drillhole: 1

2. LOCATION OF WELL

Hundred: YATALA

Section: 5473 Lot No:

Name of Driller: THORPE C G

Permit Holder: STEVENS B

Address: RSD 675
MCLAREN VALE
5171

5. SUMMARY

Date Completed: 03/10/1996

Work carried out: rehabilitate backfill Well Inspectors Report flowing dry

Total Depth: 158.70 m Final Depth: 158.70 m Final Standing Water Level: 37.30 m Final Yield: 7.5000 l/sec

Was Well abandoned? No Comments:

6. DRILLING DETAILS

6.1 Construction Details

| From (m) | To (m) | Diam (mm) | Drill Meth |
|---|---|---|---|
| 0.00 | 52.20 | 254 | RTM |
| 52.20 | 158.70 | 190 | PER |
| | | | |
| | | | |

6.2 Waters Cut

| Date | Water Cut From (m) | Water Cut To (m) | Standing Level (m) | Estimated Yield (l/sec) | Hole Depth at Test (m) | Casing at Test (m) | Test Method | Full Chem Sample No | Salinity Sample No | Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| 02/10/1996 | 76.00 | 76.50 | 37.30 | 0.1000 | 80.00 | 52.20 | AIRL | | | |
| 02/10/1996 | 113.00 | 114.00 | 37.30 | 3.8000 | 120.00 | 52.20 | AIRL | | | |
| 02/10/1996 | 149.00 | 154.00 | 37.30 | 7.5000 | 158.00 | 52.20 | AIRL | | 216087 | |
| | | | | | | | | | | |

7. CASING LEFT IN WELL

7.1 Dimensions / 7.2 Type / 7.3 Casing Shoe

| From (m) | To (m) | Diam (mm) | Swell Joint, Welded Collar, Steel, Plastic, Etc. | Shoe Yes | Shoe No | Shoe Diam (mm) | Cemented Yes | Cemented No |
|---|---|---|---|---|---|---|---|---|
| 0.00 | 52.20 | 210 | WST | | | 210 | | |
| 0.00 | 108.00 | 155 | PVC | | | 210 | | |
| | | | | | | | | |
| | | | | | | | | |

7.4 Casing Pressure Cemented

| Yes | No | From (m) | To (m) | Comments |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Print Screen

Record: 1/1 List of Values

6628 18500

Developer/2000 Forms Runtime for Windows 95 / NT - [Drillers Well Construction Report (Schedule 8) Maintenance]

File Edit Field Record Query eXtra Window Help

## 8. CONSTRUCTION AT PRODUCTION LEVEL

### 8.1 Method

- [x] Open Hole
- [ ] Screen(s)
- [ ] Slotted Casing
- [ ] Other

### 8.2 Screen or Slotted Casing

| Type | From (m) | To (m) | Aperture (mm) | Inner Diam (mm) | Material | Comments |
|---|---|---|---|---|---|---|
| OH | | | | | | |
| | | | | | | |

### 8.3 Liner Seal (packer)

| Material | Depth (m) | Diam (mm) |
|---|---|---|
| | | |
| | | |

### 8.4 Gravel Packing

| From (m) | To (m) |
|---|---|
| | |
| | |

### 9. IF NOT A DRILLED WELL (ie hand dug etc)

| Method | Depth (m) | Diam (mm) |
|---|---|---|
| | | |

| Lining Material | From (m) | To (m) |
|---|---|---|
| | | |

### 10. DEVELOPMENT

| Method | Time (hours) | Time (mins) | Comments |
|---|---|---|---|
| | | | |
| | | | |
| | | | |

### 11. PUMP TEST

| From (m) | To (m) | Test Method | Depth of Pump (m) | Discharge Rate l/sec | Method of Measuring Discharge | No of Hours Pumped | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

