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Murtho Hydrogeological Investigations - Data Report

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Government of South Australia
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2005–06 Murtho Hydrogeological Investigations — Data Report

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FOREWORD

South Australia's unique and precious natural resources are fundamental to the economic and social wellbeing of the State. It is critical that these resources are managed in a sustainable manner to safeguard them both for current users and for future generations.

The Department of Water, Land and Biodiversity Conservation (DWLBC) strives to ensure that our natural resources are managed so that they are available for all users, including the environment.

In order for us to best manage these natural resources it is imperative that we have a sound knowledge of their condition and how they are likely to respond to management changes. DWLBC scientific and technical staff continues to improve this knowledge through undertaking investigations, technical reviews and resource modelling.

Rob Freeman
CHIEF EXECUTIVE
DEPARTMENT OF WATER, LAND AND BIODIVERSITY CONSERVATION

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DWLBC would like to thank the various Murtho landholders, whom have consistently helped field programs run smoothly via providing access keys and off-road vehicle security during often prolonged periods of field work.

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EXECUTIVE SUMMARY

Between 7 December 2006 and 10 March 2006, DWLBC undertook an investigation program in the Murtho region to fill data gaps for the conceptual design of a Salt Interception Scheme (SIS) targeted for the region. Underdale Drillers, under supervision from DWLBC Hydrogeologists, drilled nine air-core wells, fourteen observation wells and five production wells to help fulfil investigations in the region addressing both in-river electrical conductivity (EC) and various floodplain health objectives.

Between 26 April 2006 and 6 June 2006, Groundwater Technical Services (DWLBC) conducted pumping tests on all production wells to provide data for determination of well hydraulics and aquifer hydraulic parameters, and to assist in the hyrogeological understanding of the Murtho region.

This report details the investigations and presents the data gathered from the various field programs to date. It is intended to be a concise data report only, designed to be a technical resource for the construction of the Murtho SIS.

1. INTRODUCTION

The Murtho irrigation area is located in the Riverland region of South Australia on the eastern side of the River Murray, from near Renmark, upstream to the Victorian border (Fig. 1). Detailed hydrogeological investigations within the Pike and Murtho regions commenced around 1995. Consultants, primarily on behalf of the Renmark to the Border Local Action Planning Association, undertook most of the investigations in the early stages. These investigations developed an awareness of the hydrogeology of the region, the various environmental impacts of saline groundwater discharge to the River Murray and adjacent floodplain, and potential management options.

The investigations were primarily of a desktop nature and allowed conceptualisation of the hydrogeological model based on a relatively sparse regional dataset. The early investigations along with the results of annual Run of River surveys, identified several areas of increased salt accessions that became the focus of a potential Salt Interception Scheme (SIS). The Murray–Darling Basin Commission (MDBC) and Government of South Australia (GSA) subsequently provided funding around 2002 for further detailed hydrogeological investigations that would lead to the development of conceptual SIS designs for the Pike–Murtho region.

1.1 POLICY BACKGROUND

In 2001, the Murray–Darling Basin Ministerial Council approved the publication of the Basin Salinity Management Strategy 2001–15 (BSMS). Similarly, the GSA adopted the River Murray Salinity Strategy 2001–15. These initiatives followed the adoption of the Ministerial Councils' Salinity and Drainage Strategy 1988 (S&DS), taking into account the 1999 Basin Salinity Audit and the National Land and Water Resources Audit.

The objectives of the BSMS are to:

1. Maintain water quality of the shared water resources of the River Murray and River Darling.
2. Control the rise in salt loads in all tributary rivers of the Murray-Darling Basin.
3. Control land degradation and protect important terrestrial ecosystems, protect farmland, cultural heritage and built infrastructure.
4. Maximize net benefits from salinity control across the Basin.

Under the S&DS, 1 January 1988 was adopted as a baseline from which any subsequent actions that affected River Murray salinity were the responsibility of the State in which the action occurred. One of the main components carried forward from the S&DS was the system of salinity credits and debits, however changes were made to the manner in which credits and debits were entered on the Salinity Registers. Under the 1988 Strategy, debits and credits were entered as the impact at 30 years. Within the BSMS, entries onto the register are the average of the 30 years, with the maximum impact in 100 years also recorded. The BSMS allows for any action resulting in an increase in river salinity, such as new irrigation developments, to occur, provided that salinity credits, gained by contributing to

the funding of salt interception schemes or other measures, are available to offset any salinity debits arising from these accountable actions.

The S&DS has significantly reduced salinity in the River Murray through implementation of salt interception schemes and improved land and water management. The target of restricting river salinity at Morgan below a threshold of 800 EC at least 95% of the time is close to being met. However, the 1999 Salinity Audit highlighted that the future impacts of salt mobilisation, due to further irrigation developments and the effects of dryland salinity, would diminish the achievements of the S&DS unless further action was taken. Consequently, the BSMS commits the partner governments to an initial seven-year investment program of salinity mitigation works and measures to be implemented across the Murray–Darling Basin to deliver 61 EC credits to the river and to offset the States accountable actions.

There are currently five operational salt interception schemes within SA (Woolpunda, Waikerie, Waikerie IIA, Qualco – Sunlands Groundwater Control Scheme and Bookpurnong). The Loxton SIS is currently under construction and further scheme extensions are being investigated in the Woolpunda – Cadell reach near Waikerie.

In presenting the combined Pike and Murtho schemes to Ministerial Council for approval in September 2005, SA proposed a credit allocation and cost-sharing methodology on the basis of the model results of the various pre-and post-1988 actions undertaken in each of the areas. The assessment of those impacts is required to be consistent with the reporting requirements of both Schedule 'C' of the Murray–Darling Basin Agreement 1992 and the Basin Salinity Management Strategy Operational Protocols 2005.

SA proposes to implement SIS within the Pike–Murtho region in a staged manner, commencing in the southern and central parts of Murtho.

1.2 PREVIOUS INVESTIGATIONS

1.2.1 DESKTOP AND FIELD INVESTIGATIONS 2003–04

In March 2003, the Groundwater Group of the Knowledge and Information Division (KID), was requested by Infrastructure and Business Division (IBD) to:

- Review the status and condition of the groundwater observation network of the Pike–Murtho region.
- Identify hydrogeological data gaps.
- Make recommendations for the gathering of new hydrogeological data and develop a comprehensive on-going groundwater monitoring program.

Recommendations of the unpublished report produced by KID in August 2004 included:

1. Drilling of investigation drillholes to better define the regional hydrostratigraphy and aquifer geometry.
2. Completion of numerous observation wells within the Loxton Sands in highland areas and within the Monoman Formation in floodplain areas.
3. Completion of four sites for conducting pumping tests including step drawdown tests and long-term constant rate discharge tests.

4. Major and minor analyses of groundwater samples collected during the pumping tests.
5. Geophysical logging of most new wells and several older Murray Group wells to assist in the interpretation of hydrostratigraphy and aquifer geometry.

KID undertook this field investigation program between April and November 2004. Unfortunately, the floodplain sites were not drilled due to time and budget constraints. However, some limited air-core hydrostratigraphic drilling was subsequently undertaken in late December 2004, under a separate budget, supervised by Resource and Environmental Management (REM).

1.2.2 CONCEPTUAL SIS DESIGN 2004–05

Following the completion of the preceding field investigations the next major phase of work was the development of Conceptual SIS designs for the various river reaches of the Pike–Murtho region by:

- Synthesising all the new data and refinement of the region's conceptual hydrogeological model.
- Development of a numerical groundwater flow model (based on the DWLBC Border to Lock-3 Model) to estimate past, current and predicted future groundwater fluxes and salt load accession to the River Murray.
- Testing and simulation of various groundwater-pumping schemes to determine the preferred Concept SIS design that focussed on in-river EC reduction, but which also incorporated a component of floodplain health benefit.

This modelling work was outsourced to REM, in partnership with Aquaterra Simulations (Aquaterra) in September 2004, due to limited resources in the DWLBC Groundwater Group (as a result of work commitments to SIS investigations in the Loxton and Chowilla regions).

Following the transfer of the model back to DWLBC late in September 2005, DWLBC made significant improvements throughout the Pike–Murtho region that address issues raised by Salient Solutions (2005) and REM–Aquaterra (2005b). The fundamental objective of this modelling was to improve confidence in the model parameters and results to a level that would enable and assist:

- Accreditation of the model by the MDBC.
- Use of modelled salt loads as Salinity Register entries.

In December of 2006, the DWLBC numerical groundwater model was reviewed and accredited by the MDBC and subsequent modelled salt loads to the River Murray were adopted for BSMS purposes. Included in the range of future scenarios, which were run in the numerical model, Scenario-6 predicted that the Concept SIS design in the Murtho region should reduce the 2105 salt load of 389 t/d to 76 t/d, a reduction of 80%. The Concept SIS design in the Pike region is predicted to reduce the 2105 salt load of 250 t/d to 75 t/d, a reduction of 70%.

2. AIM AND OBJECTIVES

2.1 2005–06 INVESTIGATION PROGRAM

The 2005–06 investigation program was multi-faceted and was based on refinement of earlier recommendations made by REM as part of the Concept SIS design.

There were two main program components; overall in-river EC reduction and the delivery of floodplain dewatering at specific target vegetation areas.

2.1.1 IN-RIVER EC REDUCTION PROGRAM OBJECTIVES

Beneath an overarching objective of resolving hydrogeological data gaps to improve the accuracy of the Conceptual SIS design, the 2005–06 investigation program included the following key objectives:

1. Improve the understanding and delineation of groundwater salinities within the unconfined aquifer in both floodplain and highland areas to allow further refinement of estimated salt loads entering the river.
2. Improve the definition of the watertable contours, which define the hydraulic gradients that are the driving force behind groundwater flux and salt loads to the floodplains and river. In many critical parts of the highland adjacent to floodplains, these contours are highly interpreted due to limited data.
3. Improve the understanding of the hydrostratigraphy of the floodplain and adjacent highland areas.
4. Improve the knowledge of the aquifer hydraulic parameters and aquifer geometry to allow further refinement of the groundwater model. Due to time constraints the analysis and interpretation of the data obtained during the pumping tests has not been presented in this report.

2.1.2 FLOODPLAIN DEWATERING PROGRAM OBJECTIVES

While they were not necessarily aimed at being answered during the 2005–06 investigation program, the objectives driving the floodplain dewatering program included:

1. Confirm the validity and accuracy of the existing model parameters and whether the conceptual abstraction rates would deliver the required drawdowns.
2. Quantify the extent of aquifer flushing from river water arising from lowering of groundwater levels significantly below river pool level in areas close to the River Murray.
3. Deliver a final wellfield design (in terms of well locations, construction design and abstraction schedules) for each targeted floodplain dewatering area.

3. SCOPE OF WORK

3.1 IN-RIVER EC REDUCTION PROGRAM SCOPE

The 2005–06 investigation program incorporated a relatively high proportion of work on the floodplain, as the original floodplain investigation program proposed in 2004 was never completed. Total data density within the Murtho project area was also considered to be quite low, with only six pumping tests conducted in the unconfined aquifer on either the floodplain or the highland along ~100 km of river length within the project area. This should be compared with the Loxton Bookpurnong area, where it is estimated that at least 30 pumping tests were completed over ~34 km of river length prior to the Final SIS design being developed.

The first phase of the drilling program to meet objectives 1–4 was to initially drill an air-core hole at most sites to depths that would successfully intersect the top of the Bookpurnong Beds. Air-core holes could then potentially be used to:

- Define the depth and construction of adjacent observation or production wells;
- Provide sediment samples for accurate assignment of stratigraphic units (air-core samples are considered more representative than those from the rotary-mud drilling technique used for installation of observation or production wells).
- Provide a broad estimation of hydraulic conductivity using Hazen's approximation from sediment sample size analyses.
- Provide sediment samples for geochemical analyses in relation to the evaluation of potential for acidification and aluminium clogging.

The production wells were specified for completion as gravel-packed 200 mm internal diameter (ID) slotted PVC, consistent in design with most SIS production wells installed to date in South Australia. Observation wells were similar in design, but with 80 mm ID slotted PVC. While the smaller diameter would preclude the observation wells from being equipped as operational SIS production wells, internal diameters of 80 mm enable sonding, pump-purging, wire line geophysical logging and groundwater level measurements from either manual or logging style instruments.

In addition to the above drilling program, the following scope of work was also proposed:

- Development of each production well through further pumping followed by a step drawdown test.
- Three-day constant rate discharge testing of the floodplain pumping test sites and a minimum 48 hour constant rate discharge test for the highland pumping test sites.
- Wireline Geophysical logging of the production wells to aid the refinement and interpretation of hydrostratigraphy and structural integrity of each well.

3.2 FLOODPLAIN DEWATERING PROGRAM SCOPE

The scope of the 2005–06 floodplain dewatering program included:

- Drilling of air-core holes at the floodplain dewatering target area and conceptual production well site.
- Drilling and construction of one production well at the floodplain dewatering target area (completed with slotted PVC).
- Drilling and construction of observation wells at the floodplain dewatering target area (completed with slotted PVC).
- Pumping tests on the production well comprising a step drawdown test and a 3-day constant rate discharge test.

4. HYDROGEOLOGY OF THE PIKE–MURTHO REGION

4.1 LOCATION

The Pike–Murtho irrigation area is located in the Riverland region of South Australia on the eastern side of the River Murray near Renmark. The Pike River and Murtho Land and Water Management Plan areas together occupy ~700 km^2 from the Old Customs house near Chowilla in the North, to Gordon road below the Pike River in the south (Fig. 1). They are bounded by the River Murray to the west and the South Australia – Victorian border to the east.

4.2 REGIONAL HYDROGEOLOGY

The Murray Basin is a closed groundwater basin containing Cainozoic unconsolidated sediments and sedimentary rock up to 600 m in thickness, and contains a number of regional aquifer systems (Evans and Kellet, 1989).

Within the project area, there are three major aquifer systems of significance (see conceptual hydrogeological model in Fig. 2). In the highland areas a perched watertable can occur within the Woorinen Formation above the Blanchetown Clay, while the watertable aquifer occurs in the underlying Loxton Sands (hydraulic conductivity typically 1–5 m/d). This aquifer forms a regionally extensive unconfined to semi-confined aquifer into which the channel of the ancestral River Murray is incised. Within this channel, the semi-confined Monoman Formation (likely to have highly variable hydraulic conductivity) has been deposited, and it is within this sequence that the modern channel of the River Murray is incised. The Loxton Sands and the Monoman Formation are considered to be in direct hydraulic communication.

At the Pike–Mundic and Woolenook floodplains the watertable can occur within the overlying surficial sediments of the Coonambidgal Formation, and the Bookpurnong Beds aquitard separates the Monoman Formation from the underlying Murray Group Limestone. A hydrostratigrahic summary is given below in Table 1 (Stadter, 2005).

Within the Pike River and Murtho Land and Water Management Plan areas, the groundwater flow direction in all aquifers of interest is generally towards the River Murray. The river and its anabranches behave as a sink for regional groundwater in the project area.

Saline groundwater enters the floodplain environment through one of three mechanisms:

1. Lateral flow from the Loxton Sands.
2. Slow upward leakage through the Bookpurnong Beds aquitard (REM 2002b estimated a vertical hydraulic conductivity of 10^{-5} m/d) from the underlying regional confined Murray Group Limestone.
3. Seepage from cliff faces found at the break of slope.

Table 1. Hydrostratigraphic units in the Pike–Murtho Region

Age	Stratigraphic unit	Hydrostratigraphic unit	Lithology
Quaternary	Woorinen Formation	Perched aquifer where Blanchetown Clay inhibits vertical recharge.	Brown and reddish coloured aeolian silts and fine to medium ferruginous sands. Regularly containing moderate to hard calcrete horizons.
Quaternary	Coonambidgal Formation	Aquitard.	Light greyish coloured moderately dense clay. Generally quite rollable with moderate plasticity.
Quaternary	Monoman Formation	Aquifer, semi-unconfined along the river valley.	Yellowish brown to greyish coloured fine to coarse sands and gravels. Clay lenses. Can be micaceous.
Quaternary	Blanchetown Clay	Aquitard.	Reddish brown silty gritty clays to light green, moderate to very dense clay with high plasticity.
Pliocene	Loxton Parilla Sands – Upper [1]	Aquifer, unconfined to semi confined in highland areas.	Yellowish orange coloured ferruginous fine to coarse sands and fine gravels.
	Loxton Parilla Sands – Lower [1]	Aquifer (as above)	Greyish coloured medium to coarse sands and fine to medium gravels. Quite micaceous, often carbonaceous and pyritic.
Pliocene	Lower Loxton Shells [1]	Aquitard. Transition from leaky zone to clay proper.	Medium greyish coloured silts and clays with interbedded shell fragments. Micaceous. Generally increasing in density and plasticity with depth.
	Lower Loxton Clays [1]		
Mio-Pliocene	Bookpurnong Beds	Aquitard. Main confining unit between Pliocene/ Monoman sands and Murray Group.	Olive greyish to green coloured moderate dense, fossiliferous clay. Can be quite silty, but generally quite rollable, with high plasticity.
Miocene	Murray Group Limestone	Confined aquifer, multilayered.	Grey to off-white coloured fossiliferous, sandy limestone. Many different stratigraphic units within.

1. Denotes units not formally recognised

Discharge subsequently occurs either directly to the River Murray (or one of its backwaters or anabranches) through the Loxton Sands or Monoman Formation, or through evapotranspiration. Typical rates of evapotranspiration from the floodplain are 250 mm/y (REM–Aquaterra, 2005a). With reference to upward leakage from the Murray Group Limestone, REM–Aquaterra (2005a) concluded “upward gradients are interpreted to exist across the project area providing a potential for the upward movement of groundwater from the Murray Group Limestone. However, the rate of upward leakage is expected to be low (relative to other vertical fluxes) because of the presence of a thick confining layer (combination of Lower Loxton Clays and Bookpurnong Beds).” It was also noted that “The project steering committee for this project has agreed that the Murray Group Limestone unit is unlikely to make a significant contribution to the salt load to the River Murray relative to the Loxton Sands on the basis that the Lower Loxton Clay – Bookpurnong Beds aquitard provides a barrier to vertical flow.”

As anecdotal evidence indicates that only minor seepage occurs from cliff faces in the project area, it can be seen that lateral flow from the Loxton Sands is the main mechanism for saline groundwater discharge to the River Murray. It should also be noted that within the project

area, there is no evidence at this point that the River Murray is in direct contact with the Murray Group Limestone, unlike the reach immediately downstream of Loxton, where erosion of the Bookpurnong Beds has created a direct connection of the River Murray with the underlying Murray Group Limestone.

It is the above two points which confirm that the Loxton Sands and Monoman Formation aquifers contribute the majority of the salt load to the River Murray, and thus are the targets for salt interception in the Pike–Murtho region.

The schematic diagram of the Pike–Murtho conceptual hydrogeological model is given in Figure 2 (after REM–Aquaterra, 2005a). The figure highlights the regional groundwater flow conditions, direction and leakage between the various hydrogeological units.

4.3 HYDROGEOLOGICAL UNITS

Each of the various hydrogeological units shown in Table 1, are discussed in order of increasing depth below ground surface in the following sections.

4.3.1 WOORINEN FORMATION

The Woorinen Formation provides a thin capping of Quaternary sediments across the highlands of the project area between 2–5 m thick (REM–Aquaterra, 2005a). It should also be noted that sequences of roughly the same thickness have been deposited in some places (due to aeolian deposition) on the Pike–Mundic Floodplain, on top of existing Coonambidgal clay. In highland areas, the Woorinen Formation regularly contains multiple hard calcrete horizons, which can often cause difficulties to digging equipment such as front-end loaders.

While the Woorinen Formation may experience localised perched watertables, predominantly in areas with a reasonably thick sequence of Blanchetown Clay and higher recharge rates due to irrigation, they are not of great significance in the context of SIS design.

4.3.2 COONAMBIDGAL FORMATION

The Coonambidgal Formation clay layer occurs ubiquitously across the floodplain and comprises clay and silts deposited during periods of episodic flooding (Yan et al. 2005).

Floodplain air-core drilling carried out by REM in December 2004 indicated that while the unit was commonly 2–4 m thick, it could vary in thickness anywhere from 1–9 m across the Pike – Mundic and Woolenook floodplains.

It is likely that similar to floodplains in the Loxton and Bookpurnong regions, the greater thicknesses would be observed at or near the break in slope between the floodplain and highland (Yan et al. 2005).

4.3.3 MONOMAN FORMATION

Beneath the Coonambidgal clay and above the regional aquitard of the Lower Loxton Clay/Bookpurnong Beds, lies the Monoman Formation.

Typically, the Monoman Formation comprises a mixture of channel and sheet sand deposits with intervening sequences of silty clay. This is likely to result in highly variable transmissivity throughout the floodplain similar to that encountered in the Loxton Bookpurnong investigations. Floodplain air-core drilling carried out by REM in December 2004 included the Pike–Mundic, Woolenook Bend, and Gurra Gurra floodplains. Drilling revealed that the thickness of the Monoman Formation ranges between 7–19 m (REM–Aquaterra, 2005a).

The data from the air-core drilling program also indicated that the Monoman Formation also tended to become thicker towards the north, coupled with the possibility of an increase in the likelihood of the Monoman Formation being directly on top of the Loxton Sands. This would thereby increase the total aquifer thickness upstream, however it is noted that visually it is very difficult to identify the boundary at the bottom of the Monoman Formation.

There are not sufficient data to reliably construct groundwater elevation contours for the Monoman Formation for the entire length of the floodplain within the project area. However, there are observations regarding groundwater flow in the floodplain aquifers between Lock 10 and Lock 5, which are likely to be relevant to the project area. The primary observation within the REM (2003) study was that regional scale flow through the floodplain aquifers is complicated by interaction with weir pools, groundwater mounds in irrigation areas, localized evapotranspiration and interaction with surface water. It is expected that all of these processes will be relevant to the project area (REM–Aquaterra, 2005a).

4.3.4 BLANCHETOWN CLAY

The Blanchetown Clay aquitard occurs sporadically throughout the region and due to its lacustrine environment of deposition can grade from a silty soft unit with poor plasticity and low density right through to a hard, dense clay with high plasticity.

The Blanchetown Clay is absent across the floodplain and in large areas to the northwest of Renmark. The clay is also absent in discrete pockets along the eastern side of the River. Thickness of the Blanchetown Clay, where present, ranges from 15 m in the north of the project area, thinning southwards, to ~5 m near the township of Berri (REM–Aquaterra, 2005a).