### PURPOSE

- ENV
- ROL

### 13 Formation Log

| From (m) | To (m) | | | Description of Material |
|---|---|---|---|---|
| 0.00 | 0.50 | TPSL | | Topsoil & gravel |
| 0.50 | 7.00 | CLYU | | Clay |
| 7.00 | 24.00 | GRVL | | Gravels & shales |
| 24.00 | 34.00 | CLYU | | Clay |
| 34.00 | 41.00 | CLYU | | Green clay |
| 41.00 | 45.50 | SHLE | | Green shale |
| 45.50 | 52.20 | SHLE | | Hard blue shale |
| 52.20 | 92.00 | ROCK | | Blue rock |
| 92.00 | 93.00 | QTZT | | Quartzite |
| 93.00 | 149.00 | ROCK | | Blue rock |
| 149.00 | 154.00 | ROCK | | Broken rock |
| 154.00 | 158.70 | ROCK | | Blue rock |
| | | | | |
| | | | | |
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Print Screen
Record: 12/12

6629 18500

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

## Groundwater Sample

**Sample No:** 403446 **Unit No:** 6628 18500 **Obs No:** **Permit No:** 38238

**Permit Holder:** STEVENS B **Date:** 03/10/1996 **Time:**

**Address:** RSD 675
MCLAREN VALE
5171

**Hundred:** YATALA

**Results To:** **Section:** 5473 **Lot No:**

**Address:**

**Collected By:** C THORPE **Depth:** 158.00 M

**Remarks:** Copied for first time series record

**Collected:** Drilling / Monitoring / Pumping Test / [Unknown] **EC:** 1670

**Method:** Pump / [Airlift] / Flowing / Bailer **TDS:** 921

**Source:** [Well] / Tank / Dam / River / Spring **pH:**

PRIMARY INDUSTRIES and RESOURCES - SOUTH AUSTRALIA

## Groundwater Sample

**Sample No:** 216087 **Unit No:** 6628 18500 **Obs No:** **Permit No:** 38238

**Permit Holder:** STEVENS B **Date:** 03/10/1996 **Time:**

**Address:** RSD 675
MCLAREN VALE
5171

**Hundred:** YATALA

**Results To:** **Section:** 5473 **Lot No:**

**Address:**

**Collected By:** C THORPE **Depth:** 158.00 M

**Remarks:**

**Collected:** Drilling / Monitoring / Pumping Test / [Unknown] **EC:** 1670

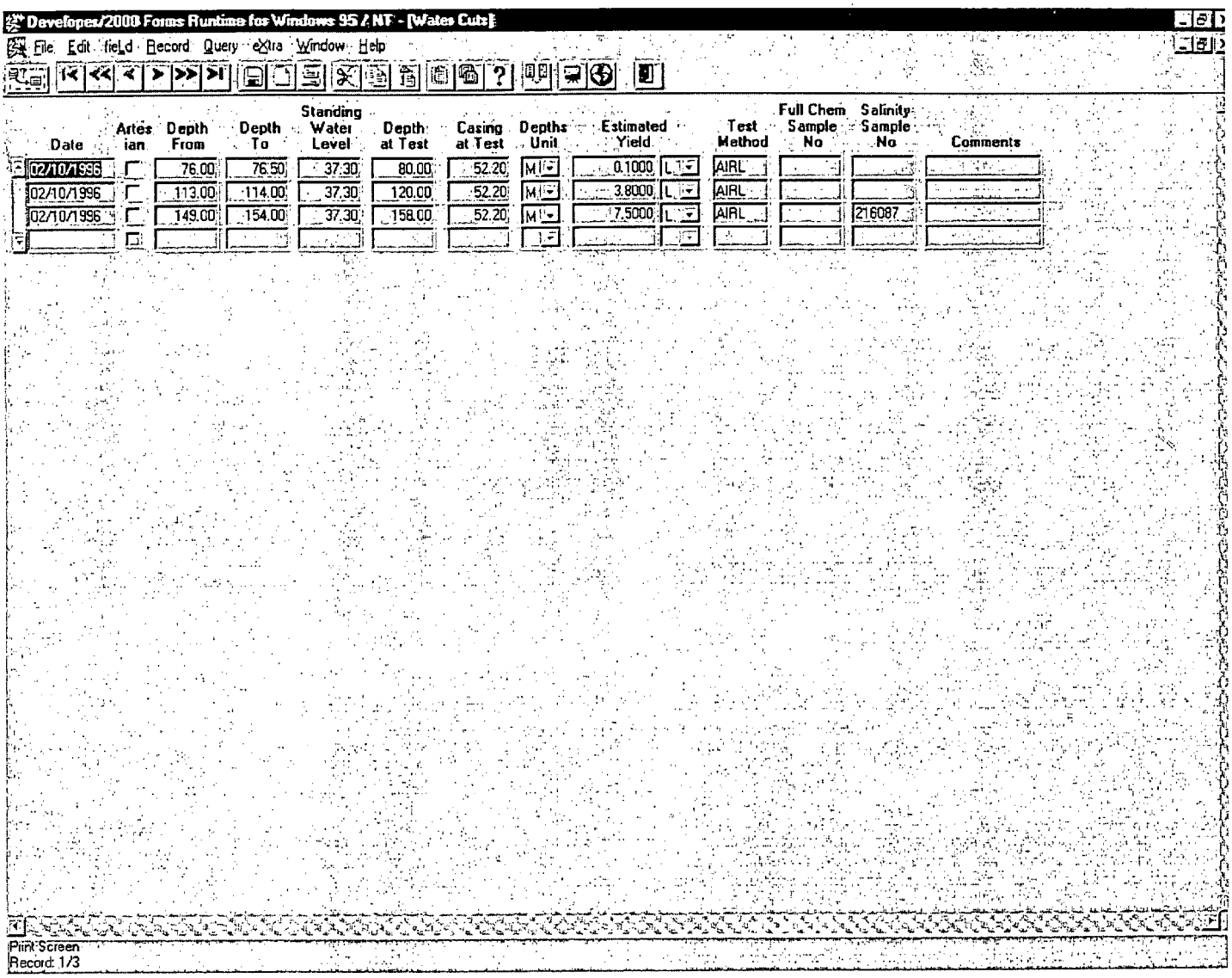
**Method:** Pump / [Airlift] / Flowing / Bailer **TDS:** 921

**Source:** [Well] / Tank / Dam / River / Spring **pH:**



Printed By Schuster C

6628 18500


Developer/2000 Forms Runtime for Windows 95 / NT - [Wates Cuts]
File Edit Field Record Query eXtra Window Help
Date
Artesian
Depth From
Depth To
Standing Water Level
Depth at Test
Casing at Test
Depths Unit
Estimated Yield
Test Method
Full Chem Sample No
Salinity Sample No
Comments
02/10/1996 76.00 76.50 37.30 80.00 52.20 M 0.1000 L AIRL
02/10/1996 113.00 114.00 37.30 120.00 52.20 M 3.8000 L AIRL
02/10/1996 149.00 154.00 37.30 158.00 52.20 M 7.5000 L AIRL 216087
Print Screen
Record: 1/3

6628 18500

Developer/2000 Forms Runtime for Windows 95 / NT - [Construction (Query only)]

File Edit Field Record Query eXtra Window Help

Unit No: 6628 18500 Obs No:

| Completion Date | Permit No | Cons | FS | Indicators: Bkf | Abn | Rehab | Insp | Flow | Dry | Core | Depths (M): Total | Final | Current | Min Diam (MM | Casing: From | To (M) | Diam (MM | Mat |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 03/10/1996 | 38238 | | | | | | | | | | 158.70 | 158.70 | | 155 | 0.00 | 108.00 | 155 | PVC+WST |