4.3.5 LOXTON SANDS

The Loxton Sands form the regional watertable aquifer, which has also been described in other hydrogeological reports as the Loxton–Parilla, Parilla Sands or Pliocene Sands aquifer. The Loxton Sands have been eroded across the floodplain but are present throughout the highland areas, often exposed in cliff faces within the project area. The Loxton Sands generally comprise three main lithofacies: (1) an Upper Loxton Sand facies dominated by pale yellow/grey medium to coarse grained sand; (2) a Lower Loxton Sand facies dominated by greyish coarse grained sand and gravel; and (3) a Lower Loxton Shells facies dominated by remnant fossiliferous shell beds. It is difficult to confirm the lateral extensiveness of each facies across the project area (particularly the Lower Loxton Shells), as driller's descriptions of lithology in many of the older wells fail to identify these three facies variants. Additionally, one of the recent wells (Unit Number 7029–2016) drilled by DWLBC during the 2004 program did not intersect the Lower Loxton Shells facies, indicating that this unit is not necessarily continuous across the project area. The recent drilling program carried out by DWLBC clearly differentiated the various facies units within the Loxton Sands. The need to

distinguish these units is important. Although the Lower Loxton Sands (as a whole) is generally considered to be a less permeable unit than the Upper Loxton Sand, the “upper” part of the Lower Loxton Sand in the Pike–Murtho region contains well-sorted marginal marine sands that grade downward to the finer Lower Loxton Clay (REM–Aquaterra, 2005a).

Based on DWLBC logs the sand and gravels within the upper part of Lower Loxton Sand are around 20 m thick in the Murtho region and 10 m thick in the Pike River area. Any potential groundwater salinity mitigation strategy for the highland area is likely to target the upper part of the Lower Loxton Sands because of the favourable hydraulic properties, the relatively large saturated thickness and the elevation of this sub-unit with respect to river pool levels. The top of the Loxton Sands group sits at an elevation of more than 60 m AHD in the northeast portion of the project area and 20 m AHD in the southwest portion of the project area beneath Berri township. Similarly, these sediments thin along a northeast/southwest axis. Thickness ranges from greater than 80 m in the northeast part of the project area to ~30 m in the southwest portion of the project area beneath Berri (REM–Aquaterra, 2005a).

4.3.6 BOOKPURNONG BEDS

The Lower Loxton Clay and the Bookpurnong Beds, while recognised as discrete stratigraphic units, form the major confining bed throughout the region separating the Murray Group Limestone and Loxton Sands aquifers. This confining bed primarily dips gently along a southwest/northeast axis. South of Renmark towards Berri, the top of the sediments reach an elevation of 0 m AHD beneath the River but dip to an elevation of -25 m AHD to the east and -15 m AHD to the west. A maximum thickness of 30 m (e.g. at Simarloo) is attained in this sequence of sediments south of Renmark, thinning to the north and west of the project area to 10 m (REM–Aquaterra, 2005a).

4.3.7 MURRAY GROUP LIMESTONE

As mentioned in section 4.2, REM–Aquaterra (2005a) reported that due to the fact that the Murray Group Limestone is unlikely to contribute a significant salt load to the River Murray in comparison with the Loxton Sands, the various sub-units that exist within the Murray Group Limestone can be modelled together as one layer, or uniform sequence.

It is likely that the majority of the observation wells completed in the Murray Group Limestone are completed in the Pata Formation, simply due to the fact that it is the first unit intersected within the group.

REM–Aquaterra (2005a) created structure contours for the top of the Murray Group litho facies (Pata Formation) and found that the sediments are generally dipping in an approximate southwest/northeast direction. In the southwest part of the project area near Lock 4 the elevation of the top of the Murray Group is ~-15 m AHD, dipping down to an elevation of ~-50 m AHD near Lindsay Point.

Groundwater contours suggest that the Murray Group Limestone does not interact significantly with the river or the groundwater mounds within the Loxton Sands (REM–Aquaterra, 2005a).

5. DRILLING RESULTS

5.1 INTRODUCTION

Underdale Drillers Pty Ltd undertook the drilling program in the Murtho region under DWLBC supervision. The drilling of 9 air-core investigation drillholes, 14 observation wells and five production wells occurred between 7 December 2005 and 10 March 2006. Production wells were drilled as close as practical to the sites of air-core investigation drillholes, from which strata samples enabled well design. Geophysical logging was undertaken on all production wells, however composite well logs have not been included in this report (LAS files are available from DWLBC Technical Services).

The locations of the drillholes and wells are shown on Figure 3. This figure also indicates the modelled location of the Concept SIS design production wells that will need to be progressively constructed during the first 30 years of SIS operation. Summary details of the drilling results are given in Table 2, with site objectives given in Table 3 and air-core drilling details given in Table 4.

Table 2. Summary details of drilling activities

Item	Floodplain Priority Drilling		In-River EC Reduction Drilling	
	Quantity drillholes/wells	*Metres*	*Quantity drillholes/wells*	*Metres*
Air-core holes	4	137	5	257.5
Production wells	1	24	4	181
Observation well sites	8	132	6	194

5.2 WELL CONFIGURATION

Three pumping test sites (production wells SMP1, SMP2, CMP1) were drilled on the highland in South Murtho where access to the floodplain is difficult and SIS construction may be uneconomic (due to steep cliffs and general logistics). Each production well was coupled with a single observation well located at a nominal radial distance of ~175 m (based on the modelled Concept SIS design wellfield where production wells were separated by ~350 m). This approach was adopted in response to funding constraints and the fact that highland observation wells are more expensive than floodplain observation wells due to the greater depth involved.

Two pumping test sites were drilled at Woolenook Bend on the floodplain in Central Murtho. No highland drilling was undertaken in this region as a long-term constant rate discharge test was conducted on the highland in 2004 (Stadter, 2005). Production well CMP4 was drilled to investigate floodplain health issues while production well CMP2 was drilled to investigate potential SIS design. Production well CMP4 included a pair of nested observation wells, CMO7S (shallow) and CMO7D (deep) to investigate potential groundwater salinity stratification at different depth intervals within the floodplain.

Table 3. Objectives of drilling

Permit number	Name	Site Objective
110011	CMA2	Air-core hole for floodplain hydrostratigraphy and implicit hydraulic conductivity definition
N/A	CMO7A	Air-core hole to top of Pata Formation for subsequent nested piezometer site
N/A	CMO9A	Air-core hole to top of Pata Formation to define floodplain hydrostratigraphy
N/A	CMP1A	Air-core hole to top of Pata Formation to aid hydrostratigraphy and production well design
N/A	CMP2A	Air-core hole to top of Pata Formation to aid hydrostratigraphy and production well design
N/A	CMP4A	Air-core hole to top of Pata Formation to aid hydrostratigraphy and production well design
N/A	SMO3A	Air-core hole to top of Pata Formation to define floodplain hydrostratigraphy
N/A	SMP1A	Air-core hole to top of Pata Formation to aid hydrostratigraphy and production well design
N/A	SMP2A	Air-core hole to top of Pata Formation to aid hydrostratigraphy and production well design
110007	SMP1	Pumping test site. Potential SIS production well
110008	SMO1	Potential midpoint observation well and piezometer associated with SMP1 pumping test site
110006	SMP2	Pumping test site. Potential SIS production well
110005	SMO2	Potential midpoint observation well and piezometer associated with SMP2 pumping test site
110004	SMO3	Observation well which forms a transect through the highland
110014	CMP1	Pumping test site. Potential SIS production well
110013	CMO1	Potential midpoint observation well and piezometer associated with SMP1 pumping test site
110001	CMP2	Pumping test site. Potential SIS production well
110000	CMO2	Piezometer designed for ~30 m radius from CMP2 production well site
109994	CMO4	Creates transect through highland potentially giving reconciliation to groundwater flow paths
109990	CMO7s	Piezometer for watertable definition and investigation of potential vegetation response
109991	CMO7d	Deeper piezometer for investigation of groundwater salinity stratiphication with depth
109993	CMO8	Piezometer designed for ~40 m radius from CMP4 production well site
110009	CMO9	Piezometer designed for ~400 m radius from CMP4 production well site
110010	CMP4	Pumping test site. Potential floodplain dewatering production well
110003	EF1	Watertable observation well for refinement of potential floodplain dewatering areas
110002	EF2	Watertable observation well for refinement of potential floodplain dewatering areas
109992	EF5	Watertable observation well for refinement of potential floodplain dewatering areas
109995	EF7	Watertable observation well for refinement of potential floodplain dewatering areas

Table 4. Air-core drilling details

			SUMMARY					CONSTRUCTION		
Permit number	**Unit number**	**Name**	**Easting**[1]	**Northing**[1]	**Ground El**[2] (m AHD)	**Max depth drilled** (m)	**Final depth** (m)	**Drilling method**[3]	**Drilling diameter** (mm)	**Comments**
110011	7029-2223	CMA2	478679.59	6229685.48	18.693	29.0	0.000	RTA	90	Investigation air hole only.
N/A	7029-2224	CMO7A	479213.27	6229622.79	18.314	42.0	0.000	RTA	90	Investigation air hole, permit not required. Sampled under PN 109990.
N/A	7029-2225	CMO9A	479724.97	6229338.36	17.801	43.0	0.000	RTA	90	Investigation air hole, permit not required. Sampled under PN 110009.
N/A	7029-2226	CMP1A	480939.99	6224459.62	49.294	68.0	0.000	RTA	90	Investigation air hole, permit not required. Sampled under PN 110014.
N/A	7029-2227	CMP2A	481630.64	6226250.83	17.355	17.5	0.000	RTA	90	Investigation air hole, permit not required. Sampled under PN 110001.
N/A	7029-2228	CMP4A	479366.05	6229534.10	18.100	23.0	0.000	RTA	90	Investigation air hole, permit not required. Sampled under PN 110010.
N/A	7029-2229	SMO3A	480036.35	6222628.71	16.876	36.0	0.000	RTA	90	Investigation air hole, permit not required. Sampled under PN 110004.
N/A	7029-2230	SMP1A	480008.05	6220686.17	48.383	72.0	0.000	RTA	90	Investigation air hole, permit not required. Sampled under PN 110007.
N/A	7029-2231	SMP2A	480250.99	6222476.58	43.487	64.0	0.000	RTA	90	Investigation air hole, permit not required. Sampled under PN 110006.

Table 5. Well completion details

			SUMMARY					CONSTRUCTION			CASING			COMPLETION				GRAVEL PACK		CEMENT		DEVELOPMENT		
Permit number	**Unit number**	**Name**	**Easting**[1]	**Northing**[1]	**Ground El**[2] (m AHD)	**Ref El** (m AHD)	**Ref point**[4]	**Max depth drilled** (m)	**Drilling diameter**[5] (mm)	**Completed depth** (m)	**Cased from surface to** (m)	**Casing ID** (mm)	**Casing comment**	**Production Interval**	**Interval** (m)	**Aperture** (mm)	**Sump interval** (m)	**Interval** (m)	**Type**[6]	**Cement interval** (m)	**Method**[7]	**Time**[8] (hours)	**Yield** (L/S)	**Final SWL** (as DTW from ref point)
110007	7029-2203	SMP1	480007.06	6220690.00	48.426	48.352	REF	60.0	356	57.5	42.5	200	Class 12 PVC	Slotted casing	42.5–55.7	1.0	55.7–57.7	39–60	8:16	33–39	TREM	1	2:24	31.88
110008	7029-2204	SMO1	479947.11	6220853.38	48.037	49.144	STP	50.0	200	49	36.0	80	Class 12 PVC	Slotted casing	36–48	1.0	48–49	30–50	8:16	0–30	TREM	1	N/A	32.7
110006	7029-2205	SMP2	480254.25	6222480.69	43.472	43.659	REF	52.0	343	49	35.0	200	Class 12 PVC	Slotted casing	35–47	0.5	47–49	29.5–52	16:30	23.5–29.5	TREM	1	2:24	27.04
110005	7029-2206	SMO2	480218.43	6222666.59	46.999	48.144	STP	50.0	200	46	33.0	80	Class 12 PVC	Slotted casing	33–45	1.0	45–46	28.5–50	8:16	0–28.5	TREM	1	N/A	31.58
110004	7029-2207	SMO3	480043.08	6222633.96	17.144	18.205	STP	15.0	200	15	5.0	80	Class 12 PVC	Slotted casing	5–14	1.0	14–15	3.5–15	8:16	0–3.5	GRAV	1	N/A	1.99
110014	7029-2208	CMP1	480942.03	6224466.29	49.148	49.469	REF	55.0	343	52	42.0	200	Class 12 PVC	Slotted casing	42–50	1.0	50–52	34–55	8:16	28–34	TREM	1.5	0.1	32.78
110013	7029-2209	CMO1	480879.88	6224227.99	48.698	49.579	STP	48.0	200	47	37.0	80	Class 12 PVC	Slotted casing	37–46	1.0	46–47	34–48	8:16	0–34	TREM	0.83	N/A	32.805
110001	7029-2210	CMP2	481630.11	6226255.07	17.371	17.655	REF	14.0	343	13	7.0	200	Class 12 PVC	Slotted casing	7–11	1.0	11–13	5.1–14	8:16	0–5.1	GRAV	0.5	4.0	1.44
110000	7029-2211	CMO2	481610.49	6226274.48	17.482	18.569	STP	15.0	200	15	7.0	80	Class 12 PVC	Slotted casing	7–14	1.0	14–15	5.5–15	8:16	0–5.5	GRAV	1	N/A	2.35
109994	7029-2212	CMO4	481498.05	6228064.29	17.949	19.023	STP	16.0	200	16	9.0	80	Class 12 PVC	Slotted casing	9–15	1.0	15–16	7–16	8:16	0–7	GRAV	0.58	1.5	N/A
109990	7029-2213	CMO7s	479214.92	6229623.23	18.314	19.299	STP	12.0	200	10	7.0	80	Class 12 PVC	Slotted casing	7–9	1.0	9–10	5.5–12	8:16	0–5.5	GRAV	0.5	N/A	3.695
109991	7029-2214	CMO7d	479212.67	6229624.05	18.261	19.341	STP	34.0	200	32	28.0	80	Class 12 PVC	Slotted casing	28–31	1.0	31–32	26.4–34	8:16	0–26.4	TREM	1.16	0.3	3.6
109993	7029-2215	CMO8	479333.43	6229555.01	18.059	19.144	STP	20.0	200	19	15.0	80	Class 12 PVC	Slotted casing	15–18	1.0	18–19	12.7–20	8:16	0–12.7	GRAV	0.58	N/A	3.55
110009	7029-2216	CMO9	479731.90	6229343.30	17.877	19.013	STP	16.0	200	15	11.0	80	Class 12 PVC	Slotted casing	11–14	1.0	14–15	7–16	8:16	0–7	GRAV	0.66	1.0	3.34
110010	7029-2217	CMP4	479361.37	6229527.84	17.991	18.277	REF	24.0	343	22	9.0	200	Class 12 PVC	Slotted casing	9–20	1.0	20–22	6.5–24	8:16	0–6.5	GRAV	0.58	7.0	2.68
110003	7029-2218	EF1	480322.44	6224514.68	17.464	18.651	STP	14.0	200	13	9.0	80	Class 12 PVC	Slotted casing	9–12	1.0	12–13	5.2–14	8:16	0–5.2	GRAV	0.75	N/A	N/A
110002	7029-2219	EF2	479586.55	6224620.36	17.225	18.402	STP	11.0	200	10	6.0	80	Class 12 PVC	Slotted casing	6–9	1.0	9–10	5–11	8:16	0–5	GRAV	0.66	1.5	N/A
109992	7029-2220	EF5	477240.73	6229773.79	18.047	19.117	STP	11.0	200	10	6.0	80	Class 12 PVC	Slotted casing	6–9	1.0	9–10	4.7–11	8:16	0–4.7	GRAV	0.5	0.8	N/A
109995	7029-2221	EF7	481114.31	6228817.56	16.837	17.977	STP	14.0	200	13	9.0	80	Class 12 PVC	Slotted casing	9–12	1.0	12–13	4–14	8:16	0–4	GRAV	0.5	N/A	N/A

Note 1 – GDA 94 MGA Zone 54

Note 2 – Surveyed by Allsurv on 2/6/06 using Survey Grade Real Time Kinematic GPS

Note 3 – Drilled using Rotary Air Technique

Note 4 – Top of Standpipe (STP) or other defined Reference Point (REF)

Note 5 – Drilled using Rotary Mud Technique

Note 6 – 16/30 Gravel pack grainsize range is ~ 0.5 to 1.2 mm, 8/16 Gravel pack grainsize range is ~ 1 to 2.5 mm

Note 7 – Placement Method is either through Tremie line or by Gravity

Note 8 – Time spent Airlifting well

5.3 WELL CONSTRUCTION

Production and observation well construction details are summarised in Table 5. Without exception, all observation wells were completed to the following specification:

- 80 mm (ID) Class 12 swelled joint PVC casing.
- 1 mm aperture slotted casing.
- 8/16 (1 to 2.5 mm) gravel pack.
- Cemented to surface using tremie line (or gravity method where grouting was only required to within a couple of metres from natural surface).
- Wellhead completed with a galvanised, lockable standpipe.

With the exception of SMP2, all production wells were completed to the following specification:

- 200 mm (ID) Class 12 swelled joint PVC casing.
- 1 mm aperture slotted casing was chosen for the production zone to keep project cost to a minimum, as compared to installing wire-wound screens.
- 8/16 (1–2.5 mm) gravel pack.
- Floodplain sites cemented to surface, with a minimum of a 6 m cement plug used on highland sites (where the Loxton sands is unconfined) above the gravel pack.
- Wellhead completed with PVC Ring and lockable steel flange plate.

Due to the fine nature of the aquifer, SMP2 was completed with a 0.5 mm aperture slotted casing and 16/30 (0.5–1.2 mm) gravel pack.

5.4 GROUNDWATER SALINITY

Groundwater samples were collected from all wells for salinity determination. Results from each completed well are listed in the Drillhole Logs provided in Appendix A. Results obtained during pumping tests are provided in Appendix B.

In August 2006, DWLBC conducted a comprehensive groundwater salinity review of wells completed in the Pike–Murtho region to assist in refining the Pike–Murtho numerical groundwater model. The States groundwater database (SAGeodata) and historic data from microfiche was also revisited and groundwater salinity values were classified on the quality of available data. Wells in areas adjacent to the River Murray were grouped according to the numerical model flow budget zones (which had previously been assigned salinity values through a similar but less rigorous process). The review included groundwater salinity data obtained from the six new highland wells (completed in the Loxton Sands) and 13 floodplain wells (completed in the Monoman Formation), which were drilled during the current investigations.

Appendix C provides the details of the zones created and wells investigated as part of the groundwater salinity review. Full details of the groundwater salinity review are given in the groundwater modelling report, (Yan et al, 2006).

With reference to Appendix C the following general comments can be made in relation to groundwater salinity observed in Murtho:

1. Through the greater part of Central Murtho, groundwater sampled in the Loxton Sands has a mean salinity value of 33 230 mg/L.
2. North of this, towards Murtho Park and beyond (where there is less data overall), mean observed groundwater salinity values range from 26 526 up to 30 032 mg/L.
3. At South Murtho, where there is also less available data, observed groundwater salinity values indicate a mean of 23 898 mg/L.
4. In the floodplain at Woolenook Bend, observed groundwater salinity values are much higher, resulting from evapo-concentration, with a mean of 41 279 mg/L.
5. At the nested floodplain site, CMO7D recorded groundwater salinity of 38 990 mg/L from the interval 28–31 m, while CMO7S provided 40 040 mg/L from the interval 7–9 m.

5.5 GROUNDWATER OBSERVATION NETWORK

The 14 observation wells drilled during the 2005–06 investigation program have been surveyed and added to the Pike–Murtho Groundwater Observation Network. Groundwater levels will be collected every three months, with an expected increased frequency in the event of a natural flood. There is presently no regular groundwater salinity monitoring occurring in the region, however this may change following the construction of the Murtho SIS. Table 6 details the observation wells and the observation number assigned to each well.

Table 6. Observation well number assignment

Completed well	Unit number	Permit number	Observation well number
SMO1	7029-2204	110008	MTH 24
SMO2	7029-2206	110005	MTH 25
SMO3	7029-2207	110004	MTH 26
CMO1	7029-2209	110013	MTH 27
CMO2	7029-2211	110000	MTH 28
CMO4	7029-2212	109994	MTH 29
CMO7s	7029-2213	109990	MTH 30
CMO7d	7029-2214	109991	MTH 31
CMO8	7029-2215	109993	MTH 32
CMO9	7029-2216	110009	MTH 33
EF1	7029-2218	110003	MTH 34
EF2	7029-2219	110002	MTH 35
EF5	7029-2220	109992	MTH 36
EF7	7029-2221	109995	MTH 37

5.6 GENERAL COMMENTS ON GEOLOGY

While the majority of the 2005–06 investigation program did not reveal any previously unexpected geological medium, there are some minor issues to note concerning regional stratigraphy, interpretation and the conceptual hydrogeological model.

Drilling, particularly across the Woolenook Floodplain, indicates the existence of thick sequences of saturated sand aquifers. CMO9A for example, intersected sand dominated lithologies from 4–34 m. While it can be very difficult to distinguish the difference between the Monoman Formation and potential underlying Lower Loxton Sands using standard field equipment, it is envisaged that the Monoman Formation would have poorer sorting, a slightly larger grainsize (depending on location) with an absence of mica.

However, if the riverine depositional environment had reworked the Lower Loxton Sands it could be easily misinterpreted for the Monoman Formation sands. For example, the stratigraphic sequence occurring in observation well CMO9 could be re-interpreted as 4–17 m Monoman Formation overlying 17–34 m Lower Loxton Sands. The transition into a relatively thick grey clay unit beneath these sands, and subsequently into the Bookpurnong Beds, was also quite similar in transition to the Lower Loxton Clays found in the highland region above the Bookpurnong Beds.

The other two air-core investigation drillholes on Woolenook Floodplain, CMO7 and CMA2 encountered similar lithologies, with problems occurring at CMA2 where the thickness of sand and gravels, and potentiometric head of water, prevented further drilling with compressed air only. Given the nature of the floodplain depositional environment, the locations of the sites drilled and width of the Woolenook Floodplain, it could be possible that large sequences of sands occur in thick paleo-channels.

6. PUMPING TESTS

Groundwater Technical Services (DWLBC) conducted step drawdown tests on the five production wells (SMP1, SMP2, CMP1, CMP2 and CMP4), and constant rate discharge tests on two of the production wells (CMP2 and CMP4) in April 2006. Test details are given in Table 7 with site plans given in Figures 4–8. Data from the tests are provided in Appendix D and plotted in Figures 9–13. Analysis and interpretation of the pumping tests is beyond the scope of this data report.

Table 7. Pumping test details

Project No.	Production aquifer	Date	Test Type[1]	Step	Dur. (min)	Q (L/s)	Purpose[2]
SMP2	Loxton Sands	27/04/2006	Step Drawdown	1	100	0.1	Well equation
CMP1	Loxton Sands	3/05/2006	Step Drawdown	1	100	0.1	Well equation
				2	100	0.15	
				3	100	0.2	
				4	100	0	Recovery
SMP1	Loxton Sands	4/05/2006	Step Drawdown	1	100	0.1	Well equation
				2	50	0.15	
				3	170	0	Recovery
CMP4	Monoman Formation	24/05/2006	Step Drawdown	1	100	3	Well equation and rate for constant rate test
				2	100	5	
				3	100	7	
				4	100	10	
				5	100	0	Recovery
CMP4	Monoman Formation	25/05/2006	Constant Rate	1	4320	7	Hydraulic properties
				2	200	0	Recovery
CMP2	Monoman Formation	1/06/2006	Step Drawdown	1	100	1.5	Well equation and rate for constant rate test
				2	100	3	
				3	100	4.5	
				4	100	6	
				5	100	0	Recovery
CMP2	Monoman Formation	2/06/2006	Constant Rate	1	4410	4	Hydraulic properties
				2	160	0	Recovery
CMP2	Monoman Formation	6/06/2006	Step Drawdown	1	100	1.5	Well equation
				2	100	3	
				3	100	4.5	
				4	100	6	
				5	100	0	Recovery

Note 1 – Refers to the type of pumping test that was proposed for each production well

Note 2 – Whether or not obtainable, this is the purpose for conducting the pumping test

All three of the highland pumping tests failed to support any operable pumping rate that could have been utilised for a constant rate discharge test. While there is limited evidence indicating that these wells may have been incorrectly completed, it is anticipated that the anomalously low yields from all three wells were not solely a product of the sediments occurring at each site. While slotted casing was used in preference to the installation of wire-wound screens due to funding constraints, future decisions regarding well completions in the region will need to be carefully considered, based on the findings of 2005–06 investigation program. See Figure 14 for the maximum yield available from production well SMP2.

6.1 OPERATIONAL ISSUES DURING PUMPING TESTS

6.1.1 SMP2 STEP DRAWDOWN TEST

This test had been proposed to extend into a second step, however the test had to be abandoned at the end of the first step due to a lack of available drawdown and poor well performance (see Fig. 12). No measurable drawdown was recorded at observation well SMO2 during or after testing.

6.1.2 SMP1 STEP DRAWDOWN TEST

This test was terminated half way through the second step due to the lack of available drawdown (see Fig. 13). No measurable drawdown was recorded at observation well SMO1 during or after testing.

6.1.3 CMP2 CONSTANT RATE DISCHARGE TEST

This test ran without any noticeable problems until recovery was noticed at the pumping well after 900 minutes. The test was run for three days, and then 160 minutes of recovery data was collected. It was subsequently decided to repeat the step drawdown test at the same rates, as recovery was most likely occurring due to further development of the production well during the test (see Figs 10.1–10.4). A final groundwater sample was submitted for full chemical analysis, the results are given in Appendix E.

6.1.4 CMP2 SECOND STEP DRAWDOWN TEST

This test was completed at the same pumping rates as the initial step drawdown test. Keeping in mind that there was a small amount of residual drawdown from the constant rate test, it is apparent from the second test that the drawdown developed at the pumping well is noticeably less (while drawdown developed at observation well CMO2 during both tests was relatively equal), indicating that development has occurred since the first step drawdown test (see Fig. 10.4).

7. CONCLUSIONS AND RECOMMENDATIONS

The 2005–06 investigation program has provided 925 m of valuable sub-surface data in the Murtho region, from nine air-core stratigraphic holes, 14 observation wells, and five production wells.

All well information has been entered in the hydrogeological database, SAGeodata, and is freely available on the internet through the online Drillhole Enquiry System found at: https://info.pir.sa.gov.au/des/desHome.html.

The following conclusions and recommendations are made in relation to the in-river EC reduction program:

1. The groundwater salinity review DWLBC conducted in August of 2006 (Yan et al. 2006) is considered the most comprehensive review of groundwater salinities within the Murtho region to date.

2. The observation wells that have been drilled during the investigation program will provide key data for more accurate definition of watertable contours for the Monoman Formation and Loxton Sands. *Recommendation – Further gap analysis of the observation network. There may be a further requirement for the drilling of additional observation wells completed in the Murray Group Limestone.*

3. The lithological and stratigraphic data obtained during the investigation program has provided valuable sub-surface data in the Murtho region. *Recommendation – In order to improve the conceptual hydrogeological model draw at least two hydrogeological cross-sections to delineate the relative position of potential Lower Loxton Sands and Lower Loxton Clays within the Woolenook floodplain. Changes to the conceptual hydrogeological model may need to be replicated in the numerical groundwater model.*

4. Due to time constraints, the analysis and interpretation of the data obtained from the pumping tests has not been presented in this report. *Recommendation –Pumping tests be analysed and interpreted to gain further knowledge of the hydraulic behaviour of production wells and aquifer hydraulic parameters. The outcome of this is likely to influence the design of production wells, particularly in relation to screen options. Aquifer hydraulic parameters must be checked for consistency with those used in the numerical groundwater model.*

5. If there are any significant inconsistencies between the results of these investigations, in terms of aquifer geometry or aquifer hydraulic parameters, and the numerical groundwater model, a decision will need to be made as to whether there will need to be alterations made to the model.

6. Sediment samples exist on which geochemical analyses can be undertaken to assist with evaluating the potential for acidification and aluminium clogging in the Murtho region.

   Recommendation –
   - *Collation and review of hydrochemistry data from the four pumping tests conducted by DWLBC in 2004 and two pumping test sites in 2005–06.*
   - *Desktop mapping of the presence and extent of sulphide minerals and lignitic sediments known to occur in the Pike–Murtho region within the Loxton Sands.*
   - *Select samples for Scanning Electron Microscope (SEM) analyses of air-core sediment samples to support the identification and mapping of sulphide minerals.*

The following conclusions and recommendations are made in relation to the Floodplain Dewatering Program:

1. With respect to point four above, until analysis of well and aquifer hydraulics has been completed for both of the floodplain pumping test sites, conceptual abstraction rates and drawdown associated with floodplain dewatering cannot be quantified.
   Recommendation – Analysis of well and aquifer hydraulics.

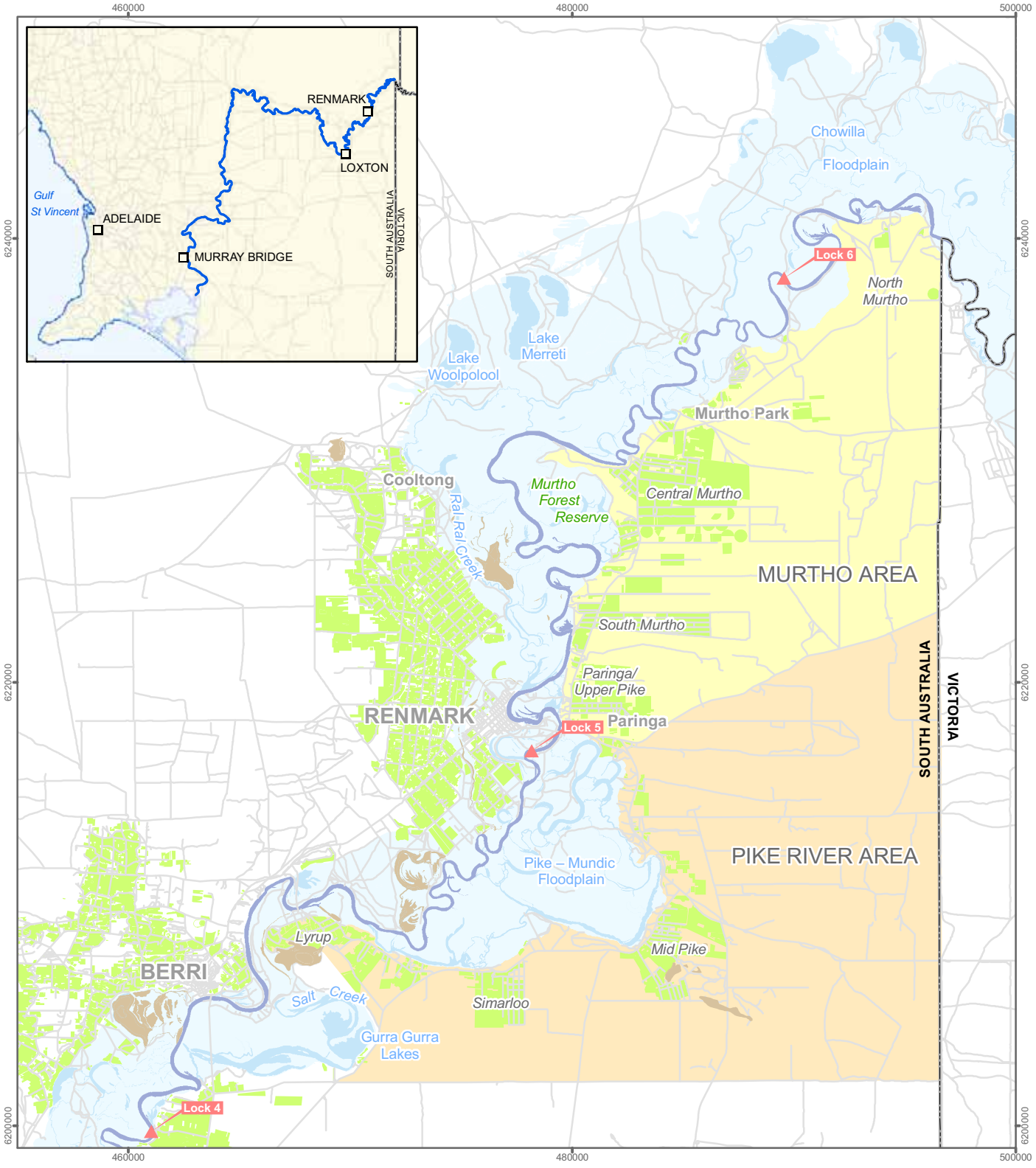
2. Until local numerical groundwater models are created, qualification/quantification of the extent of aquifer flushing resulting from the lowering of groundwater levels and induced low salinity flow into the floodplain is not possible. Even if such effects are modelled, the outputs will still be of little value until they are further used in a tool such as the Commonwealth Scientific and Industrial Research Organisations (CSIRO) Weighted INDex of Salinization (WINDS) model.

   Recommendation – Numerical groundwater modelling in collaboration with CSIRO.

3. Final wellfield design (in terms of well locations and abstraction schedules) is beyond the scope of this data report. Until the key objectives of floodplain dewatering sites have been agreed upon by all stakeholders, wellfield design cannot proceed any further.

   Recommendation – Stakeholders interested in shaping floodplain dewatering initiatives to reach consensus on agreed objectives of dewatering sites.

8. FIGURES



- Locks
- Roads
- Wetlands
- Evaporation basins
- Murtho LWMP
- Pike River LWMP
- Irrigated areas (2003)
- River Murray Floodplain (1956 flood extent)

N

0 1 2 3 4 5 Kilometres

PRODUCED BY: River Murray SIS Group, DWLBC
MAP PROJECTION: MGA Zone 54
MAP DATUM: Geocentric Datum of Australia 1994
DATE: May 2007

GDA

Figure 1

Pike – Murtho Regional Location Plan

Government of South Australia
Department of Water, Land and Biodiversity Conservation

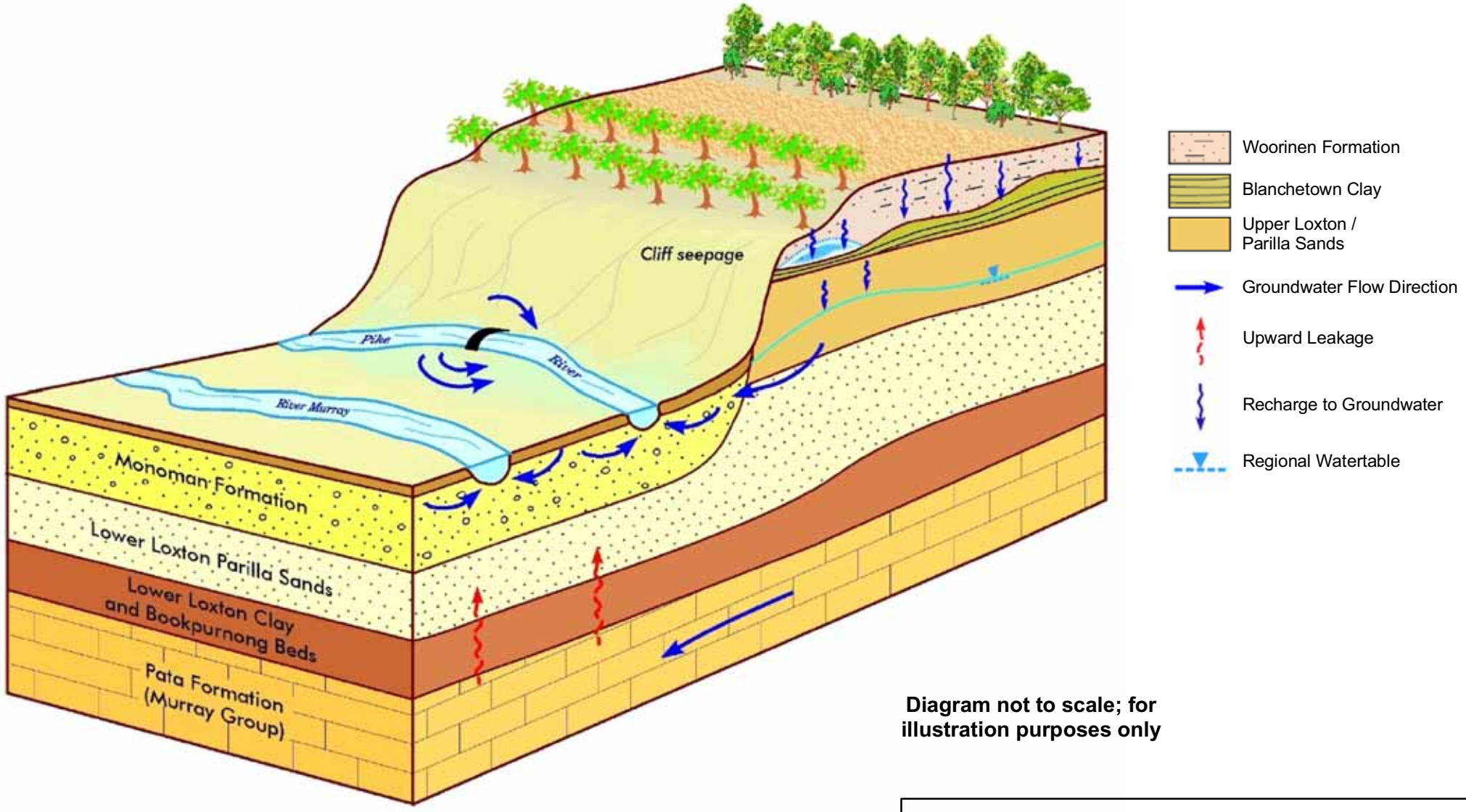


Diagram not to scale; for illustration purposes only

Figure 2

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Pike – Murtho Conceptual Hydrogeological Model

- Locks
- Roads
- Wetlands
- Evaporation basins
- Irrigated areas (2003)
- River Murray Floodplain (1956 flood extent)
- Modelled Location of SIS Concept Well

2005 – 06 Drill Site

- Aircore Hole
- Observation Well
- Production Well

N

0 0.2 0.4 0.6 0.8 1 Kilometres

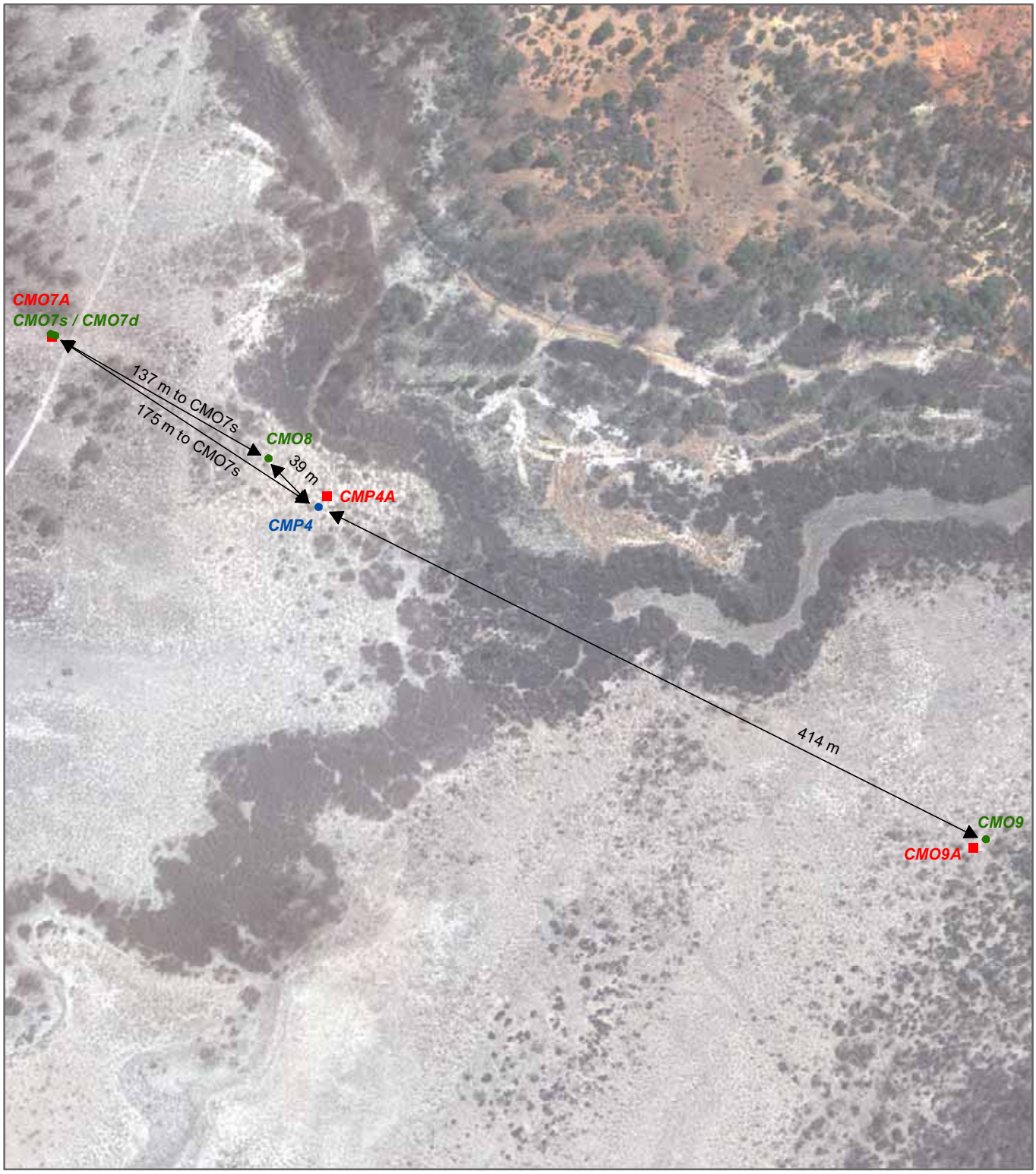
PRODUCED BY: River Murray SIS Group, DWLBC
MAP PROJECTION: MGA Zone 54
MAP DATUM: Geocentric Datum of Australia 1994
DATE: May 2007

GDA

Figure 3

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Air-core holes, Observation and Production well locations drilled in 2005 – 06



Murtho Satellite Imagery (2005)

- Red: Band 1
- Green: Band 2
- Blue: Band 3

2005 – 06 Drill Site

- Aircore Hole
- Observation Well
- Production Well

N

0 10 20 30 40 50 Metres

PRODUCED BY: River Murray SIS Group, DWLBC
MAP PROJECTION: MGA Zone 54
MAP DATUM: Geocentric Datum of Australia 1994
DATE: May 2007

GDA

Figure 4

CMP4 Pumping Test Site

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Murtho Satellite Imagery (2005)

- Red: Band 1
- Green: Band 2
- Blue: Band 3

2005 – 06 Drill Site

- Aircore Hole
- Observation Well
- Production Well

Existing Observation Well

- Observation Well

N

0 10 20 30 40 50 Metres

PRODUCED BY: River Murray SIS Group, DWLBC
MAP PROJECTION: MGA Zone 54
MAP DATUM: Geocentric Datum of Australia 1994
DATE: May 2007

GDA

Figure 5

CMP2 Pumping Test Site

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Murtho Satellite Imagery (2005)

- Red: Band 1
- Green: Band 2
- Blue: Band 3

2005 – 06 Drill Site

- Aircore Hole
- Observation Well
- Production Well

N

0 10 20 30 40 50 Metres

PRODUCED BY: River Murray SIS Group, DWLBC
MAP PROJECTION: MGA Zone 54
MAP DATUM: Geocentric Datum of Australia 1994
DATE: May 2007

GDA

Figure 6

CMP1 Pumping Test Site

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Murtho Satellite Imagery (2005)

- Red: Band 1
- Green: Band 2
- Blue: Band 3

2005 – 06 Drill Site

- Aircore Hole
- Observation Well
- Production Well

N

0 10 20 30 40 50 Metres

PRODUCED BY: River Murray SIS Group, DWLBC
MAP PROJECTION: MGA Zone 54
MAP DATUM: Geocentric Datum of Australia 1994
DATE: May 2007

GDA

Figure 7

SMP2 Pumping Test Site

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Murtho Satellite Imagery (2005)

- Red: Band 1
- Green: Band 2
- Blue: Band 3

2005 – 06 Drill Site

- Aircore Hole
- Observation Well
- Production Well

N

0 10 20 30 40 50 Metres

PRODUCED BY: River Murray SIS Group, DWLBC
MAP PROJECTION: MGA Zone 54
MAP DATUM: Geocentric Datum of Australia 1994
DATE: May 2007