| | | | | | | | | | | | | | | | | | | |
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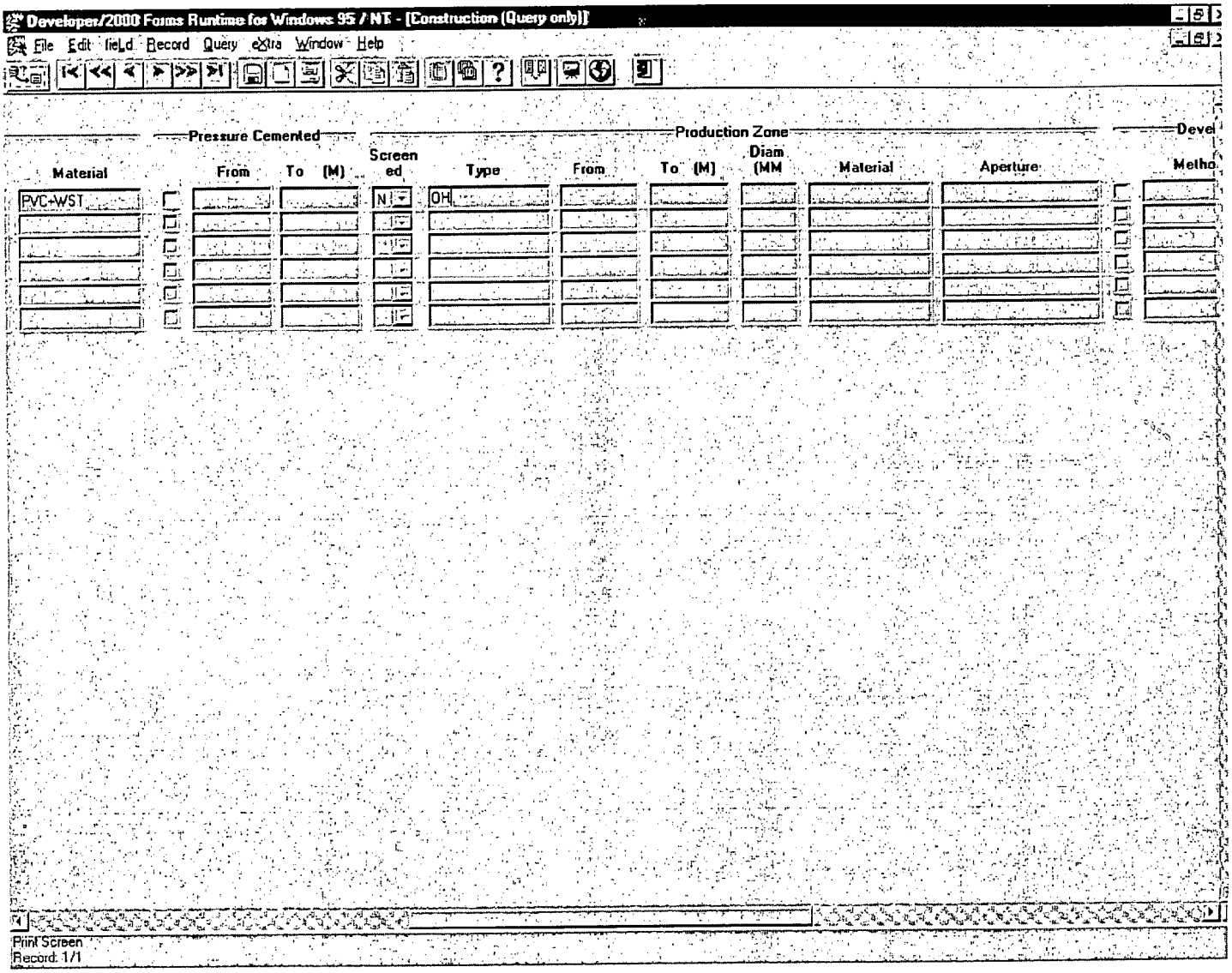
| | | | | | | | | | | | | | | | | | | |

Print Screen
Record: 1/1

6628 18500


Developer/2000 Forms Runtime for Windows 95 / NT - [Construction (Query only)]
File Edit Field Record Query eXtra Window Help
Pressure Cemented
Production Zone
Material
From
To (M)
Screened
Type
From
To (M)
Diam (MM
Material
Aperture
Devel
Metho
PVC+WST
N
OH
Print Screen
Record: 1/1

6628 18500

# Appendix 2

## Latest chemical analyses from Tea Tree Gully Golf Course Wells

**Groundwater Sampling – TTG Golf Course 16 May 2000**

90FL data – unable to use flow cell, so probe just placed in bucket filled with sample

**TTG 1A** 6628 5340

| TIME | TEMP | EC | pH | DO |
|---|---|---|---|---|
| 12:30 | 15.9 | 2006 | 7.37 | 5.95 |
| 12:38 | 15.6 | 2006 | 7.36 | 3.38 |
| 12:40 | 15.2 | 1964 | 7.37 | 3.31 |
| 12:45 | 15.2 | 1921 | 7.32 | 2.85 |
| 12:50 | 15.3 | 2037 | 7.34 | 2.95 |
| 12:55 | 15.2 | 2030 | 7.35 | 2.86 |
| 13:00 | 15.3 | 2032 | 7.34 | 2.84 |

Collect sample for major ions (inc. F), TOC, Nutrients, Fe/Mn/As

Pump on 12:10 Total time pumped 55 minutes
Pump off 13:05

Previous analyses (Sports Turf)

| DATE | EC | pH |
|---|---|---|
| 15/05/1999 | 2470 | 7.0 |
| 08/10/1999 | 2500 | 6.8 |

**TTG 2** 6628 5341

| TIME | TEMP | EC | pH | DO |
|---|---|---|---|---|
| 11:40 | 18.5 | 1796 | 7.22 | 2.19 |
| 11:50 | 18.6 | 2014 | 7.22 | 2.23 |
| 11:55 | 18.6 | 2032 | 7.20 | 2.20 |
| 11:58 | 18.6 | 2019 | 7.21 | 2.12 |
| 12:00 | 18.5 | 2024 | 7.22 | 2.10 |

Collect sample for major ions (inc. F), TOC, Nutrients, Fe/Mn/As

Pump on 11:30 Total time pumped 35 minutes
Pump off 12:05

Previous analyses (Sports Turf)

| DATE | EC | pH |
|---|---|---|
| 14/05/1999 | 1940 | 6.8 |
| 08/10/1999 | 1750 | 7.3 |

**TTG 3** 6628 5342
Not responding – unable to sample

**TTG 4** 6628 5343

| TIME | TEMP | EC | pH | DO |
|---|---|---|---|---|
| 10:50 | 20.0 | 1617 | 7.07 | 1.25 |
| 10:58 | 20.3 | 1932 | 7.15 | 0.91 |
| 11:02 | 20.4 | 2119 | 7.16 | 0.89 |
| 11:07 | 20.3 | 2098 | 7.15 | 0.90 |
| 11:10 | 20.4 | 2105 | 7.16 | 0.88 |
| 11:15 | 20.4 | 2099 | 7.16 | 0.89 |

Collect sample for major ions (inc. F), TOC, Nutrients, Fe/Mn/As

Pump on 10:50 Total time pumped 25 minutes
Pump off 11:15

Previous analyses (Sports Turf)