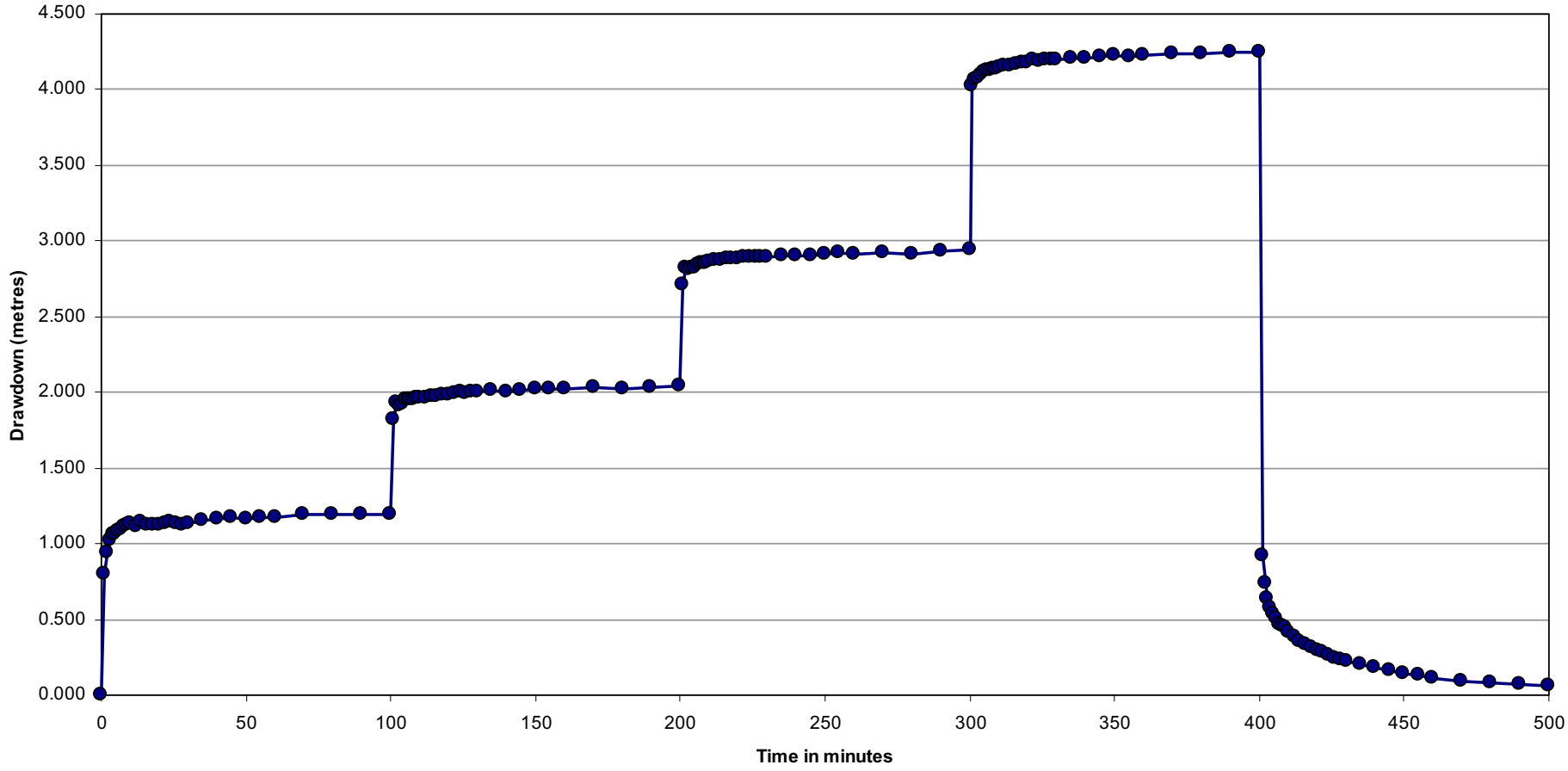
GDA

Figure 8

SMP1 Pumping Test Site

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP4
Permit Number	110010
Comment	Production Well
Completion	11m of 200mm ID Slotted Casing (1mm slots 9 - 20m, Sump 20 - 22m) with 8/16 Gravel Pack
Address	Woolenook Bend - Floodplain
Test type	4 X 100 Minute Step Test using Grundfos 9.2kW electric submersible pump
Pumping commenced	24/05/06 at 09:00
Pumping ceased	24/05/06 at 15:40
Are measurements for pumped well	Yes



Standing water level	3.090	metres below	measured point (conduit)
Standing water level	15.567	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	21.700	metres below	top of flange
Pump setting	14.3 (intake at 13.6)	metres below	top of flange
Casing height (top of flange)	0.310	metres above	ground level
Head above pump intake	10.900	metres	
Head above top of production zone	6.610	metres	
Rates	3, 5, 7 & 10	litres per second	

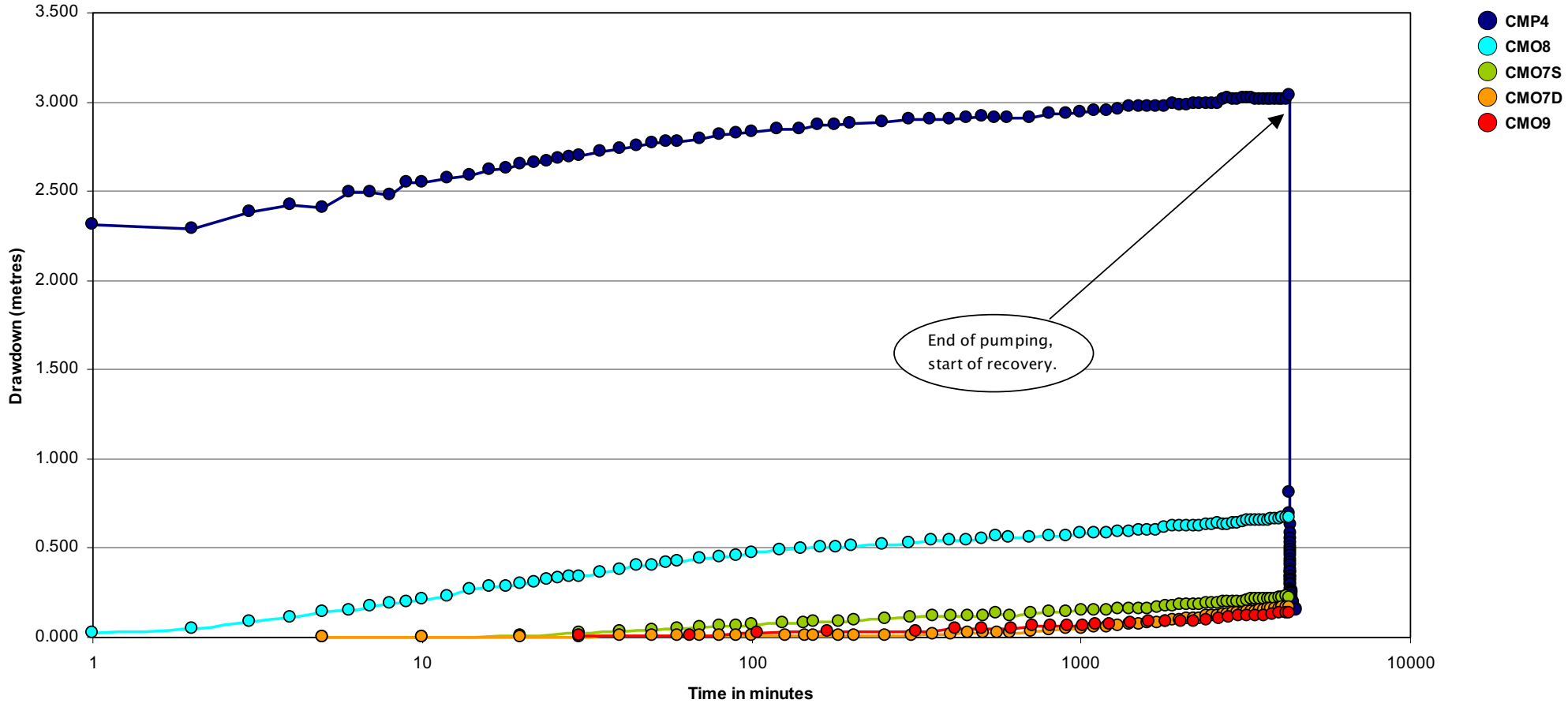
Figure

9.1

Government of South Australia
Department of Water, Land and Biodiversity Conservation

CMP4 - Step Drawdown Test
Pumping well drawdown - Linear scale

Site	CMP4
Permit Number	110010
Completion	11m of 200mm ID Slotted Casing (1mm slots 9 - 20m, Sump 20 - 22m) with 8/16 Gravel Pack
Address	Woolenook Bend - Floodplain
Test type	3-Day Constant Discharge Test - CMP4 with Grundfos 9.2kW electric submersible pump
Radial Distance of Piezometers	CMO8 (39m), CMO7s (175m), CMO7d (177m), CMO9 (414m)



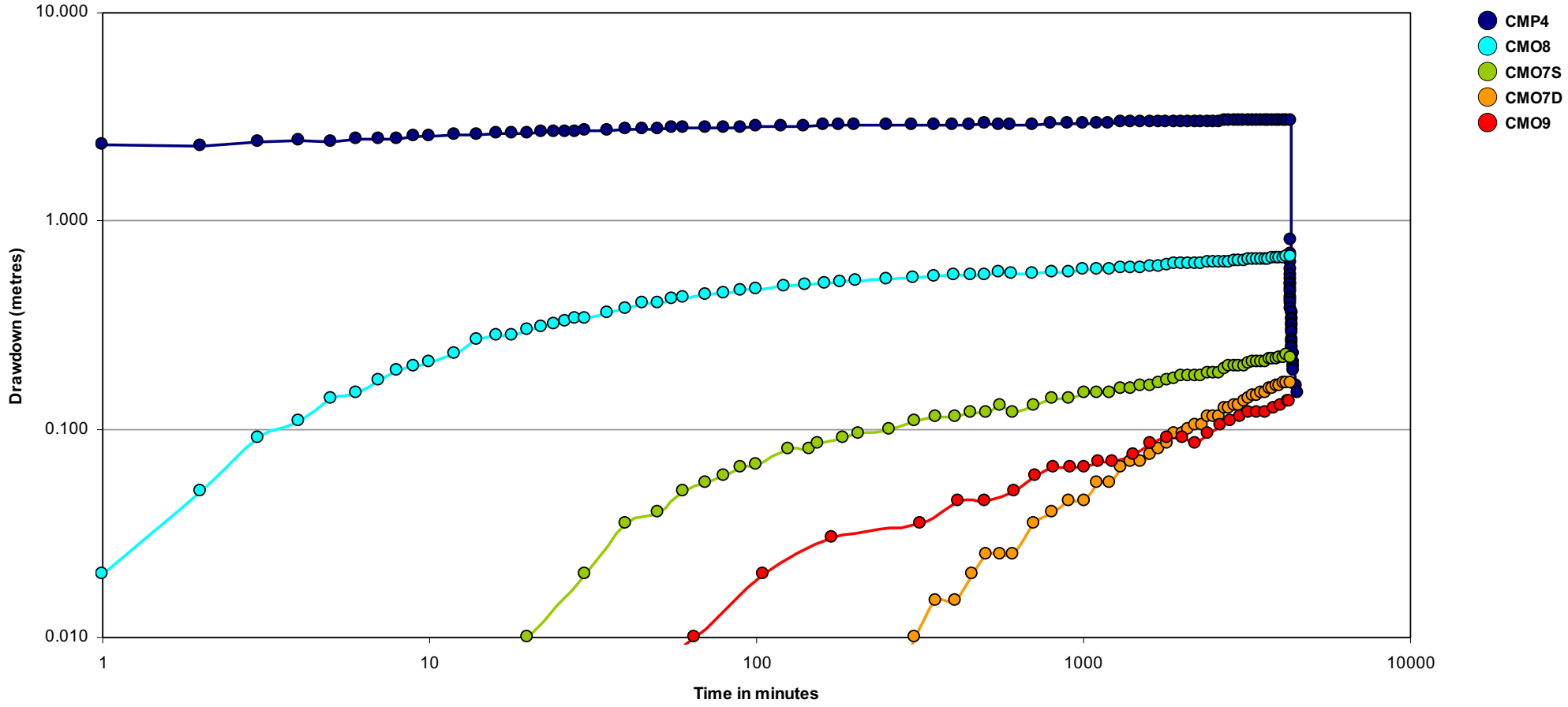
Standing water level (CMP4)	3.090	metres below	measured point (conduit)
Standing water level (CMP4)	15.567	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	21.700	metres below	top of flange
Pump setting	14.3 (intake at 13.6)	metres below	top of flange
Casing height (top of flange)	0.310	metres above	ground level
Head above pump intake	10.900	metres	
Head above top of production zone	6.610	metres	
Rates	7	litres per second	

Figure 9.2

Government of South Australia
Department of Water, Land and Biodiversity Conservation

CMP4 - Constant Rate Discharge Test
Observed Well Drawdowns - Semi Log scale

Site	CMP4
Permit Number	110010
Completion	11m of 200mm ID Slotted Casing (1mm slots 9 - 20m, Sump 20 - 22m) with 8/16 Gravel Pack
Address	Woolenook Bend - Floodplain
Test type	3-Day Constant Discharge Test - CMP4 with Grundfos 9.2kW electric submersible pump
Radial Distance of Piezometers	CMO8 (39m), CMO7s (175m), CMO7d (177m), CMO9 (414m)



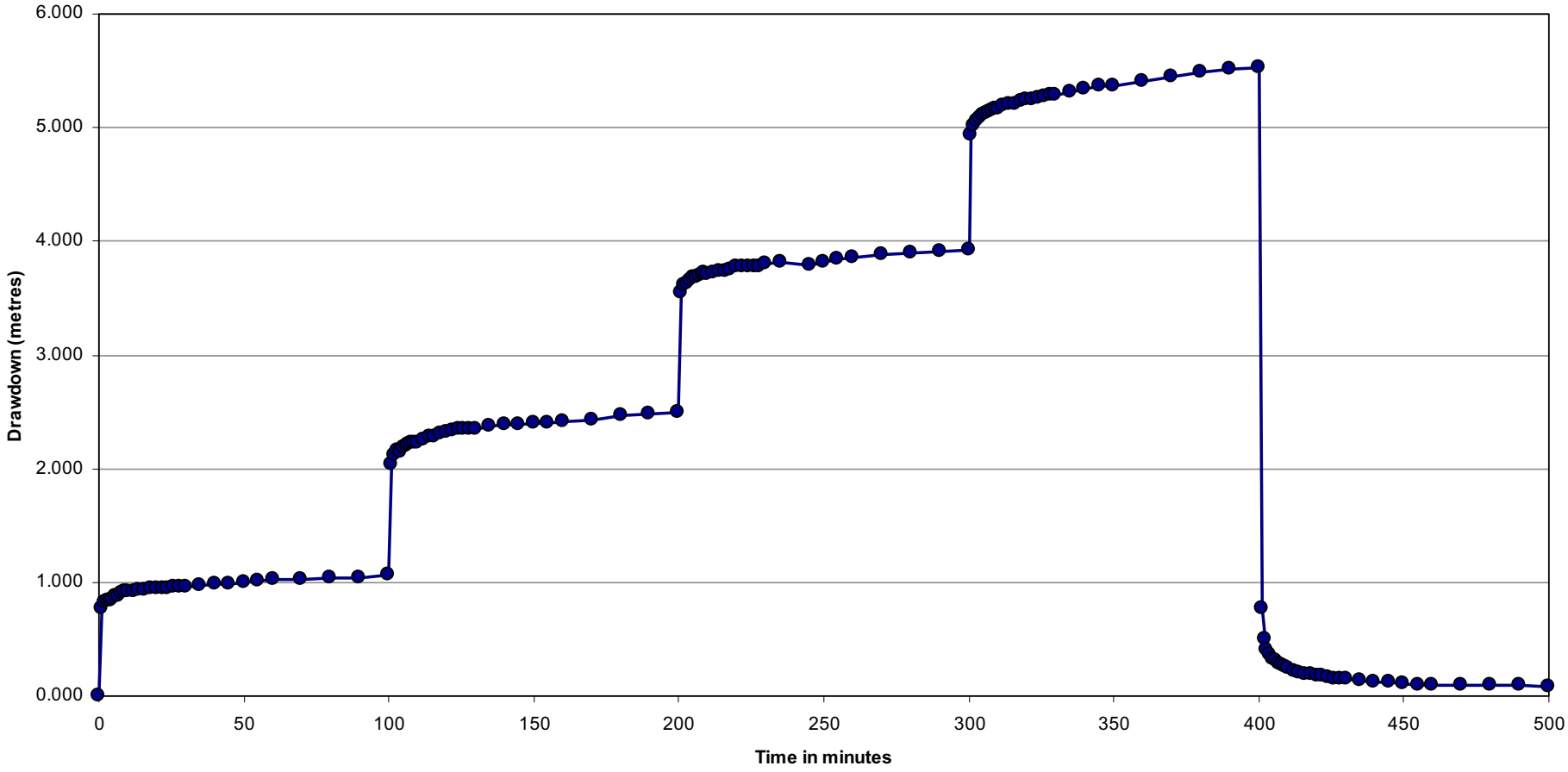
Standing water level (CMP4)	3.090	metres below	measured point (conduit)
Standing water level (CMP4)	15.567	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	21.700	metres below	top of flange
Pump setting	14.3 (intake at 13.6)	metres below	top of flange
Casing height (top of flange)	0.310	metres above	ground level
Head above pump intake	10.900	metres	
Head above top of production zone	6.610	metres	
Rates	7	litres per second	

Figure 9.3

Government of South Australia
Department of Water, Land and Biodiversity Conservation

CMP4 - Constant Rate Discharge Test
Observed Well Drawdowns - Double Log scale

Site	CMP2
Permit Number	110001
Comment	Production Well
Completion	4m of 200mm ID Slotted Casing (1mm slots 7 - 11m and Sump 11 - 13m) with 8/16 Gravel Pack
Address	Floodplain - Murtho
Test type	4 X 100 Minute Step Test using Grundfos 9.2kW electric submersible pump
Pumping commenced	01/06/06 at 09:10
Pumping ceased	01/06/06 at 15:50
Are measurements for pumped well	Yes



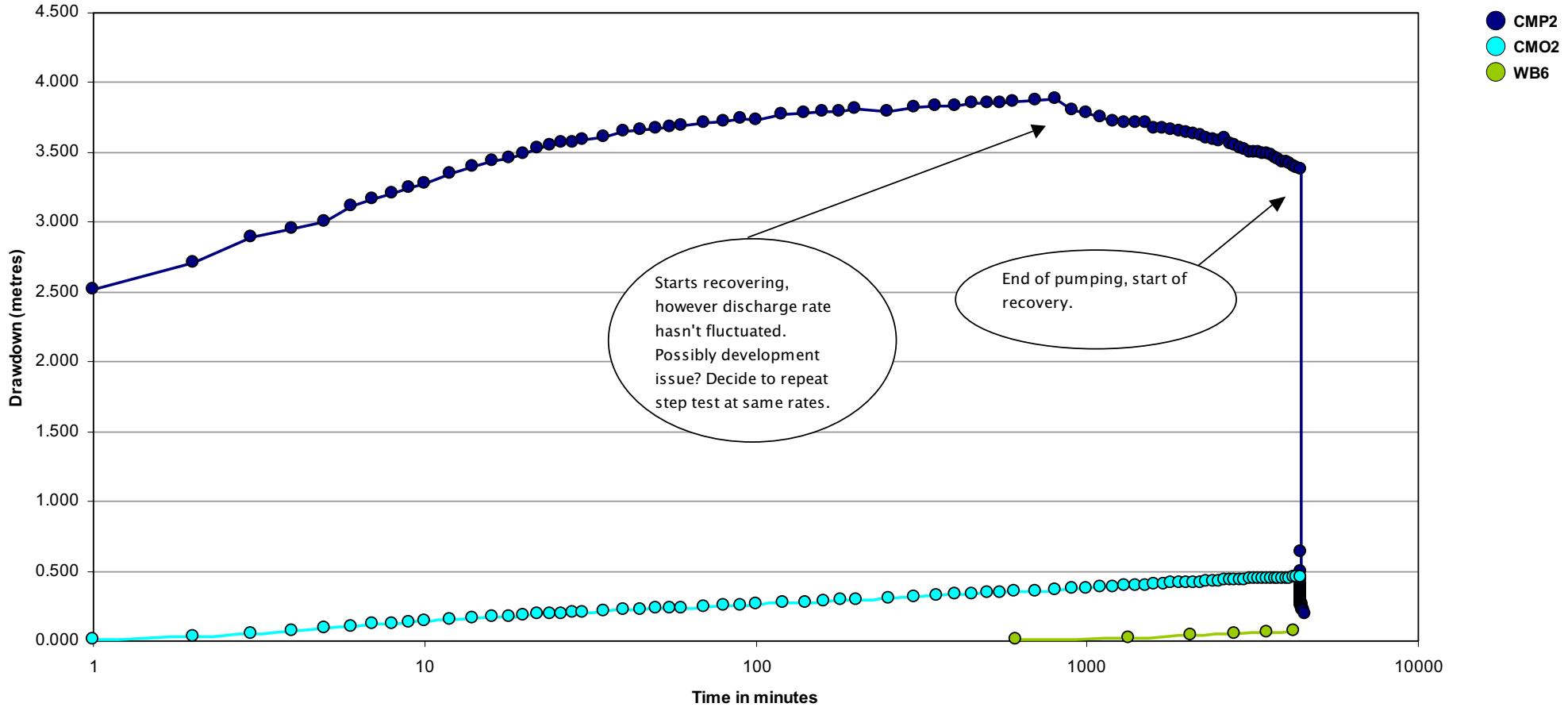
Standing water level	1.870	metres below	measured point (conduit)
Standing water level	16.185	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	13.680	metres below	top of flange
Pump setting	10.3 (intake at 9.6)	metres below	top of flange
Casing height (top of flange)	0.300	metres above	ground level
Head above pump intake	8.130	metres	
Head above top of production zone	5.830	metres	
Rates	1.5, 3, 4.5 & 6	litres per second	

Figure 10.1

Government of South Australia
Department of Water, Land and Biodiversity Conservation

CMP2 - Step Drawdown Test
Pumping well drawdown - Linear scale

Site	CMP2
Permit Number	110001
Completion	4m of 200mm ID Slotted Casing (1mm slots 7 - 11m and Sump 11 - 13m) with 8/16 Gravel Pack
Address	Floodplain - Murtho
Test type	3-Day Constant Discharge Test - CMP2 with Grundfos 9.2kW electric submersible pump
Radial Distance of Piezometers	CMO2 (28m), WB6 (271m)



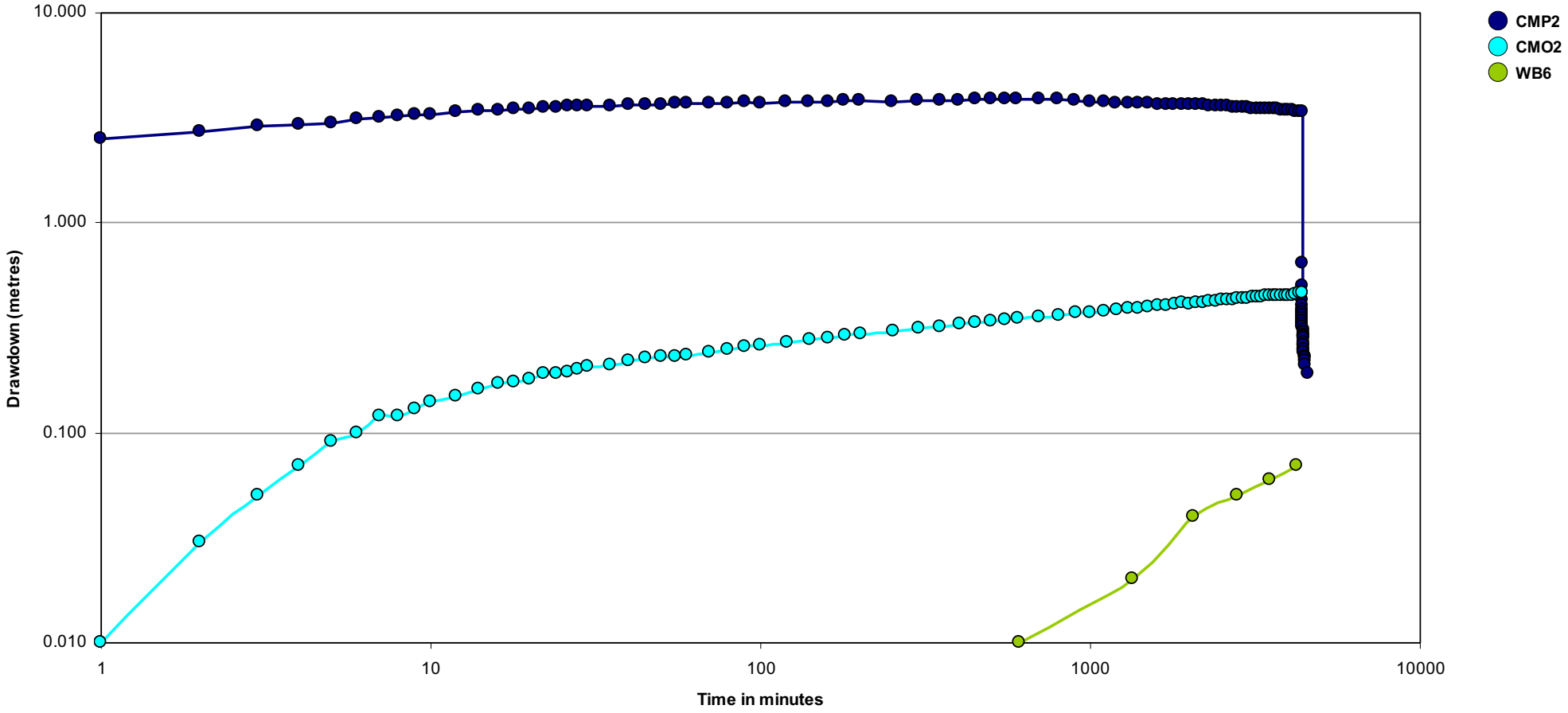
Standing water level (CMP2)	1.880	metres below	measured point (conduit)
Standing water level (CMP2)	16.175	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	13.680	metres below	top of flange
Pump setting	10.3 (intake at 9.6)	metres below	top of flange
Casing height (top of flange)	0.300	metres above	ground level
Head above pump intake	8.120	metres	
Head above top of production zone	5.820	metres	
Rates	4	litres per second	