| DATE | EC | pH |
|---|---|---|
| 14/05/1999 | 1720 | 6.9 |
| 08/10/1999 | 1980 | 7.0 |

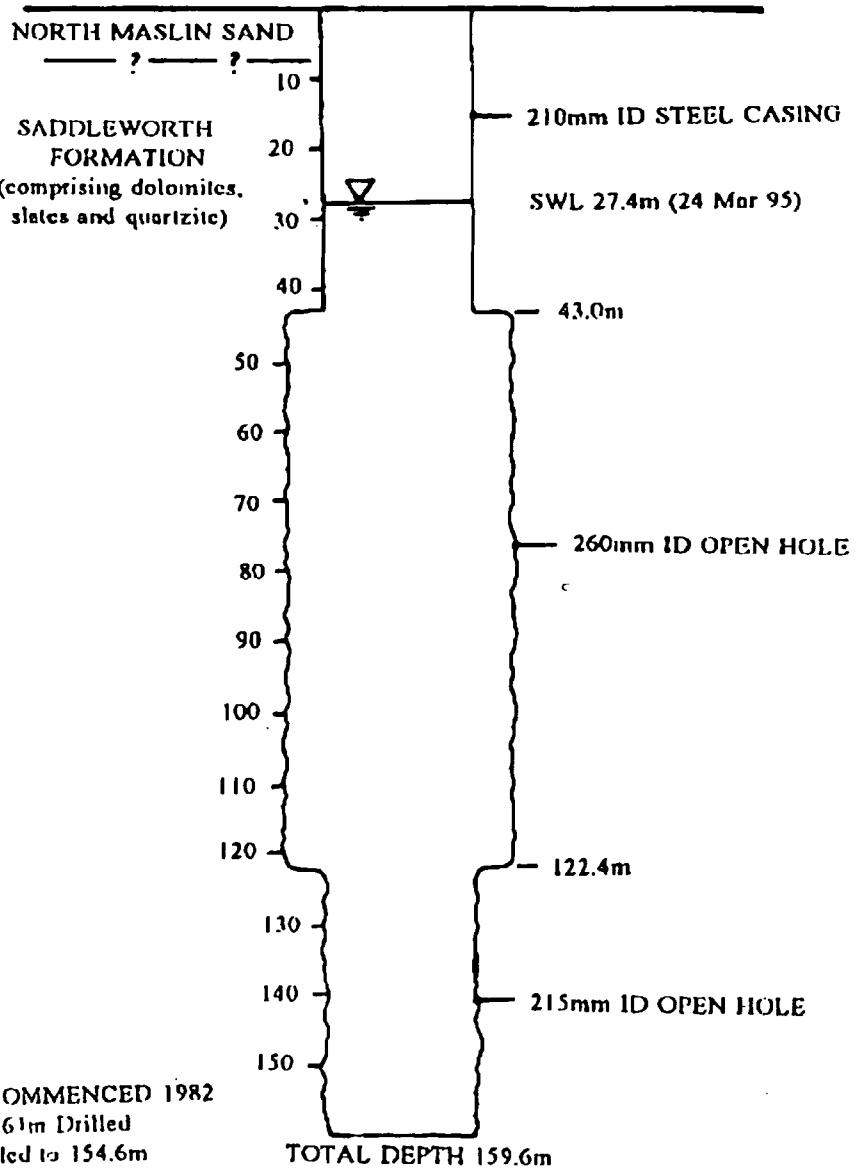
Appendix 3

The Tea Tree Gully Golf Course

Production Bore Register, March 1995

# PRODUCTION BORE ASSET REGISTER

**TEA TREE GULLY GOLF CLUB  BORE 1  (6628 - 5340 & 12212)  Permit No 11546**




DRILLING COMMENCED 1982
(TD 161m Drilled
Backfilled to 154.6m

## PUMPING SYSTEM DETAILS

**PUMP**
Grundfos SP 27 - 28 purchased March 1992
Non return valve installed in pump
Maximum diameter = 142 mm
Pump only length = 2790 mm
316 stainless steel
last installed 29 March 95

**MOTOR**
22 kW Franklin Submersible motor installed March 92
Serial number ???-???-???
Maximum diameter = 138 mm
Motor only length = 934 mm
??? stainless steel

**PUMP COLUMN**
17 @ 6.5 m of 100 mm ND heavy galv steel pump column
Lowered from 16 lengths + 0.5 m to 17 lengths on 29 March 95
No centralisers installed
Pump intake setting = 113.3 m below top of casing

**ELECTRICAL CABLE**
16 mm² electrical cable - new Mar 92
Heat shrink cable joint to motor lead
Fixed to pump column with duct tape
No excess cable in bore

**CONTROL PANEL**
Primary resistance starting mechanism

**HEADWORKS**
Gate valve
Poly pipe swl monitoring tube
non return valve
sampling tap

**PROTECTION**
Flow switch (installed 5 April 95)

**PERFORMANCE HISTORY**
Jan 83 new pump
Mar 92 pump replaced

Jan 83 new motor
Nov 86 motor repair
Mar 88 motor repair
Nov 88 motor burnt out
Feb 89 new motor
Dec 91 needed replacement
Mar 92 new motor

Mar 92 new flow switch
Apr 95 replace flow switch

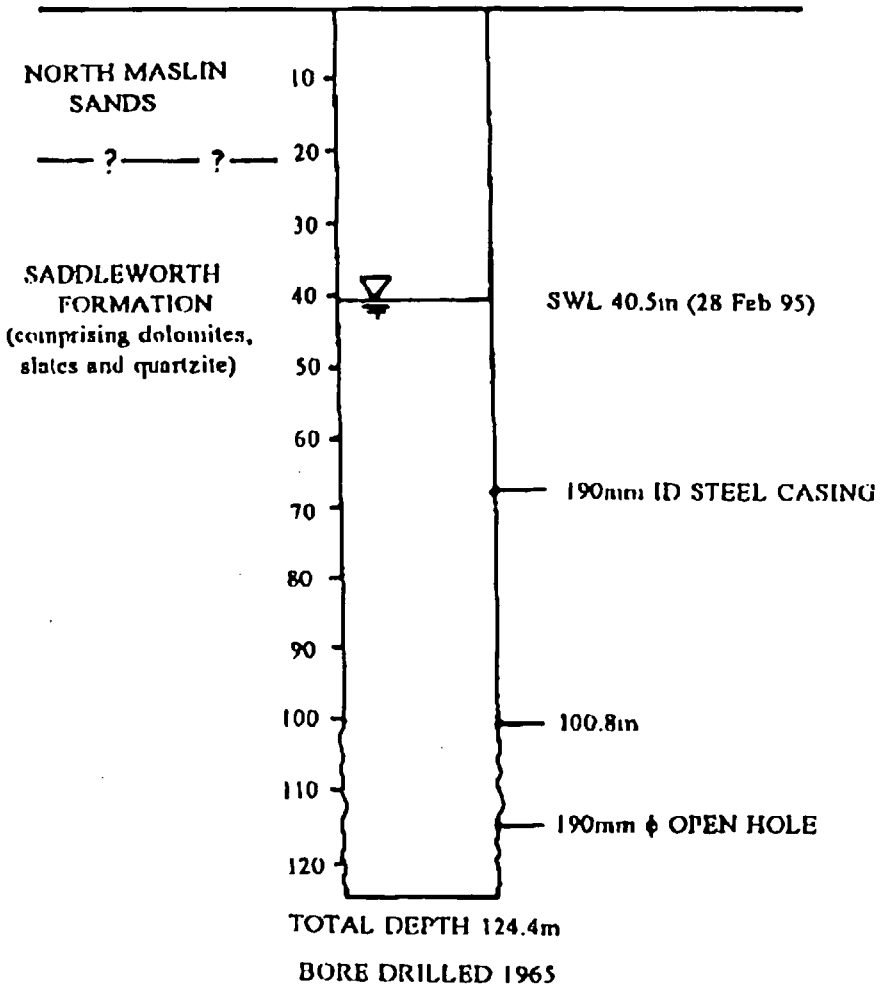
Jan 83 presume new column
Jun 87 replace 3 lengths
Mar 95 add 1 length
Dec 96 New VARIABLE Frequency DRIVE

Pumping RATE Between 4.5+ 48L/sec.

Prepared: 21 June 1995

# PRODUCTION BORE ASSET REGISTER

## TEA TREE GULLY GOLF CLUB BORE 2 (6628 - 5341)




## PUMPING SYSTEM DETAILS

**PUMP**
Layne & Bowler 150 TBL 8
purchased November 94
Serial No 1074 28
100 mm opening
No non return valve in pump
Maximum diameter = 136.5 mm
Pump only length = 1045 mm
Cast iron
last installed December 94

**MOTOR**
15 kW Franklin Submersible motor
last serviced November 94
Model number 2366946
10, HP 20, PH 3, Volts 415, Amp 29.3, RPM 2875, Hz 50, Code Date A88
Maximum diameter = 138 mm
Motor only length = 784 mm
??? stainless steel

**PUMP COLUMN**
12 @ 6.5 m of 100 mm ND heavy galv steel pump column
No centralisers installed
Pump intake setting = 79.05 m below top of casing

**ELECTRICAL CABLE**
?? mm² electrical cable - installed ??
Cable spliced at 3 locations including motor lead
4 individual leads from motor
Fixed to pump column with duct tape
No excess cable in bore