Figure 10.2

Government of South Australia
Department of Water, Land and Biodiversity Conservation

CMP2 - Constant Rate Discharge Test
Observed Well Drawdowns - Semi Log scale

Site	CMP2
Permit Number	110001
Completion	4m of 200mm ID Slotted Casing (1mm slots 7 - 11m and Sump 11 - 13m) with 8/16 Gravel Pack
Address	Floodplain - Murtho
Test type	3-Day Constant Discharge Test - CMP2 with Grundfos 9.2kW electric submersible pump
Radial Distance of Piezometers	CMO2 (28m), WB6 (271m)



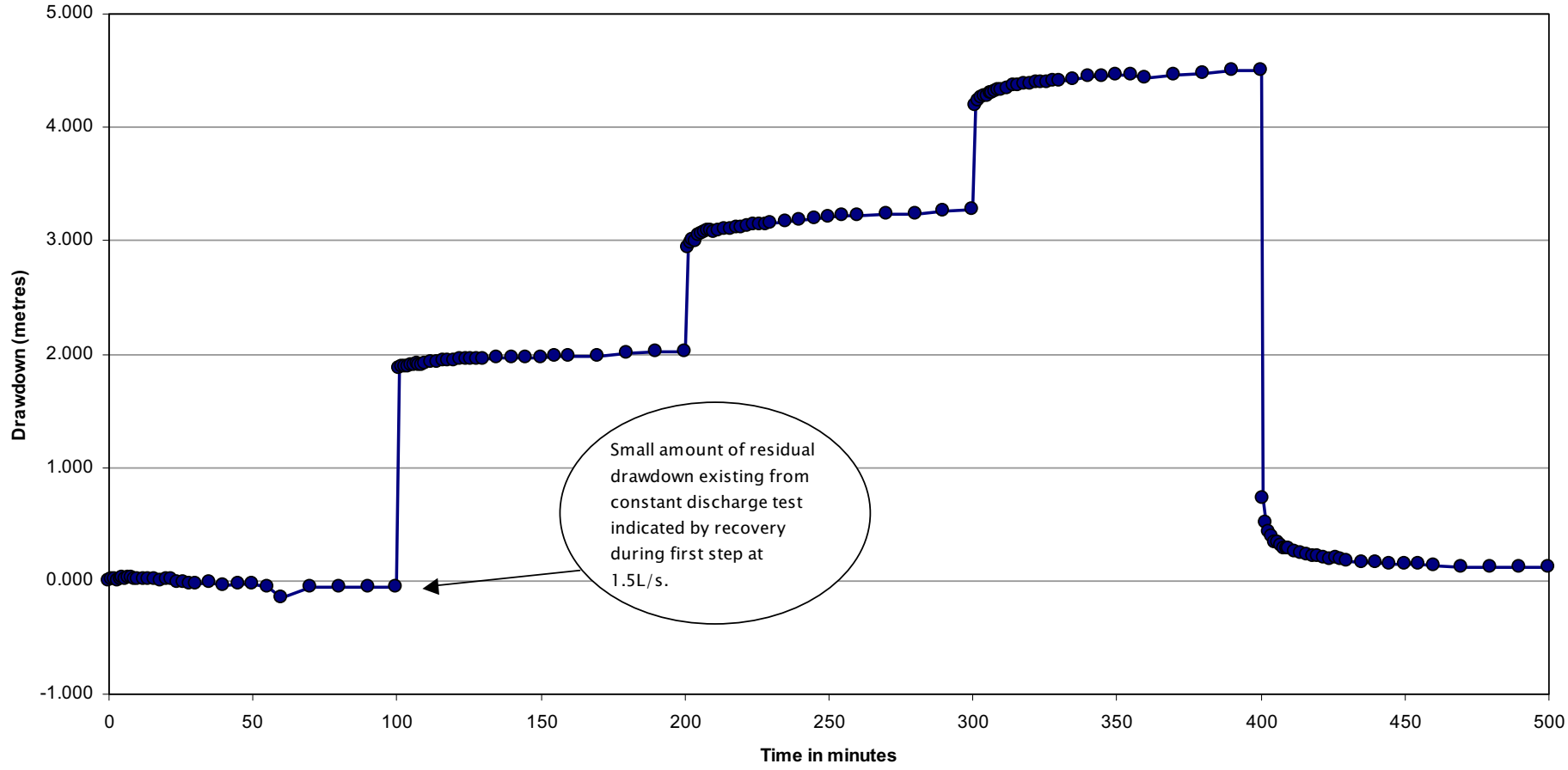
Standing water level (CMP2)	1.880	metres below	measured point (conduit)
Standing water level (CMP2)	16.175	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	13.680	metres below	top of flange
Pump setting	10.3 (intake at 9.6)	metres below	top of flange
Casing height (top of flange)	0.300	metres above	ground level
Head above pump intake	8.120	metres	
Head above top of production zone	5.820	metres	
Rates	4	litres per second	

Figure 10.3

Government of South Australia
Department of Water, Land and Biodiversity Conservation

CMP2 - Constant Rate Discharge Test
Observed Well Drawdowns - Double Log scale

Site	CMP2
Permit Number	110001
Comment	Production Well
Completion	4m of 200mm ID Slotted Casing (1mm slots 7 - 11m and Sump 11 - 13m) with 8/16 Gravel Pack
Address	Floodplain - Murtho
Test type	2nd - 4 X 100 Minute Step Test using Grundfos 9.2kW electric submersible pump
Pumping commenced	06/06/06 at 08:50
Pumping ceased	06/06/06 at 15:30
Are measurements for pumped well	Yes



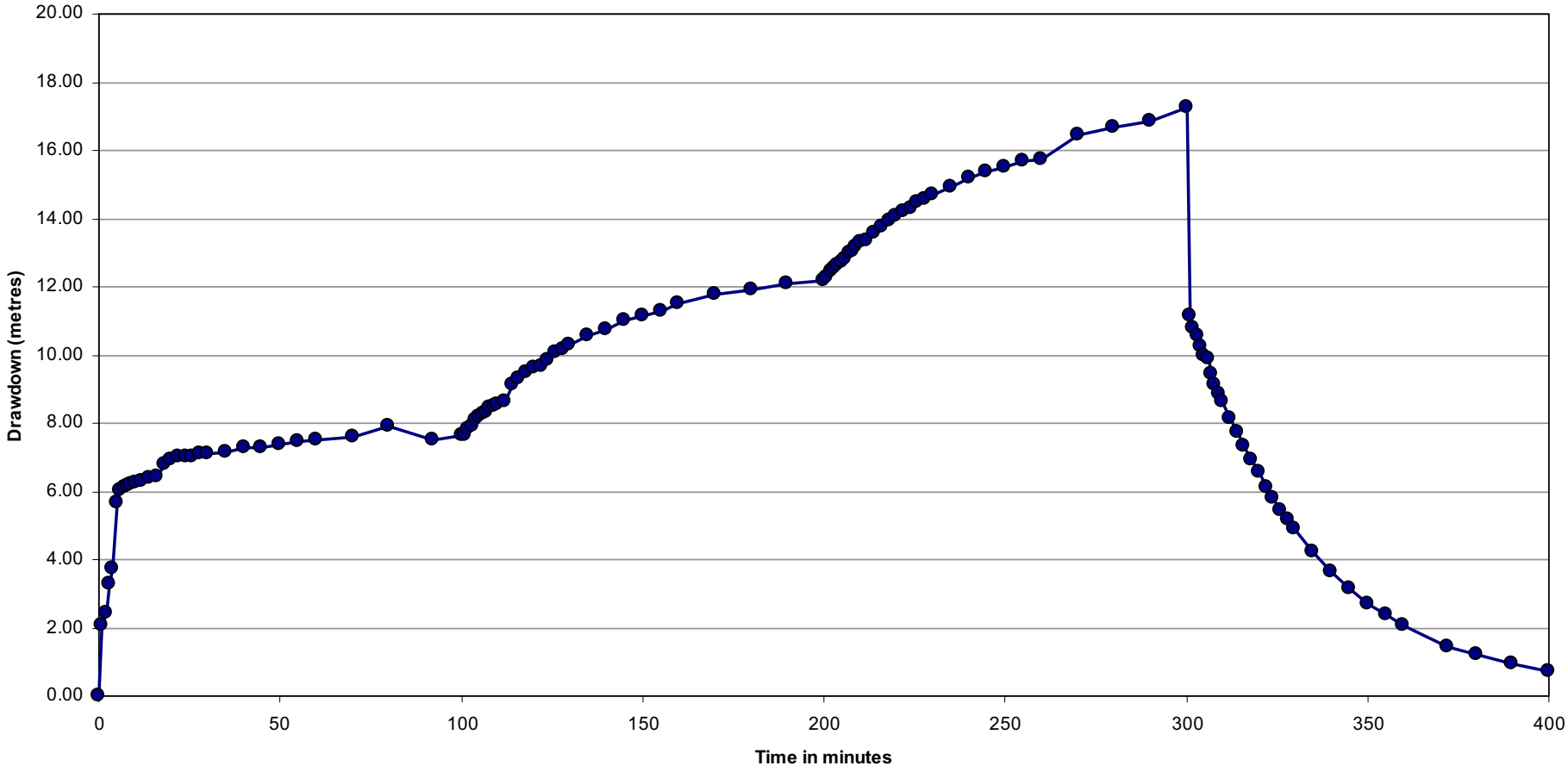
Standing water level	1.905	metres below	measured point (conduit)
Standing water level	16.150	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	13.680	metres below	top of flange
Pump setting	10.3 (intake at 9.6)	metres below	top of flange
Casing height (top of flange)	0.300	metres above	ground level
Head above pump intake	8.095	metres	
Head above top of production zone	5.795	metres	
Rates	1.5, 3, 4.5 & 6	litres per second	

Figure 10.4

Government of South Australia
Department of Water, Land and Biodiversity Conservation

CMP2 - 2nd Step Drawdown Test
Pumping well drawdown - Linear scale

Site	CMP1
Permit Number	110014
Comment	Production Well
Completion	8m of 200mm ID Slotted Casing (1mm slots 42 - 50m, Sump 50 - 52m) with 8/16 Gravel Pack
Address	Central Murtho Highland
Test type	3 X 100 Minute Step Test using Legra Grundfos hydraulic submersible pump
Pumping commenced	03/05/06 at 13:35
Pumping ceased	03/05/06 at 18:35
Are measurements for pumped well	Yes



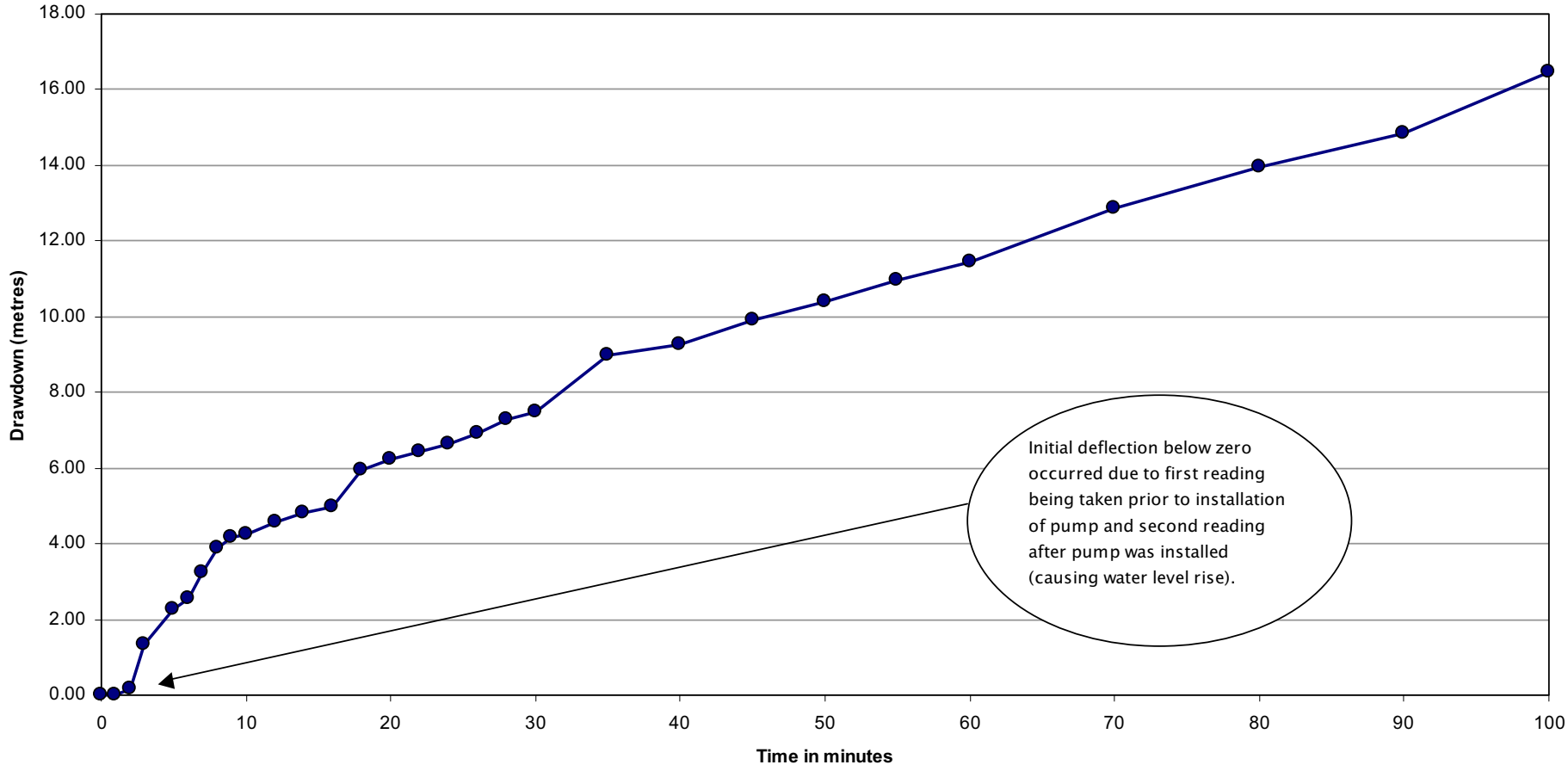
Standing water level	33.440	metres below	measured point (conduit)
Standing water level	16.629	metres above	Australian Height Datum
Reference point (conduit)	0.600	metres above	top of flange
Total depth	52.320	metres below	top of flange
Pump setting	51.800	metres below	top of flange
Casing height (top of flange)	0.321	metres above	ground level (calculated from survey data)
Head above pump intake	18.960	metres	
Head above top of production zone	9.481	metres	
Rates	0.1, 0.15 & 0.2	litres per second	

Figure 11

Government of South Australia
Department of Water, Land and Biodiversity Conservation

CMP1 - Step Drawdown Test
Pumping well drawdown - Linear scale

Site	SMP2
Permit Number	110006
Comment	Production Well
Completion	12m of 200mm ID Slotted Casing (0.5mm slots 35 - 47m, Sump 47 - 49m), 16/30 Gravel Pack.
Address	South Murtho Highland - Angoves Vineyard
Test type	First step only of planned Step Test, using Legra Grundfos hydraulic submersible pump
Pumping commenced	27/04/06 at 07:50
Pumping ceased	27/04/06 at 09:30
Are measurements for pumped well	Yes



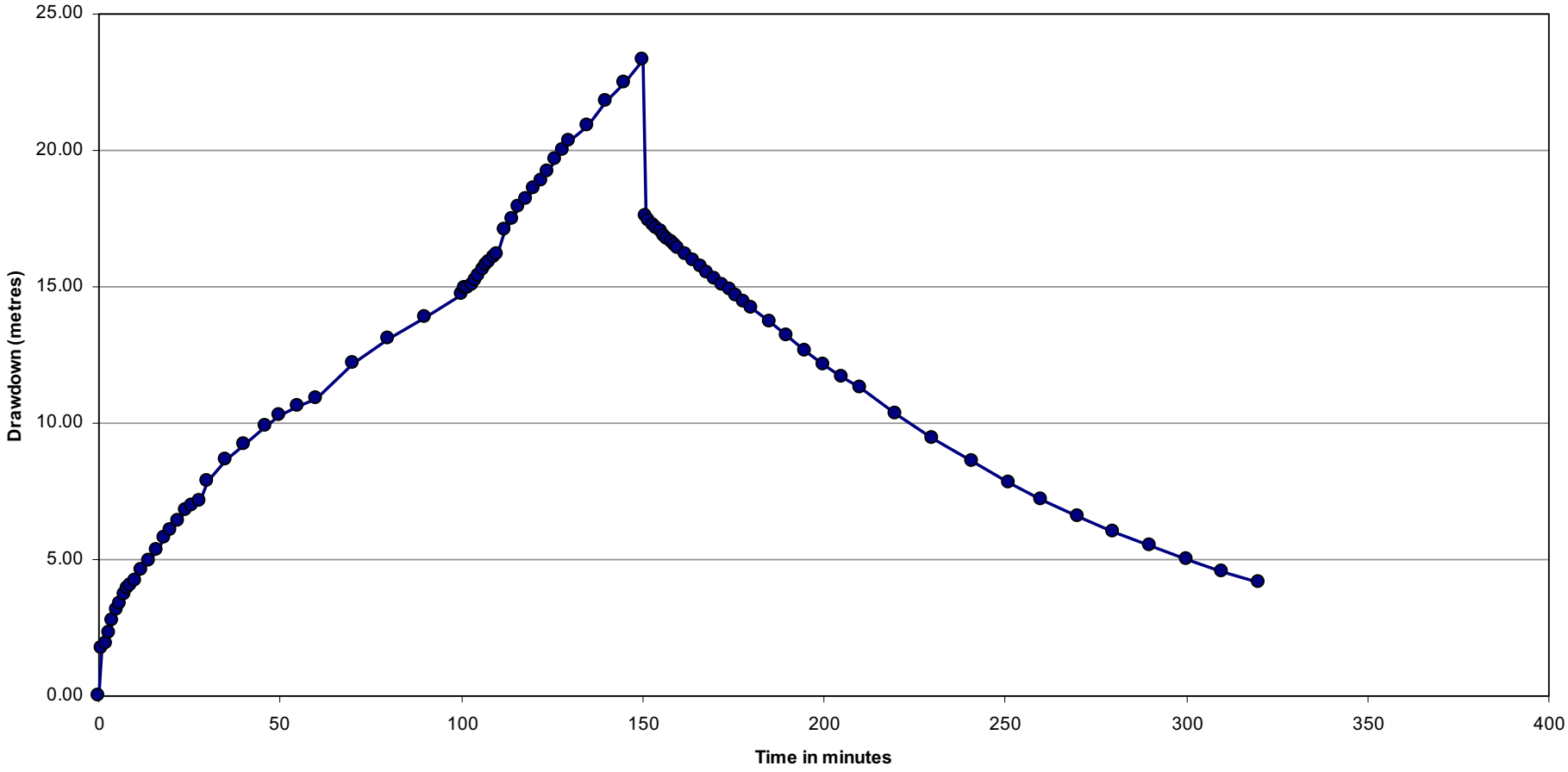
Standing water level	27.665	metres below	measured point (conduit)
Standing water level	16.585	metres above	Australian Height Datum
Reference point (conduit)	0.850	metres above	ground level
Total depth	48.600	metres below	ground level
Pump setting	48.500	metres below	ground level
Casing height (top of flange)	0.187	metres above	ground level (calculated from survey data)
Head above pump intake	21.685	metres	
Head above top of production zone	8.185	metres	
Rates	0.1	litres per second	

Figure 12

Government of South Australia
Department of Water, Land and Biodiversity Conservation

SMP2 - First Step of Planned Step Drawdown Test
Pumping well drawdown - Linear scale

Site	SMP1
Permit Number	110007
Comment	Production Well
Completion	13.2m of 200mm Slotted Casing (1mm slots 42.5 - 55.7m, Sump 55.7 - 57.7m) & 8/16 G. Pack
Address	South Murtho Highland - Rover Crescent
Test type	2 Step - Step Test using Legra Grundfos hydraulic submersible pump
Pumping commenced	04/05/06 at 09:30
Pumping ceased	04/05/06 at 12:00
Are measurements for pumped well	Yes



Standing water level	32.950	metres below	measured point (conduit)
Standing water level	16.352	metres above	Australian Height Datum
Reference point (conduit)	0.950	metres above	top of flange
Total depth	57.000	metres below	top of flange
Pump setting	56.000	metres below	top of flange
Casing height (top of flange)	0.074	metres below	ground level (calculated from survey data)
Head above pump intake	24.000	metres	
Head above top of production zone	10.426	metres	
Rates	0.1 & 0.15	litres per second	

Figure 13

Government of South Australia
Department of Water, Land and Biodiversity Conservation

SMP1 - Step Drawdown Test
Pumping well drawdown - Linear scale

Figure 14. Maximum yield available from production well SMP2

APPENDICES

A. DRILLHOLE LOGS

Drillhole Details

Unit Number: 7029-2223 **Drillhole Name:** CMA 2
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 29 **Date:** 12/12/2005
Maximum Depth (m): 29 **Date:** 12/12/2005
Latest Open Depth (m): 29 **Date:** 12/12/2005

General Information

Latest Status: **Date:**
Cased to (m): **Min diameter (mm):** **Latest Permit No:** 110011
Purpose: INV **Aquifer:**

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): **TDS (mg/L):** **Date:**
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** 18.69 **Date:**

Location Information

MGA Easting: 478679 **MGA Northing:** 6229685 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 8.15 **Decimal:** 140.7689307
Latitude - degrees: 34 **minutes:** 4 **seconds:** 24.11 **Decimal:** 34.0733636

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** f

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Completion Date	Const / Survey	Total Depth (m)	Final Depth (m)	Current Depth (m)	Permit No	Bkf Ind	Comments
12/12/2005	C	29.00	29.00	29.00	110011	N	Investigation air hole only

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	3.5	Aquitard	Coonambidgal Formation
3.5	> 29	Aquifer	Monoman Formation

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	3.5	CLAY	SILT	Medium to light greyish coloured silty gritty clay. Clay is moderately dense with low to moderate plasticity.
3.5	4	SAND	SILT	Greyish orange silty sand. Sand is fine to coarse grained up to approximately 1mm. Grains are sub-angular to sub-rounded.
4	6	SAND	--	Yellowish orange coloured medium to predominantly coarse grained sand. Clear and ferruginous sub-rounded to sub-angular grains of approximately 0.5 to 1.5mm (with small percentage up to 2mm).
6	9	SAND	--	Light greyish orange coloured fine to predominantly medium sand. Sand grains are sub-rounded in shape and up to 0.8 to 1mm in size (with small percentage up to approximately 1.5mm).
9	11	SAND	--	Light greyish orange sands as above.
11	12	SAND	SILT	Light greyish coloured sands fine to medium sands as above with introduction of significant percentage of silt.
12	13	SAND	--	Light greyish orange coloured reasonably clean, predominantly medium sand. Sand grains are sub-rounded to sub-angular in shape and up to approximately 0.8mm, with small percentage of coarse grains up to 1mm.
13	15	SAND	GRAVEL	Light greyish coloured predominantly medium to coarse-grained sand up to fine gravel. Grains are sub-angular to sub-rounded in shape and generally 0.4 to 2mm in size with small percentage of gravel up to approximately 3mm.
15	16	SILT	SAND	Medium brownish grey coloured sandy silt. Small percentage of sand as above, with brownish coloured silt.
16	17	SAND	--	Medium greyish coloured fine to medium sand. Quartz grains are sub-rounded to sub-angular in shape, generally clear and up to approximately 0.6mm in size. Small percentage of silt evident.
17	20	SAND	GRAVEL	Medium greyish coloured medium to coarse sand. Clear, sub-angular to sub-rounded quartz grains of 0.5 to 2mm in diameter with small percentage of fine gravel (particularly 19 to 20 metre interval) up to 2.5 to 3mm in diameter.
20	22	SAND	--	Light to medium greyish coloured predominantly fine but up to medium quartz sand. Clear, sub-rounded to sub-angular quartz grains generally up to approximately 0.8mm in diameter, but with small percentage of coarse grains up to 1.2mm.
22	24	SAND	--	Light greyish coloured fine to medium sands as above, with increase in coarse grained content and introduction of fine gravel up to approximately 2.5mm.
24	29	SAND	--	Light greyish coloured fine to predominantly medium but up to coarse grained sands. Clear, sub-rounded to sub-angular quartz grains generally up to 1mm in diameter, but with small percentage up to 2mm. Sample is slightly micaceous.