**CONTROL PANEL**
Auto transformer starting mechanism

**HEADWORKS**
Poly pipe swl monitoring tube
non return valve
sampling tap

**PROTECTION**
Flow switch (installed ???)

**PERFORMANCE HISTORY**
1965 New L & B 6EHL-10, 15kW

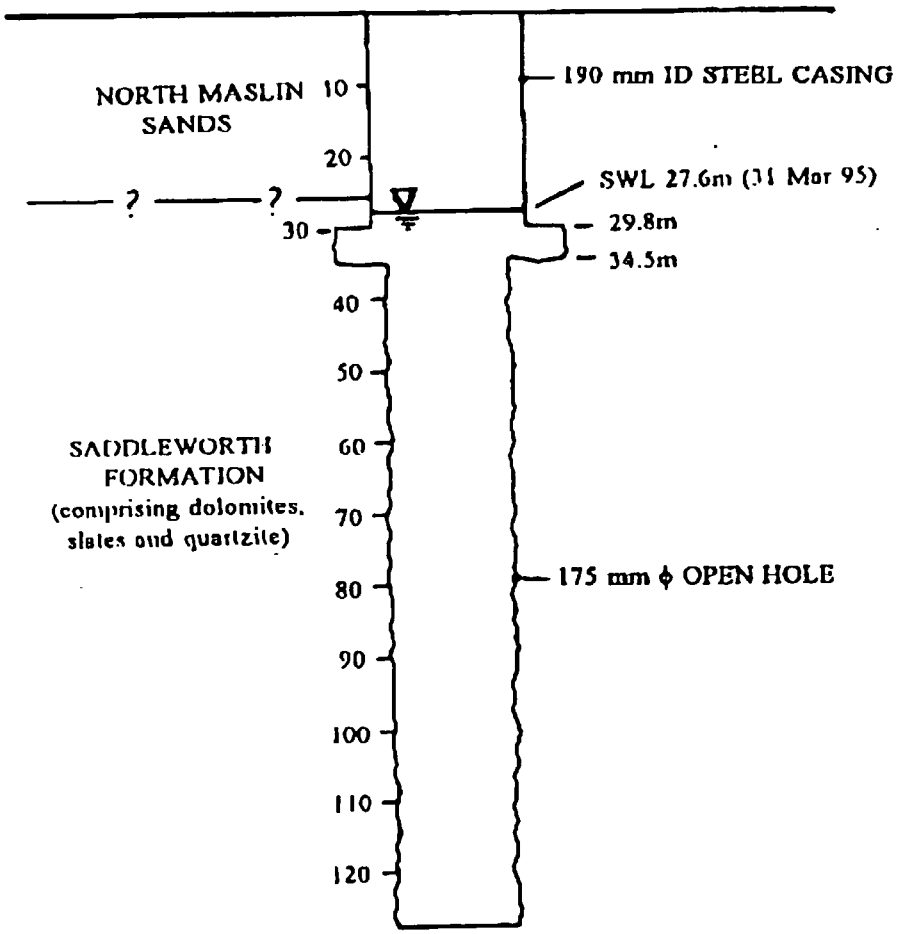
Jul 87 Service pump + motor
Dec 87 Motor burnt out
Jan 88 Replace motor
Oct 91 Service motor ?

pumping Rate 14 litre/sec.

Prepared: 21 June 1995

# PRODUCTION BORE ASSET REGISTER

## TEA TREE GULLY GOLF CLUB BORE 3 (6628 - 5342)




TOTAL DEPTH 127.0 m

DRILLING COMPLETED 1967

## PUMPING SYSTEM DETAILS

**PUMP**
9W ??? 9 stage pump purchased January 87
No non return valve in pump
Maximum diameter = 140 mm
Pump only length = 1270 mm
Cast iron
last installed Maroh 95

**MOTOR**
22 kW Hitachi Submersible motor
Model number M86 G89226
3ϕ, 30 hp, 2 pole, 415 V
Maximum diameter = 140 mm
Motor only length = 970 mm
Interconnector = 130 mm
??? stainless steel

**PUMP COLUMN**
15 @ 6.5 m + 0.26 m of 100 mm ND heavy galv steel pump column
No centralisers installed
Pump intake setting = 99.03 m below top of casing

**ELECTRICAL CABLE**
35 $mm^2$ electrical cable - installed ??
Individual wires over entire length
Fixed to pump column with duct tape

**CONTROL PANEL**
Auto transformer starting mechanism

**HEADWORKS**
Poly pipe swl monitoring tube
non return valve
sampling tap

**PROTECTION**
Flow switch (installed ???)

**PERFORMANCE HISTORY**

| | |
|---|---|
| 1965 | First pump installed |
| Mar 82 | Repair pump + motor |
| Apr 82 | Pump lowered |
| Nov 86 | Repair pump + motor |
| Jan 87 | New pump + motor |
| Sep 90 | Service pump |
| Sep 93 | Replace 4 lengths of column |
| Dec 96 | New pump + motor (Grundfos SP8A-21) |

Pumping Rate 2.2 – 2.4 L/sec.

Prepared: 21 June 1995