Drillhole Details

Unit Number: 7029-2226 **Drillhole Name:** CMP 1A
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): **Date:**
Maximum Depth (m): 68 **Date:** 11/12/2005
Latest Open Depth (m): 68 **Date:** 11/12/2005

General Information

Latest Status: **Date:**
Cased to (m): **Min diameter (mm):** **Latest Permit No:**
Purpose: INV **Aquifer:**

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): **TDS (mg/L):** **Date:**
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** 49.29 **Date:**

Location Information

MGA Easting: 480939 **MGA Northing:** 6224459 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 35.93 **Decimal:** 140.7933140
Latitude - degrees: 34 **minutes:** 7 **seconds:** 13.94 **Decimal:** 34.1205379

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** e

Hundred: MURTHO **Plan:** D55550 **Parcel:** Q19 **Title:** CT 5861/764

Construction Information

Completion Date	Const / Survey	Total Depth (m)	Final Depth (m)	Current Depth (m)	Permit No	Bkf Ind	Comments
11/12/2005	C	68.00	68.00	68.00		N	Investigation air hole, permit not required. Sampled under PN 110014

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	2	Perched Aquifer in some areas	Woorinen Formation
2	5	Aquitard	Blanchetown Clay
5	54	Watertable Aquifer	Loxton Parilla Sands (Upper Loxton Sands 5 – 44m, Lower Loxton Sands 44 – 54m)
54	66	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
66	> 68	Aquitard	Bookpurnong Beds Proper

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	SAND	--	Light reddish brown coloured silty sand and calcrete. Sand is fine grained with grains generally less than 0.2mm in diameter.
2	5	CLAY	SILT	Dark reddish coloured gritty silty clay. Sample is moderately dense.
5	12	SAND	--	Light yellowish orange and multicolored predominantly fine to medium sands. Small percentage of calcrete, occurring in thin discreet bands.
12	36	SAND	--	Multicoloured yellowish orange coloured medium to coarse grained sands. Clear and ferruginous, sub-angular to sub-rounded quartz grains predominantly 0.2 - 1mm in diameter.
36	42	SAND	--	Light boney coloured fine sand. Clear, sub-rounded quartz grains generally less than 0.2mm in diameter.
42	44	SAND	--	Light yellowish coloured predominantly fine but up to medium sized sand. Clear, sub-rounded quartz grains up to approximately only 0.5mm in diameter.
44	54	SAND	SILT	Light greyish coloured silty fine sand less than 0.2mm in diameter.
54	57	CLAY	SILT	Light olive greyish coloured gritty silty clay. Sample has moderate density but poor plasticity.
57	66	CLAY	SILT	Light to medium greyish coloured silty, fossiliferous clay. Sample is moderately dense with low to moderate plasticity. Small shell fragments up to approximately 1 - 2mm in size.
66	68	CLAY	FOSSILS	Olive coloured gritty fossiliferous clay. Clay has moderate density and moderate plasticity. Large, unbroken shell fragments up to 25mm in size.

DRILLHOLE ENQUIRY SYSTEM | Map Search | Text Search | View Definitions | Contact Us | Help | DES Home

Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2208 **Drillhole Name:** CMP 1
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 55 **Date:** 03/02/2006
Maximum Depth (m): 55 **Date:** 03/02/2006
Latest Open Depth (m): 52 **Date:** 03/02/2006

General Information

Latest Status: **Date:**
Cased to (m): 42 **Min diameter (mm):** 200 **Latest Permit No:** 110014
Purpose: MON **Aquifer:** Tpl

Latest Hydro Information

SWL (m): 32.46 **RSWL (mAHD):** 16.69 **Date:** 03/02/2006
EC (uS/cm): 41100 **TDS (mg/L):** 26130 **Date:** 03/05/2006
Yield (L/sec): 0.1 **Date:** 03/02/2006

Latest Elevation Information

Reference Elevation (m): 49.47 **Ground Elevation (m):** 49.15 **Date:** 02/06/2006

Location Information

MGA Easting: 480942 **MGA Northing:** 6224466 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 36.01 **Decimal:** 140.7933363
Latitude - degrees: 34 **minutes:** 7 **seconds:** 13.72 **Decimal:** 34.1204778

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** e

Hundred: MURTHO **Plan:** D55550 **Parcel:** Q19 **Title:** CT 5861/764

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	42.00	200	PVC	P	28.00	34.00	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
42.00	50.00	200	SC	PVC	1	Class 12 PVC
50.00	52.00		SB			Sump

Hydro Stratigraphic Log (as logged from corresponding air-core site CMP1A)

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	2	Perched Aquifer in some areas	Woorinen Formation
2	5	Aquitard	Blanchetown Clay
5	54	Watertable Aquifer	Loxton Parilla Sands (Upper Loxton Sands 5 – 44m, Lower Loxton Sands 44 – 54m)
54	66	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
66	68	Aquitard	Bookpurnong Beds Proper

Lithological Log (as logged from corresponding air-core site CMP1A)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	SAND	--	Light reddish brown coloured silty sand and calcrete. Sand is fine grained with grains generally less than 0.2mm in diameter.
2	5	CLAY	SILT	Dark reddish coloured gritty silty clay. Sample is moderately dense.
5	12	SAND	--	Light yellowish orange and multicolored predominantly fine to medium sands. Small percentage of calcrete, occurring in thin discreet bands.
12	36	SAND	--	Multicoloured yellowish orange coloured medium to coarse grained sands. Clear and ferruginous, sub-angular to sub-rounded quartz grains predominantly 0.2 - 1mm in diameter.
36	42	SAND	--	Light boney coloured fine sand. Clear, sub-rounded quartz grains generally less than 0.2mm in diameter.
42	44	SAND	--	Light yellowish coloured predominantly fine but up to medium sized sand. Clear, sub-rounded quartz grains up to approximately only 0.5mm in diameter.
44	54	SAND	SILT	Light greyish coloured silty fine sand less than 0.2mm in diameter.
54	57	CLAY	SILT	Light olive greyish coloured gritty silty clay. Sample has moderate density but poor plasticity.
57	66	CLAY	SILT	Light to medium greyish coloured silty, fossiliferous clay. Sample is moderately dense with low to moderate plasticity. Small shell fragments up to approximately 1 - 2mm in size.
66	68	CLAY	FOSSILS	Olive coloured gritty fossiliferous clay. Clay has moderate density and moderate plasticity. Large, unbroken shell fragments up to 25mm in size.

Drillhole Details

Unit Number: 7029-2227 **Drillhole Name:** CMP 2A

Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): **Date:**

Maximum Depth (m): 17.5 **Date:** 11/12/2005

Latest Open Depth (m): 17.5 **Date:** 11/12/2005

General Information

Latest Status: **Date:**

Cased to (m): **Min diameter (mm):** **Latest Permit No:**

Purpose: INV **Aquifer:**

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**

EC (uS/cm): **TDS (mg/L):** **Date:**

Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** 17.36 **Date:**

Location Information

MGA Easting: 481630 **MGA Northing:** 6226250 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 48 **seconds:** 3.03 **Decimal:** 140.8008413

Latitude - degrees: 34 **minutes:** 6 **seconds:** 15.82 **Decimal:** 34.1043957

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 14 **2,500 map sheet:** a

Hundred: MURTHO **Plan:** H710600 **Parcel:** S14 **Title:** CL 1134/45

Construction Information

Completion Date	Const / Survey	Total Depth (m)	Final Depth (m)	Current Depth (m)	Permit No	Bkf Ind	Comments
11/12/2005	C	17.50	17.50	17.50		N	Investigation air hole, permit not required. Sampled under PN 110001

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4.5	Aquitard	Coonambidgal Clay
4.5	16.5	Aquifer	Monoman Formation
16.5	17.5	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	3	CLAY	--	Light greyish coloured sticky clays. Clay is moderately dense and low to moderately plastic. Becoming rollable with depth.
3	4.5	CLAY	SILT	Light greyish to light olive greyish coloured silty gritty clays. Clay is less dense than above, with in increase in fine sand overall. Samples are barely rollable.
4.5	7	SAND	LIGNITE	Light yellowish grey coloured medium to coarse sands. Clear and ferruginous, sub-angular to sub-rounded quartz grains generally 0.5 to 2mm in diameter. Minor lignite pieces between 6-7 metres.
7	9	SAND	--	Light greyish coloured sands as above. Thin, sticky, silty to almost clayey interval found within 7-8m interval.
9	11	SAND	--	Light greyish coloured predominantly medium to coarse sands. Sub-angular to sub-rounded quartz grains, 0.5 - 2mm overall as above, with a decrease in grainsize by percentage. 10 - 11m becoming predominantly medium grainsize (ie up to o.6mm).
11	12	CLAY	SAND	Light yellowish grey overall. Sands as above, with thin discreet medium greyish coloured, low to moderately dense clay. Clay assumed to be only a percentage of the thickness of this interval.
12	14	SAND	--	Light yellowish and light greyish yellow coloured medium to coarse sands. Clear and ferruginous, sub-angular to sub-rounded quartz grains generally 0.5 - 2mm in diameter with small percentage of fine gravel up to 3mm. Small amount of clay contamination assumed to be from above.
14	15	SAND	CLAY	Light greyish coloured medium to coarse sands as above with introduction of light grey silty gritty clay towards bottom half of interval. Clay is moderate to very dense.
15	16.5	SILT	CLAY	Light grey to light olive greyish coloured silty, gritty clay to gritty clayey silt. Sample is quite sticky with increasing density with depth.
16.5	17.5	CLAY	--	Medium grey coloured moderate to very dense clay. Sample is sticky with moderate plasticity, becoming very rollable with depth. Prevented drilling any further due to clay becoming stuck in drilling inner tubes.

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2210 **Drillhole Name:** CMP 2
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 14 **Date:** 17/01/2006
Maximum Depth (m): 14 **Date:** 17/01/2006
Latest Open Depth (m): 13 **Date:** 17/01/2006

General Information

Latest Status: **Date:**
Cased to (m): 7 **Min diameter (mm):** 200 **Latest Permit No:** 110001
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): 1.16 **RSWL (mAHD):** 16.22 **Date:** 17/01/2006
EC (uS/cm): 64300 **TDS (mg/L):** 45010 **Date:** 06/06/2006
Yield (L/sec): 4 **Date:** 17/01/2006

Latest Elevation Information

Reference Elevation (m): 17.66 **Ground Elevation (m):** 17.37 **Date:** 02/06/2006

Location Information

MGA Easting: 481630 **MGA Northing:** 6226255 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 48 **seconds:** 3.01 **Decimal:** 140.8008356
Latitude - degrees: 34 **minutes:** 6 **seconds:** 15.69 **Decimal:** 34.1043576

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 14 **2,500 map sheet:** a

Hundred: MURTHO **Plan:** H710600 **Parcel:** S14 **Title:** CL 1134/45

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	7.00	200	PVC	G	0.00	5.10	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
7.00	11.00	200	SC	PVC	1	Class 12 PVC
11.00	13.00		SB			Sump

Hydro Stratigraphic Log (as logged from corresponding air-core site CMP2A)

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4.5	Aquitard	Coonambidgal Clay
4.5	16.5	Aquifer	Monoman Formation
16.5	> 17.5	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer

Lithological Log (as logged from corresponding air-core site CMP2A)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	3	CLAY	--	Light greyish coloured sticky clays. Clay is moderately dense and low to moderately plastic. Becoming rollable with depth.
3	4.5	CLAY	SILT	Light greyish to light olive greyish coloured silty gritty clays. Clay is less dense than above, with in increase in fine sand overall. Samples are barely rollable.
4.5	7	SAND	LIGNITE	Light yellowish grey coloured medium to coarse sands. Clear and ferruginous, sub-angular to sub-rounded quartz grains generally 0.5 to 2mm in diameter. Minor lignite pieces between 6-7 metres.
7	9	SAND	--	Light greyish coloured sands as above. Thin, sticky, silty to almost clayey interval found within 7-8m interval.
9	11	SAND	--	Light greyish coloured predominantly medium to coarse sands. Sub-angular to sub-rounded quartz grains, 0.5 - 2mm overall as above, with a decrease in grainsize by percentage. 10 - 11m becoming predominantly medium grainsize (ie up to o.6mm).
11	12	CLAY	SAND	Light yellowish grey overall. Sands as above, with thin discreet medium greyish coloured, low to moderately dense clay. Clay assumed to be only a percentage of the thickness of this interval.
12	14	SAND	--	Light yellowish and light greyish yellow coloured medium to coarse sands. Clear and ferruginous, sub-angular to sub-rounded quartz grains generally 0.5 - 2mm in diameter with small percentage of fine gravel up to 3mm. Small amount of clay contamination assumed to be from above.
14	15	SAND	CLAY	Light greyish coloured medium to coarse sands as above with introduction of light grey silty gritty clay towards bottom half of interval. Clay is moderate to very dense.
15	16.5	SILT	CLAY	Light grey to light olive greyish coloured silty, gritty clay to gritty clayey silt. Sample is quite sticky with increasing density with depth.
16.5	17.5	CLAY	--	Medium grey coloured moderate to very dense clay. Sample is sticky with moderate plasticity, becoming very rollable with depth. Prevented drilling any further due to clay becoming stuck in drilling inner tubes.

Drillhole Details

Unit Number: 7029-2209 **Drillhole Name:** CMO 1
Obs Number: MTH027 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 48 **Date:** 18/12/2005
Maximum Depth (m): 48 **Date:** 18/12/2005
Latest Open Depth (m): 47 **Date:** 18/12/2005

General Information

Latest Status: **Date:**
Cased to (m): 37 **Min diameter (mm):** 80 **Latest Permit No:** 110013
Purpose: MON **Aquifer:** Tpl

Latest Hydro Information

SWL (m): 31.92 **RSWL (mAHD):** 16.78 **Date:** 18/12/2005
EC (uS/cm): 41500 **TDS (mg/L):** 26384 **Date:** 06/01/2006
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): 49.58 **Ground Elevation (m):** 48.7 **Date:** 02/06/2006

Location Information

MGA Easting: 480879 **MGA Northing:** 6224227 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 33.57 **Decimal:** 140.7926572
Latitude - degrees: 34 **minutes:** 7 **seconds:** 21.45 **Decimal:** 34.1226257

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** e

Hundred: MURTHO **Plan:** D55550 **Parcel:** Q19 **Title:** CT 5861/764

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	37.00	80	PVC	P	0.00	34.00	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
37.00	46.00	80	SC	PVC	1	Class 12 PVC
46.00	47.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	3	Perched Aquifer in some areas	Woorinen Formation
3	> 48	Watertable Aquifer	Loxton Parilla Sands (Upper Loxton Sands 3 ~ 41m, Lower Loxton Sands ~ 41 – 48m)

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	SAND	--	silty, loamy fine sand, brown/red. Very small percentage sand upto 1mm
2	4	SAND	--	silty, predominantly fine to medium sand with increased but small percentage of coarser grains upto 1mm
4	6	SAND	--	medium/coarse silty sand upto 2mm, red/off white/yellow with thin moderately consolidated coarse grained sandstone
6	8	SAND	--	off white with red and yellow coarse/medium sand with thin sandstone, moderately consolidated coarse/medium grained
8	10	SAND	--	white/yellow fine to coarse sand with some percentage of silt, some grains upto 2mm
10	12	SAND	--	orange fine to coarse sand, clean, upto 2mm
12	18	SAND	--	yellow fine - coarse sand, relatively clean, grains upto 2mm
18	20	SAND	--	poor sample fine to coarse predominantly sand and silt, some grains upto 2mm
20	22	SAND	--	medium/coarse sand, contains mafic grains, relatively clean, mixed colours
22	24	SAND	--	orange fine and coarse grained sand, some silt
24	26	SAND	--	fine/medium sand and predominantly coarse sand/fine gravel, grains upto 3mm common
26	28	GRAVEL	--	sandy gravel, grains upto 4mm
28	32	SAND	--	gravely fine/medium sand, gravel upto 5mm
32	34	SAND	--	orange/red medium/coarse sand with gravel upto 3mm
34	38	SAND	--	fine to predominantly medium sand, micaceous, grains upto 2mm
38	41	SAND	--	as above, slightly finer

Drillhole Details

Unit Number: 7029-2209 **Drillhole Name:** CMO 1

Obs Number: MTH027 **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
41	42	SAND	--	grey medium micaceous sand, occasional grains upto 4mm
42	44	SAND	--	fine to coarse sands, with thin plastic moderately dense clay
44	46	SAND	--	predominantly medium/coarse sand and some clay
46	48	SAND	--	grey fine to coarse sand upto 2mm

Drillhole Details

Unit Number: 7029-2211 **Drillhole Name:** CMO 2
Obs Number: MTH028 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 15 **Date:** 18/12/2005
Maximum Depth (m): 15 **Date:** 18/12/2005
Latest Open Depth (m): 15 **Date:** 18/12/2005

General Information

Latest Status: **Date:**
Cased to (m): 7 **Min diameter (mm):** 80 **Latest Permit No:** 110000
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): 1.26 **RSWL (mAHD):** 16.22 **Date:** 18/12/2005
EC (uS/cm): 62700 **TDS (mg/L):** 43890 **Date:** 20/12/2005
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): 18.57 **Ground Elevation (m):** 17.48 **Date:** 02/06/2006

Location Information

MGA Easting: 481610 **MGA Northing:** 6226274 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 48 **seconds:** 2.24 **Decimal:** 140.8006232
Latitude - degrees: 34 **minutes:** 6 **seconds:** 15.06 **Decimal:** 34.1041822

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 14 **2,500 map sheet:** a

Hundred: MURTHO **Plan:** H710600 **Parcel:** S14 **Title:** CL 1134/45

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	7.00	80	PVC	G	0.00	5.50	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
7.00	14.00	80	SC	PVC	1	Class 12 PVC
14.00	15.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4	Aquitard	Coonambidgal Clay
4	> 15	Aquifer	Monoman Formation

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	CLAY	--	medium grey moderate density plastic clay and fine sandy clay
2	4	CLAY	--	grey/olive moderate density plastic clay
4	6	SAND	--	yellow/off white clean coarse sand, grains upto 3mm
6	8	SAND	--	coarse sand upto 2mm with silt mixed through, possibly contaminated sample, carbonaceous clumps upto 10mm present
8	10	SAND	--	grey clayey medium to predominantly coarse sand, grains upto 2mm
10	12	SAND	--	yellow clean medium to predominantly coarse sand upto 4mm
12	14	SAND	--	as above, slightly finer, upto 3mm
14	15	SAND	--	as above, upto 4mm but with grey silty carbonaceous fine/medium sand, may be contaminated sample

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2212 **Drillhole Name:** CMO 4
Obs Number: MTH029 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 16 **Date:** 11/01/2006
Maximum Depth (m): 16 **Date:** 11/01/2006
Latest Open Depth (m): 16 **Date:** 11/01/2006

General Information

Latest Status: **Date:**
Cased to (m): 9 **Min diameter (mm):** 80 **Latest Permit No:** 109994
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): 51400 **TDS (mg/L):** 33710 **Date:** 13/01/2006
Yield (L/sec): 1.5 **Date:** 11/01/2006

Latest Elevation Information

Reference Elevation (m): 19.02 **Ground Elevation (m):** 17.95 **Date:** 02/06/2006

Location Information

MGA Easting: 481498 **MGA Northing:** 6228064 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 57.99 **Decimal:** 140.7994422
Latitude - degrees: 34 **minutes:** 5 **seconds:** 16.94 **Decimal:** 34.0880384

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** n

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	9.00	80	PVC	G	0.00	7.00	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
9.00	15.00	80	SC	PVC	1	
15.00	16.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	7	Aquitard	Coonambidgal Clay
7	> 16	Aquifer	Monoman Formation

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	7	CLAY	--	Light greyish coloured stiff, dense clay. Very small percentage of grit and quite sticky when wet.
7	10	SAND	GRAVEL	Light greyish coloured medium to coarse sands. Clear and ferruginous quartz grains up to approximately 2.5mm in diameter. Moderately sorted.
10	12	SAND	GRAVEL	Sands as above with large pieces of lignite present.
12	14	SAND	GRAVEL	Light yellowish coloured medium to predominantly coarse sands and fine gravel. Clear and ferruginous quartz grains up to approximately 3mm in diameter.
14	16	SAND	--	Light greyish coloured medium to coarse sands. Sands as above with a general decrease in grainsize overall.

Drillhole Details

Unit Number: 7029-2228 **Drillhole Name:** CMP 4A
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): **Date:**
Maximum Depth (m): 23 **Date:** 12/12/2005
Latest Open Depth (m): 23 **Date:** 12/12/2005

General Information

Latest Status: **Date:**
Cased to (m): **Min diameter (mm):** **Latest Permit No:**
Purpose: INV **Aquifer:**

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): **TDS (mg/L):** **Date:**
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** 16.1 **Date:**

Location Information

MGA Easting: 479366 **MGA Northing:** 6229534 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 34.92 **Decimal:** 140.7763667
Latitude - degrees: 34 **minutes:** 4 **seconds:** 29.07 **Decimal:** 34.0747426

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** e

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Completion Date	Const / Survey	Total Depth (m)	Final Depth (m)	Current Depth (m)	Permit No	Bkf Ind	Comments
12/12/2005	C	23.00	23.00	23.00		N	Investigation air hole, permit not required. Sampled under PN 110010

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	5	Aquitard	Coonambidgal Clay
5	> 23	Aquifer	Monoman Formation

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	5	CLAY	--	Medium greyish coloured dense clays. Clays are moderate to very dense with high plasticity and very rollable. Small percentage of grit.
5	13	SAND	--	Light greyish coloured, clean, fine to predominantly medium sands. Clear, sub-rounded to sub-angular quartz grains, generally 0.2 - 0.6mm with small percentage of coarse grains up to 0.8 - 1mm in diameter.
13	15	SILT	CLAY	Light greyish coloured gritty fine sand and clayey silt. Samples are sticky, and becoming denser in clay with depth. Becoming rollable.
15	16	CLAY	SILT	Light to medium greyish overall. Fine grit, silt and clay as above with introduction of medium grey, moderately dense clay. Sample is rollable with low plasticity.
16	17	SAND	GRAVEL	Light greyish coloured medium to predominantly coarse grained sand with small percentage of fine gravel to approximately 2.5mm. Generally clear, sub-angular to sub-rounded quartz grains.
17	19	SAND	SILT	Light greyish coloured silty fine sand. Poor matrix of silt and low percentage of clay, increasing with depth.
19	21	SILT	CLAY	Light greyish coloured overall. Silt and fine sands as above with increase in clay content with depth.
21	23	SILT	SAND	Light greysish coloured, silty fine sand. Samples are relatively clean with little to zero clay content. Clear quartz grains generally below 0.2mm in diameter. Couldn't drill on with air, due to thickness of sands and head of water.

Drillhole Details

Unit Number: 7029-2217 **Drillhole Name:** CMP 4

Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 24 **Date:** 11/01/2006

Maximum Depth (m): 24 **Date:** 11/01/2006

Latest Open Depth (m): 22 **Date:** 11/01/2006

General Information

Latest Status: **Date:**

Cased to (m): 9 **Min diameter (mm):** 200 **Latest Permit No:** 110010

Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): 2.39 **RSWL (mAHD):** 15.6 **Date:** 11/01/2006

EC (uS/cm): 70400 **TDS (mg/L):** 49280 **Date:** 28/05/2006

Yield (L/sec): 7 **Date:** 25/05/2006

Latest Elevation Information

Reference Elevation (m): 18.28 **Ground Elevation (m):** 17.99 **Date:** 02/06/2006

Location Information

MGA Easting: 479361 **MGA Northing:** 6229527 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 34.74 **Decimal:** 140.7763159

Latitude - degrees: 34 **minutes:** 4 **seconds:** 29.28 **Decimal:** 34.0747989

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** e

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	9.00	200	PVC	G	0.00	6.50	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
9.00	20.00	200	SC	PVC	1	Class 12 PVC
20.00	22.00		SB			Sump

Hydro Stratigraphic Log (as logged from corresponding air-core site CMP4A)

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	5	Aquitard	Coonambidgal Clay
5	> 23	Aquifer	Monoman Formation

Lithological Log (as logged from corresponding air-core site CMP4A)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	5	CLAY	--	Medium greyish coloured dense clays. Clays are moderate to very dense with high plasticity and very rollable. Small percentage of grit.
5	13	SAND	--	Light greyish coloured, clean, fine to predominantly medium sands. Clear, sub-rounded to sub-angular quartz grains, generally 0.2 - 0.6mm with small percentage of coarse grains up to 0.8 - 1mm in diameter.
13	15	SILT	CLAY	Light greyish coloured gritty fine sand and clayey silt. Samples are sticky, and becoming denser in clay with depth. Becoming rollable.
15	16	CLAY	SILT	Light to medium greyish overall. Fine grit, silt and clay as above with introduction of medium grey, moderately dense clay. Sample is rollable with low plasticity.
16	17	SAND	GRAVEL	Light greyish coloured medium to predominantly coarse grained sand with small percentage of fine gravel to approximately 2.5mm. Generally clear, sub-angular to sub-rounded quartz grains.
17	19	SAND	SILT	Light greyish coloured silty fine sand. Poor matrix of silt and low percentage of clay, increasing with depth.
19	21	SILT	CLAY	Light greyish coloured overall. Silt and fine sands as above with increase in clay content with depth.
21	23	SILT	SAND	Light greysish coloured, silty fine sand. Samples are relatively clean with little to zero clay content. Clear quartz grains generally below 0.2mm in diameter. Couldn't drill on with air, due to thickness of sands and head of water.

Drillhole Details

Unit Number: 7029-2224 **Drillhole Name:** CMO 7A
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): **Date:**
Maximum Depth (m): 42 **Date:** 11/12/2005
Latest Open Depth (m): 42 **Date:** 11/12/2005

General Information

Latest Status: **Date:**
Cased to (m): **Min diameter (mm):** **Latest Permit No:**
Purpose: INV **Aquifer:**

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): **TDS (mg/L):** **Date:**
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** 18.31 **Date:**

Location Information

MGA Easting: 479213 **MGA Northing:** 6229622 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 28.97 **Decimal:** 140.7747130
Latitude - degrees: 34 **minutes:** 4 **seconds:** 26.18 **Decimal:** 34.0739398

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** f

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Completion Date	Const / Survey	Total Depth (m)	Final Depth (m)	Current Depth (m)	Permit No	Bkf Ind	Comments
11/12/2005	C	42.00	42.00	42.00		N	Investigation air hole, permit not required. Sampled under PN 109990

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	5.5	Aquitard	Coonambidgal Formation
5.5	30	Aquifer	Monoman Formation
30	40	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
40	> 42	Aquitard	Bookpurnong Beds Proper

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	5.5	CLAY	--	Light greyish and light olive greyish coloured moderate to very dense clays. Moderate to highly plasticity with small percentage of grit.
5.5	7	SAND	--	Light greyish yellow coloured fine sand. Sub-rounded quartz grains generally less than 0.2mm in diameter.
7	9	SAND	--	Light greyish yellow coloured fine to medium sand. Sub-rounded quartz grains up to approximately 0.5mm in diameter.
9	12	SAND	GRAVEL	Light greyish orange coloured medium to coarse sand and fine gravel. Clear and ferruginous, sub-angular to sub-rounded quartz grains, generally 0.5 to 2mm but with small percentage up to 2.5 to 3mm in diameter.
12	15	SILT	CLAY	Light greyish coloured gritty, clayey silt. Sample has low plasticity and density and significant amount of fine sand less than 0.2mm in diameter.
15	17	SAND	GRAVEL	Light to medium greyish coloured medium to coarse grained sand and fine gravel. Sample is predominantly 0.5 to 2mm in diameter with small percentage of fine, sub-angular gravel up to 2.5 to 3mm.
17	19	SILT	SAND	Light greyish and brownish grey coloured gritty silts and fine sand. Sample becoming finer with depth.
19	21	CLAY	SILT	Medium greyish coloured silty, gritty clay. Sample has low to moderate density and plasticity.
21	29	SILT	SAND	Light greyish and light olive greyish coloured fine sandy silt to silty fine sand. Quartz grains less than 0.2mm in diameter.
29	30	SAND	--	Light greyish coloured fine sand. Clear, sub-rounded quartz grains up to approximately 0.2mm in diameter. Sample is slightly micaceous.
30	32	SILT	SAND	Light to medium greyish coloured fine sandy silt.
32	35	CLAY	SILT	Medium greyish coloured silty gritty clay. Sample has low to moderate density and plasticity.
35	39	CLAY	SILT	Medium grey to olive grey coloured silty clay. Sample is moderately dense and moderately to highly plastic.
39	40	CLAY	SAND	Medium greyish coloured silty gritty clay. Sample has low to moderate density with low plasticity.
40	41	CLAY	--	Dark olive greyish coloured moderately dense, moderately plastic clay. Small percentage of grit.
41	42	CLAY	FOSSILS	Dark olive greyish coloured, moderately dense and moderately to highly plastic clay with shell fragments up to approximately 6mm.

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2213 **Drillhole Name:** CMO 7S
Obs Number: MTH030 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 12 **Date:** 08/01/2006
Maximum Depth (m): 12 **Date:** 08/01/2006
Latest Open Depth (m): 10 **Date:** 08/01/2006

General Information

Latest Status: **Date:**
Cased to (m): 7 **Min diameter (mm):** 80 **Latest Permit No:** 109990
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): 2.71 **RSWL (mAHD):** 15.61 **Date:** 08/01/2006
EC (uS/cm): 57200 **TDS (mg/L):** 40040 **Date:** 09/01/2006
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): 19.3 **Ground Elevation (m):** 18.31 **Date:** 02/06/2006

Location Information

MGA Easting: 479214 **MGA Northing:** 6229623 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 29.03 **Decimal:** 140.7747310
Latitude - degrees: 34 **minutes:** 4 **seconds:** 26.17 **Decimal:** 34.0739358

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** f

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	7.00	80	PVC	G	0.00	5.50	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
7.00	9.00	80	SC	PVC	1	Class 12 PVC
9.00	10.00		SB			Sump

Hydro Stratigraphic Log (as logged from corresponding air-core site CMO7A)

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	5.5	Aquitard	Coonambidgal Formation
5.5	30	Aquifer	Monoman Formation
30	40	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
40	> 42	Aquitard	Bookpurnong Beds Proper

Lithological Log (as logged from corresponding air-core site CMO7A)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	5.5	CLAY	--	Light greyish and light olive greyish coloured moderate to very dense clays. Moderate to highly plasticity with small percentage of grit.
5.5	7	SAND	--	Light greyish yellow coloured fine sand. Sub-rounded quartz grains generally less than 0.2mm in diameter.
7	9	SAND	--	Light greyish yellow coloured fine to medium sand. Sub-rounded quartz grains up to approximately 0.5mm in diameter.
9	12	SAND	GRAVEL	Light greyish orange coloured medium to coarse sand and fine gravel. Clear and ferruginous, sub-angular to sub-rounded quartz grains, generally 0.5 to 2mm but with small percentage up to 2.5 to 3mm in diameter.
12	15	SILT	CLAY	Light greyish coloured gritty, clayey silt. Sample has low plasticity and density and significant amount of fine sand less than 0.2mm in diameter.
15	17	SAND	GRAVEL	Light to medium greyish coloured medium to coarse grained sand and fine gravel. Sample is predominantly 0.5 to 2mm in diameter with small percentage of fine, sub-angular gravel up to 2.5 to 3mm.
17	19	SILT	SAND	Light greyish and brownish grey coloured gritty silts and fine sand. Sample becoming finer with depth.
19	21	CLAY	SILT	Medium greyish coloured silty, gritty clay. Sample has low to moderate density and plasticity.
21	29	SILT	SAND	Light greyish and light olive greyish coloured fine sandy silt to silty fine sand. Quartz grains less than 0.2mm in diameter.
29	30	SAND	--	Light greyish coloured fine sand. Clear, sub-rounded quartz grains up to approximately 0.2mm in diameter. Sample is slightly micaceous.
30	32	SILT	SAND	Light to medium greyish coloured fine sandy silt.
32	35	CLAY	SILT	Medium greyish coloured silty gritty clay. Sample has low to moderate density and plasticity.

Drillhole Details

Unit Number: 7029-2213 **Drillhole Name:** CMO 7S

Obs Number: MTH030 **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
35	39	CLAY	SILT	Medium grey to olive grey coloured silty clay. Sample is moderately dense and moderately to highly plastic.
39	40	CLAY	SAND	Medium greyish coloured silty gritty clay. Sample has low to moderate density with low plasticity.
40	41	CLAY	--	Dark olive greyish coloured moderately dense, moderately plastic clay. Small percentage of grit.
41	42	CLAY	FOSSILS	Dark olive greyish coloured, moderately dense and moderately to highly plastic clay with shell fragments up to approximately 6mm.

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2214 **Drillhole Name:** CMO 7D
Obs Number: MTH031 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 34 **Date:** 10/01/2006
Maximum Depth (m): 34 **Date:** 10/01/2006
Latest Open Depth (m): 32 **Date:** 10/01/2006

General Information

Latest Status: **Date:**
Cased to (m): 28 **Min diameter (mm):** 80 **Latest Permit No:** 109991
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): 2.52 **RSWL (mAHD):** 15.74 **Date:** 10/01/2006
EC (uS/cm): 55700 **TDS (mg/L):** 38990 **Date:** 13/01/2006
Yield (L/sec): 0.25 **Date:** 13/01/2006

Latest Elevation Information

Reference Elevation (m): 19.34 **Ground Elevation (m):** 18.26 **Date:** 02/06/2006

Location Information

MGA Easting: 479212 **MGA Northing:** 6229624 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 28.94 **Decimal:** 140.7747067
Latitude - degrees: 34 **minutes:** 4 **seconds:** 26.14 **Decimal:** 34.0739283

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** f

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	28.00	80	PVC	P	0.00	26.40	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
28.00	31.00	80	SC	PVC	1	Class 12 PVC
31.00	32.00		SB			Sump

Hydro Stratigraphic Log (as logged from corresponding air-core site CMO7A)

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	5.5	Aquitard	Coonambidgal Formation
5.5	30	Aquifer	Monoman Formation
30	40	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
40	> 42	Aquitard	Bookpurnong Beds Proper

Lithological Log (as logged from corresponding air-core site CMO7A)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	5.5	CLAY	--	Light greyish and light olive greyish coloured moderate to very dense clays. Moderate to highly plasticity with small percentage of grit.
5.5	7	SAND	--	Light greyish yellow coloured fine sand. Sub-rounded quartz grains generally less than 0.2mm in diameter.
7	9	SAND	--	Light greyish yellow coloured fine to medium sand. Sub-rounded quartz grains up to approximately 0.5mm in diameter.
9	12	SAND	GRAVEL	Light greyish orange coloured medium to coarse sand and fine gravel. Clear and ferruginous, sub-angular to sub-rounded quartz grains, generally 0.5 to 2mm but with small percentage up to 2.5 to 3mm in diameter.
12	15	SILT	CLAY	Light greyish coloured gritty, clayey silt. Sample has low plasticity and density and significant amount of fine sand less than 0.2mm in diameter.
15	17	SAND	GRAVEL	Light to medium greyish coloured medium to coarse grained sand and fine gravel. Sample is predominantly 0.5 to 2mm in diameter with small percentage of fine, sub-angular gravel up to 2.5 to 3mm.
17	19	SILT	SAND	Light greyish and brownish grey coloured gritty silts and fine sand. Sample becoming finer with depth.
19	21	CLAY	SILT	Medium greyish coloured silty, gritty clay. Sample has low to moderate density and plasticity.
21	29	SILT	SAND	Light greyish and light olive greyish coloured fine sandy silt to silty fine sand. Quartz grains less than 0.2mm in diameter.
29	30	SAND	--	Light greyish coloured fine sand. Clear, sub-rounded quartz grains up to approximately 0.2mm in diameter. Sample is slightly micaceous.
30	32	SILT	SAND	Light to medium greyish coloured fine sandy silt.
32	35	CLAY	SILT	Medium greyish coloured silty gritty clay. Sample has low to moderate density and plasticity.

Drillhole Details

Unit Number: 7029-2214 **Drillhole Name:** CMO 7D

Obs Number: MTH031 **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
35	39	CLAY	SILT	Medium grey to olive grey coloured silty clay. Sample is moderately dense and moderately to highly plastic.
39	40	CLAY	SAND	Medium greyish coloured silty gritty clay. Sample has low to moderate density with low plasticity.
40	41	CLAY	--	Dark olive greyish coloured moderately dense, moderately plastic clay. Small percentage of grit.
41	42	CLAY	FOSSILS	Dark olive greyish coloured, moderately dense and moderately to highly plastic clay with shell fragments up to approximately 6mm.

Drillhole Details

Unit Number: 7029-2215 **Drillhole Name:** CMO 8
Obs Number: MTH032 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 20 **Date:** 08/01/2006
Maximum Depth (m): 20 **Date:** 08/01/2006
Latest Open Depth (m): 19 **Date:** 08/01/2006

General Information

Latest Status: **Date:**
Cased to (m): 15 **Min diameter (mm):** 80 **Latest Permit No:** 109993
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): 3.55 **RSWL (mAHD):** **Date:** 08/01/2006
EC (uS/cm): 68100 **TDS (mg/L):** 47670 **Date:** 09/01/2006
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** **Date:**

Location Information

MGA Easting: 479333 **MGA Northing:** 6229555 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 33.65 **Decimal:** 140.7760138
Latitude - degrees: 34 **minutes:** 4 **seconds:** 28.39 **Decimal:** 34.0745533

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** e

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	15.00	80	PVC	G	0.00	12.70	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
15.00	18.00	80	SC	PVC	1	Class 12 PVC
18.00	19.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	8	Aquitard	Coonambidgal Formation
8	> 20	Aquifer	Monoman Formation

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	CLAY	--	loamy silty clay, contains moderately consolidated clay, organics
2	4	CLAY	--	plastic clay, hard
4	6	CLAY	--	hard plastic clay and soft silty clay
6	8	CLAY	--	predominantly silty clay, contains some dark grey sandy silt and very small percentage of medium grain yellow micaceous sand
8	10	SILT	--	predominantly a sandy clayey silt. mixed sample, contains hard clay clumps
10	12	SAND	--	predominantly a medium sand. contains a large percentage of silt and a small percentage of clay
12	14	SILT	--	predominantly micaceous silt. some fine sandy silt and clayey silt
14	16	SAND	--	silty medium sand and clayey silt/fine sand
16	18	SAND	--	silty clayey fine to predominantly medium sand
18	20	SILT	--	fine grained sandy silt (predominantly silt) with small percentage of medium sand

Drillhole Details

Unit Number: 7029-2225 **Drillhole Name:** CMO 9A
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): **Date:**
Maximum Depth (m): 43 **Date:** 12/12/2005
Latest Open Depth (m): 43 **Date:** 12/12/2005

General Information

Latest Status: **Date:**
Cased to (m): **Min diameter (mm):** **Latest Permit No:**
Purpose: INV **Aquifer:**

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): **TDS (mg/L):** **Date:**
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** 17.8 **Date:**

Location Information

MGA Easting: 479724 **MGA Northing:** 6229338 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 48.91 **Decimal:** 140.7802523
Latitude - degrees: 34 **minutes:** 4 **seconds:** 35.45 **Decimal:** 34.0765149

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** m

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Completion Date	Const / Survey	Total Depth (m)	Final Depth (m)	Current Depth (m)	Permit No	Bkf Ind	Comments
12/12/2005	C	43.00	43.00	43.00		N	Investigation air hole, permit not required. Sampled under PN 110009

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4	Aquitard	Coonambidgal Formation
4	34	Aquifer	Monoman Formation
34	42	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
42	> 43	Aquitard	Bookpurnong Beds Proper

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	4	CLAY	--	Light greyish coloured moderately dense, moderately plastic, gritty clay.
4	6	SAND	--	Light yellowish orange coloured fine to medium sand. Clear and ferruginous sub-rounded to sub-angular quartz grains up to approximately 0.8mm in diameter.
6	8	SAND	--	Light yellowish coloured fine to predominantly medium but up to coarse sand. Sub-rounded to sub-angular quartz grains, generally up to 0.6mm with small percentage up to 1mm in diameter.
8	11	SAND	--	Light yellowish grey coloured predominantly medium to coarse sand. Clear and ferruginous, sub-angular to sub-rounded quartz grains up to approximately 1mm in diameter.
11	15	SAND	GRAVEL	Light greyish coloured medium to predominantly coarse sands and fine gravel. Sub-rounded quartz grains generally 0.6 to 2mm, but up to 3mm in diameter.
15	17	SAND	GRAVEL	Medium greyish coloured sands and gravels as above with decrease in gravel content.
17	21	SILT	SAND	Medium greyish coloured fine sandy silt. Sample is slightly micaceous.
21	22	SILT	SAND	Light greyish to light olive greyish coloured sandy silt to silty sand. Sample contains small percentage of coarse grains, potentially from above intervals.
22	26	SILT	SAND	Light greyish coloured fine sandy silt. Samples are slightly micaceous.
26	27	SAND	SILT	Light greyish silty fine sand. Fine sand as above sample, but in higher percentage.
27	34	SILT	SAND	Medium greyish to olive greyish coloured fine sandy silt to silty fine sand. Grainsize less than approximately 0.3mm. Samples are slightly micaceous.
34	37	SILT	CLAY	Medium greyish coloured gritty clayey silt. Samples have low density and low plasticity, becoming denser with depth.
37	40	CLAY	SILT	Medium to dark greyish coloured silty, gritty clay. Low to moderate density with low plasticity. Increasing density with depth. Micaceous.
40	42	CLAY	--	Medium dark olive greyish coloured clay. Clay is moderate to highly dense with moderate plasticity.
42	43	CLAY	FOSSILS	Dark olive coloured gritty fossiliferous clay. Clay is moderately dense and moderately plastic. Shell fragments up to approximately 6mm.

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2216 **Drillhole Name:** CMO 9
Obs Number: MTH033 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 16 **Date:** 07/01/2006
Maximum Depth (m): 16 **Date:** 07/01/2006
Latest Open Depth (m): 15 **Date:** 07/01/2006

General Information

Latest Status: **Date:**
Cased to (m): 11 **Min diameter (mm):** 80 **Latest Permit No:** 110009
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): 2.2 **RSWL (mAHD):** 15.67 **Date:** 07/01/2006
EC (uS/cm): 59200 **TDS (mg/L):** 41440 **Date:** 11/01/2006
Yield (L/sec): 1 **Date:** 11/01/2006

Latest Elevation Information

Reference Elevation (m): 19.01 **Ground Elevation (m):** 17.88 **Date:** 02/06/2006

Location Information

MGA Easting: 479731 **MGA Northing:** 6229343 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 49.18 **Decimal:** 140.7803274
Latitude - degrees: 34 **minutes:** 4 **seconds:** 35.30 **Decimal:** 34.0764733

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** m

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	11.00	80	PVC	G	0.00	7.00	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
11.00	14.00	80	SC	PVC	1	Class 12 PVC
14.00	15.00		SB			Sump

Hydro Stratigraphic Log (as logged from corresponding air-core site CMO9A)

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4	Aquitard	Coonambidgal Formation
4	34	Aquifer	Monoman Formation
34	42	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
42	> 43	Aquitard	Bookpurnong Beds Proper

Lithological Log (as logged from corresponding air-core site CMO9A)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	4	CLAY	--	Light greyish coloured moderately dense, moderately plastic, gritty clay.
4	6	SAND	--	Light yellowish orange coloured fine to medium sand. Clear and ferruginous sub-rounded to sub-angular quartz grains up to approximately 0.8mm in diameter.
6	8	SAND	--	Light yellowish coloured fine to predominantly medium but up to coarse sand. Sub-rounded to sub-angular quartz grains, generally up to 0.6mm with small percentage up to 1mm in diameter.
8	11	SAND	--	Light yellowish grey coloured predominantly medium to coarse sand. Clear and ferruginous, sub-angular to sub-rounded quartz grains up to approximately 1mm in diameter.
11	15	SAND	GRAVEL	Light greyish coloured medium to predominantly coarse sands and fine gravel. Sub-rounded quartz grains generally 0.6 to 2mm, but up to 3mm in diameter.
15	17	SAND	GRAVEL	Medium greyish coloured sands and gravels as above with decrease in gravel content.
17	21	SILT	SAND	Medium greyish coloured fine sandy silt. Sample is slightly micaceous.
21	22	SILT	SAND	Light greyish to light olive greyish coloured sandy silt to silty sand. Sample contains small percentage of coarse grains, potentially from above intervals.
22	26	SILT	SAND	Light greyish coloured fine sandy silt. Samples are slightly micaceous.
26	27	SAND	SILT	Light greyish silty fine sand. Fine sand as above sample, but in higher percentage.
27	34	SILT	SAND	Medium greyish to olive greyish coloured fine sandy silt to silty fine sand. Grainsize less than approximately 0.3mm. Samples are slightly micaceous.
34	37	SILT	CLAY	Medium greyish coloured gritty clayey silt. Samples have low density and low plasticity, becoming denser with depth.

Drillhole Details

Unit Number: 7029-2216 **Drillhole Name:** CMO 9

Obs Number: MTH033 **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
37	40	CLAY	SILT	Medium to dark greyish coloured silty, gritty clay. Low to moderate density with low plasticity. Increasing density with depth. Micaceous.
40	42	CLAY	--	Medium dark olive greyish coloured clay. Clay is moderate to highly dense with moderate plasticity.
42	43	CLAY	FOSSILS	Dark olive coloured gritty fossiliferous clay. Clay is moderately dense and moderately plastic. Shell fragments up to approximately 6mm.

Drillhole Details

Unit Number: 7029-2230 **Drillhole Name:** SMP 1A
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): **Date:**
Maximum Depth (m): 72 **Date:** 08/12/2005
Latest Open Depth (m): 72 **Date:** 08/12/2005

General Information

Latest Status: **Date:**
Cased to (m): **Min diameter (mm):** **Latest Permit No:**
Purpose: INV **Aquifer:**

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): **TDS (mg/L):** **Date:**
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** 46.38 **Date:**

Location Information

MGA Easting: 480008 **MGA Northing:** 6220686 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 59.24 **Decimal:** 140.7831212
Latitude - degrees: 34 **minutes:** 9 **seconds:** 16.39 **Decimal:** 34.1545519

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 18 **2,500 map sheet:** d
Hundred: MURTHO **Plan:** **Parcel:** **Title:** /

Construction Information

Completion Date	Const / Survey	Total Depth (m)	Final Depth (m)	Current Depth (m)	Permit No	Bkf Ind	Comments
08/12/2005	C	72.00	72.00	72.00		N	Investigation air hole, permit not required. Sampled under PN 110007

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4	Perched Aquifer in some areas	Woorinen Formation
4	6	Aquitard	Blanchetown Clay
6	62.5	Watertable Aquifer	Loxton Parilla Sands (Upper Loxton Sands 6 – 40.5m, Lower Loxton Sands 40.5 – 62.5m)
62.5	70.5	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
70.5	> 72	Aquitard	Bookpurnong Beds Proper

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	4	SAND	CALC	Light pinkish red coloured aeolian sands and calcrete. Sand is generally fine grained with quartz grains being less than 0.2mm in diameter. Some intermediate to hard bands of calcrete.
4	6	CLAY	SILT	Dark reddish coloured moderately hard clay. Clay has small amount of grit evident and is becoming harder with depth.
6	12	SAND	--	Dark yellowish orange to reddish orange coloured sands. Sands are clean, but generally only fine with maximum grainsize of approximately 0.8mm. Clear and ferruginous, well sorted, sub-rounded quartz grains.
12	16	SAND	--	Whiteish and multicoloured sands. Sand is fine to predominantly medium in size with a small percentage of coarse grains up to approximately 1mm in diameter.
16	18	SAND	--	Light yellowish coloured sands as above with increase in coarse grains by percentage and overall maximum size. Sub-angular quartz grains upto 2mm in diameter.
18	24	SAND	GRAVEL	Orangey yellowish coloured sandy gravel to gravelly sand. Sub-rounded to sub-angular quartz grains, predominantly 0.5 to 2mm but up to 4mm in diameter. Becoming much coarser with depth.
24	26	GRAVEL	SAND	Multicoloured ferruginous sandy gravel. Gravel is generally fine being predominantly 1mm to 5mm, but with small percentage of medium gravel up to approximately 10mm in diameter.
26	28	GRAVEL	SAND	Medium orange coloured gravels as above with decrease in maximum size to approximately 4mm.
28	32	SAND	--	Light reddish coloured fine to medium sands with small percentage of coarse grains which is assumed to be contamination from above. Grainsize generally below 0.6mm.
32	36	SAND	--	Orangey yellowish coloured fine to predominantly medium to coarse sands. Ferruginous, sub-angular quartz grains up to approximately 1.5mm in diameter.
36	38	SAND	--	Light yellowish coloured predominantly medium sands. Sands as above, with decrease in percentage of coarse grains and overall maximum size (reduced to approximately 0.8 - 1mm).
38	40.5	SAND	--	Yellowish orange coloured fine to coarse sands. Poorly sorted, sub-angular quartz grains up to approximately 2mm in diameter.

Drillhole Details

Unit Number: 7029-2230 **Drillhole Name:** SMP 1A

Obs Number: **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
40.5	42	SAND	GRAVEL	Greyish coloured medium to coarse sands and fine gravel. Sub-rounded to sub-angular clear quartz grains up to approximately 3mm in diameter. Moderately sorted.
42	43	SAND	GRAVEL	As above, with thin silty band and general reduction in grainsize by percentage.
43	44	SAND	--	Medium greyish coloured predominantly medium but up to coarse sand. Clear, moderately sorted sands as above up to approximately 1mm in diameter.
44	45	SAND	GRAVEL	Greyish coloured gravelly sand to sandy gravel. Poorly sorted, clear, sub-rounded quartz grains up to 4mm in diameter.
45	48	SILT	SAND	Medium greyish coloured silty fine sand to fine sandy silt. Significant reduction in relative hydraulic conductivity. Micaceous.
48	50.5	SAND	--	Medium greyish coloured fine to medium sand. Relatively clean, moderately sorted clear quartz grains up to approximately 0.6mm.
50.5	51	SILT	SAND	Medium greyish coloured sands as above with introduction of significant amount of grey silt.
51	52	SAND	--	Greyish coloured fine to predominantly medium but up to coarse grained sand. Clear, sub-rounded quartz grains up to approximately 1mm in diameter.
52	53	SILT	SAND	Light greyish to light olive greyish coloured overall. Sands as seen above (51 - 52m) with decrease in size by percentage and the introduction of light olive silty matrix.
53	54	GRAVEL	SAND	Light greyish coloured sandy gravel. Moderately sorted, clear, sub-rounded quartz grains, predominantly 1 - 6mm in diameter.
54	55	SAND	GRAVEL	Light greyish coloured overall. Gravel and sands as above, with slight decrease in grainsize by percentage. Predominantly coarse sands, but up to fine gravel.
55	58	SILT	SAND	Light to medium greyish and light olive coloured fine sandy silt to silty fine sand. Micaceous.
58	59.5	SAND	GRAVEL	Light greyish coloured medium to predominantly coarse sand and fine gravel. Generally clear quartz grains up to 1mm, but with small percentage up to 6mm.
59.5	62.5	SILT	SAND	Light to medium greyish coloured fine sand and silt. Slightly micaceous.
62.5	65	SILT	CLAY	Medium greyish coloured clayey gritty silt. Samples are soft and sticky but not overly dense or plastic.
65	70.5	CLAY	SILT	Medium greyish coloured silty gritty clays. Low to moderately dense, becoming rollable with an increase in density with depth.
70.5	72	CLAY	FOSSILS	Olive greenish coloured moderate to very dense clay. Clay has high plasticity and contains shell fragments up to approximately 5mm in size.

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2203 **Drillhole Name:** SMP 1
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 60 **Date:** 10/03/2006
Maximum Depth (m): 60 **Date:** 10/03/2006
Latest Open Depth (m): 57.5 **Date:** 10/03/2006

General Information

Latest Status: **Date:**
Cased to (m): 42.5 **Min diameter (mm):** 200 **Latest Permit No:** 110007
Purpose: MON **Aquifer:** Tpl

Latest Hydro Information

SWL (m): 31.95 **RSWL (mAHD):** 16.47 **Date:** 10/03/2006
EC (uS/cm): 28600 **TDS (mg/L):** 17448 **Date:** 04/05/2006
Yield (L/sec): 0.1 **Date:** 10/03/2006

Latest Elevation Information

Reference Elevation (m): 48.35 **Ground Elevation (m):** 48.43 **Date:** 02/06/2006

Location Information

MGA Easting: 480007 **MGA Northing:** 6220689 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 59.20 **Decimal:** 140.7831105
Latitude - degrees: 34 **minutes:** 9 **seconds:** 16.26 **Decimal:** 34.1545173

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 18 **2,500 map sheet:** d

Hundred: MURTHO **Plan:** **Parcel:** **Title:** /

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	42.50	200	PVC	P	33.00	39.00	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
42.50	55.70	200	SC	PVC	1	Class 12 PVC
55.70	57.70		SB			Sump

Hydro Stratigraphic Log (as logged from corresponding air-core site SMP1A)

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4	Perched Aquifer in some areas	Woorinen Formation
4	6	Aquitard	Blanchetown Clay
6	62.5	Watertable Aquifer	Loxton Parilla Sands (Upper Loxton Sands 6 – 40.5m, Lower Loxton Sands 40.5 – 62.5m)
62.5	70.5	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
70.5	> 72	Aquitard	Bookpurnong Beds Proper

Lithological Log (as logged from corresponding air-core site SMP1A)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	4	SAND	CALC	Light pinkish red coloured aeolian sands and calcrete. Sand is generally fine grained with quartz grains being less than 0.2mm in diameter. Some intermediate to hard bands of calcrete.
4	6	CLAY	SILT	Dark reddish coloured moderately hard clay. Clay has small amount of grit evident and is becoming harder with depth.
6	12	SAND	--	Dark yellowish orange to reddish orange coloured sands. Sands are clean, but generally only fine with maximum grainsize of approximately 0.8mm. Clear and ferruginous, well sorted, sub-rounded quartz grains.
12	16	SAND	--	Whiteish and multicoloured sands. Sand is fine to predominantly medium in size with a small percentage of coarse grains up to approximately 1mm in diameter.
16	18	SAND	--	Light yellowish coloured sands as above with increase in coarse grains by percentage and overall maximum size. Sub-angular quartz grains upto 2mm in diameter.
18	24	SAND	GRAVEL	Orangey yellowish coloured sandy gravel to gravelly sand. Sub-rounded to sub-angular quartz grains, predominantly 0.5 to 2mm but up to 4mm in diameter. Becoming much coarser with depth.
24	26	GRAVEL	SAND	Multicoloured ferruginous sandy gravel. Gravel is generally fine being predominantly 1mm to 5mm, but with small percentage of medium gravel up to approximately 10mm in diameter.
26	28	GRAVEL	SAND	Medium orange coloured gravels as above with decrease in maximum size to approximately 4mm.
28	32	SAND	--	Light reddish coloured fine to medium sands with small percentage of coarse grains which is assumed to be contamination from above. Grainsize generally below 0.6mm.
32	36	SAND	--	Orangey yellowish coloured fine to predominantly medium to coarse sands. Ferruginous, sub-angular quartz grains up to approximately 1.5mm in diameter.

Drillhole Details

Unit Number: 7029-2203 **Drillhole Name:** SMP 1

Obs Number: **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
36	38	SAND	--	Light yellowish coloured predominantly medium sands. Sands as above, with decrease in percentage of coarse grains and overall maximum size (reduced to approximately 0.8 - 1mm).
38	40.5	SAND	--	Yellowish orange coloured fine to coarse sands. Poorly sorted, sub-angular quartz grains up to approximately 2mm in diameter.
40.5	42	SAND	GRAVEL	Greyish coloured medium to coarse sands and fine gravel. Sub-rounded to sub-angular clear quartz grains up to approximately 3mm in diameter. Moderately sorted.
42	43	SAND	GRAVEL	As above, with thin silty band and general reduction in grainsize by percentage.
43	44	SAND	--	Medium greyish coloured predominantly medium but up to coarse sand. Clear, moderately sorted sands as above up to approximately 1mm in diameter.
44	45	SAND	GRAVEL	Greyish coloured gravelly sand to sandy gravel. Poorly sorted, clear, sub-rounded quartz grains up to 4mm in diameter.
45	48	SILT	SAND	Medium greyish coloured silty fine sand to fine sandy silt. Significant reduction in relative hydraulic conductivity. Micaceous.
48	50.5	SAND	--	Medium greyish coloured fine to medium sand. Relatively clean, moderately sorted clear quartz grains up to approximately 0.6mm.
50.5	51	SILT	SAND	Medium greyish coloured sands as above with introduction of significant amount of grey silt.
51	52	SAND	--	Greyish coloured fine to predominantly medium but up to coarse grained sand. Clear, sub-rounded quartz grains up to approximately 1mm in diameter.
52	53	SILT	SAND	Light greyish to light olive greyish coloured overall. Sands as seen above (51 - 52m) with decrease in size by percentage and the introduction of light olive silty matrix.
53	54	GRAVEL	SAND	Light greyish coloured sandy gravel. Moderately sorted, clear, sub-rounded quartz grains, predominantly 1 - 6mm in diameter.
54	55	SAND	GRAVEL	Light greyish coloured overall. Gravel and sands as above, with slight decrease in grainsize by percentage. Predominantly coarse sands, but up to fine gravel.
55	58	SILT	SAND	Light to medium greyish and light olive coloured fine sandy silt to silty fine sand. Micaceous.
58	59.5	SAND	GRAVEL	Light greyish coloured medium to predominantly coarse sand and fine gravel. Generally clear quartz grains up to 1mm, but with small percentage up to 6mm.
59.5	62.5	SILT	SAND	Light to medium greyish coloured fine sand and silt. Slightly micaceous.
62.5	65	SILT	CLAY	Medium greyish coloured clayey gritty silt. Samples are soft and sticky but not overly dense or plastic.
65	70.5	CLAY	SILT	Medium greyish coloured silty gritty clays. Low to moderately dense, becoming rollable with an increase in density with depth.
70.5	72	CLAY	FOSSILS	Olive greenish coloured moderate to very dense clay. Clay has high plasticity and contains shell fragments up to approximately 5mm in size.

Drillhole Details

Unit Number: 7029-2231 **Drillhole Name:** SMP 2A

Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): **Date:**

Maximum Depth (m): 64 **Date:** 09/12/2005

Latest Open Depth (m): 64 **Date:** 09/12/2005

General Information

Latest Status: **Date:**

Cased to (m): **Min diameter (mm):** **Latest Permit No:**

Purpose: INV **Aquifer:**

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**

EC (uS/cm): **TDS (mg/L):** **Date:**

Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** 43.49 **Date:**

Location Information

MGA Easting: 480250 **MGA Northing:** 6222476 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 8.87 **Decimal:** 140.7857974

Latitude - degrees: 34 **minutes:** 8 **seconds:** 18.27 **Decimal:** 34.1384094

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** n

Hundred: MURTHO **Plan:** F142873 **Parcel:** Q2 **Title:** CT 5262/108

Construction Information

Completion Date	Const / Survey	Total Depth (m)	Final Depth (m)	Current Depth (m)	Permit No	Bkf Ind	Comments
09/12/2005	C	64.00	64.00	64.00		N	Investigation air hole, permit not required. Sampled under PN 110006

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	2	Perched Aquifer in some areas	Woorinen Formation
2	56.5	Watertable Aquifer	Loxton Parilla Sands (Upper Loxton Sands 2 – 34.5m, Lower Loxton Sands 34.5 – 56.5m)
56.5	63	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
63	> 64	Aquitard	Bookpurnong Beds Proper

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	SAND	SILT	Light reddish coloured fine silty sand. Iron stained quartz grains generally less than 0.2mm in diameter.
2	18	SAND	--	Light yellowish to white coloured fine sands. Clear and ferruginous sub-rounded quartz grains generally below 0.2mm, but up to 0.5mm in diameter.
18	26	SAND	--	Orangey yellowish coloured fine to coarse sands. Moderate to poorly sorted clear and ferruginous quartz grains up to approximately 2mm in diameter.
26	28	SAND	--	As above, with slight decrease in grainsize by percentage.
28	34.5	SAND	--	Light yellowish and light orangey yellowish coloured predominantly fine to medium but up to coarse sands. Clear and ferruginous quartz grains generally below 0.5mm, but with a small percentage up to approximately 0.8 to 1mm in diameter. Sub-rounded to rounded.
34.5	35	SILT	CLAY	Light greyish coloured thin silty, gritty, slightly clayey lense.
35	41	SAND	--	Light greyish coloured fine sand. Clear, well sorted quartz grains less than 0.2mm in diameter. Small percentage of silt between 38.5 - 40m.
41	44.5	SAND	--	Light greyish coloured fine to medium sand. Sand as above, with an increase in grainsize up to approximately 0.6mm.
44.5	49	SAND	SILT	Light to medium greyish coloured silty fine sand. Grainsize generally below 0.2mm. Slighly micaceous.
49	50	SILT	SAND	As above with an increase in silt content. Fine sandy silt overall.
50	52.5	SAND	--	Light greyish coloured medium to coarse grained sand. Generally moderate to well sorted, clear quartz grains up to approximately 1.5mm in diameter.
52.5	56.5	SILT	SAND	Light greyish coloured silty fine sand to fine sandy silt.
56.5	63	CLAY	SILT	Medium greyish coloured sticky, silty clays. Moderately dense with reasonable amount of fine grit. Micaceous. Increasing in density with depth.
63	64	CLAY	FOSSILS	Olive greenish coloured moderately dense, moderately plastic clay. Shell fragments up to approximately 6mm.

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2205 **Drillhole Name:** SMP 2
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 52 **Date:** 07/02/2006
Maximum Depth (m): 52 **Date:** 07/02/2006
Latest Open Depth (m): 49 **Date:** 07/02/2006

General Information

Latest Status: **Date:**
Cased to (m): 35 **Min diameter (mm):** 200 **Latest Permit No:** 110006
Purpose: MON **Aquifer:** Tpl

Latest Hydro Information

SWL (m): 26.85 **RSWL (mAHD):** 16.62 **Date:** 07/02/2006
EC (uS/cm): 13650 **TDS (mg/L):** 7896 **Date:** 27/04/2006
Yield (L/sec): 0.1 **Date:** 07/02/2006

Latest Elevation Information

Reference Elevation (m): 43.66 **Ground Elevation (m):** 43.47 **Date:** 02/06/2006

Location Information

MGA Easting: 480254 **MGA Northing:** 6222480 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 9.00 **Decimal:** 140.7858330
Latitude - degrees: 34 **minutes:** 8 **seconds:** 18.14 **Decimal:** 34.1383725

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** n

Hundred: MURTHO **Plan:** F142873 **Parcel:** Q2 **Title:** CT 5262/108

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	35.00	200	PVC	P	23.50	29.50	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
35.00	47.00	200	SC	PVC	0.5	Class 12 PVC
47.00	49.00		SB			Sump

Hydro Stratigraphic Log (as logged from corresponding air-core site SMP2A)

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	2	Perched Aquifer in some areas	Woorinen Formation
2	56.5	Watertable Aquifer	Loxton Parilla Sands (Upper Loxton Sands 2 – 34.5m, Lower Loxton Sands 34.5 – 56.5m)
56.5	63	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
63	> 64	Aquitard	Bookpurnong Beds Proper

Lithological Log (as logged from corresponding air-core site SMP2A)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	SAND	SILT	Light reddish coloured fine silty sand. Iron stained quartz grains generally less than 0.2mm in diameter.
2	18	SAND	--	Light yellowish to white coloured fine sands. Clear and ferruginous sub-rounded quartz grains generally below 0.2mm, but up to 0.5mm in diameter.
18	26	SAND	--	Orangey yellowish coloured fine to coarse sands. Moderate to poorly sorted clear and ferruginous quartz grains up to approximately 2mm in diameter.
26	28	SAND	--	As above, with slight decrease in grainsize by percentage.
28	34.5	SAND	--	Light yellowish and light orangey yellowish coloured predominantly fine to medium but up to coarse sands. Clear and ferruginous quartz grains generally below 0.5mm, but with a small percentage up to approximately 0.8 to 1mm in diameter. Sub-rounded to rounded.
34.5	35	SILT	CLAY	Light greyish coloured thin silty, gritty, slightly clayey lense.
35	41	SAND	--	Light greyish coloured fine sand. Clear, well sorted quartz grains less than 0.2mm in diameter. Small percentage of silt between 38.5 - 40m.
41	44.5	SAND	--	Light greyish coloured fine to medium sand. Sand as above, with an increase in grainsize up to approximately 0.6mm.
44.5	49	SAND	SILT	Light to medium greyish coloured silty fine sand. Grainsize generally below 0.2mm. Slighly micaceous.
49	50	SILT	SAND	As above with an increase in silt content. Fine sandy silt overall.
50	52.5	SAND	--	Light greyish coloured medium to coarse grained sand. Generally moderate to well sorted, clear quartz grains up to approximately 1.5mm in diameter.

Drillhole Details

Unit Number: 7029-2205 **Drillhole Name:** SMP 2

Obs Number: **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
52.5	56.5	SILT	SAND	Light greyish coloured silty fine sand to fine sandy silt.
56.5	63	CLAY	SILT	Medium greyish coloured sticky, silty clays. Moderately dense with reasonable amount of fine grit. Micaceous. Increasing in density with depth.
63	64	CLAY	FOSSILS	Olive greenish coloured moderately dense, moderately plastic clay. Shell fragments up to approximately 6mm.

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2204 **Drillhole Name:** SMO 1
Obs Number: MTH024 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 50 **Date:** 16/12/2005
Maximum Depth (m): 50 **Date:** 16/12/2005
Latest Open Depth (m): 49 **Date:** 16/12/2005

General Information

Latest Status: **Date:**
Cased to (m): 36 **Min diameter (mm):** 80 **Latest Permit No:** 110008
Purpose: MON **Aquifer:** Tpl

Latest Hydro Information

SWL (m): 31.59 **RSWL (mAHD):** 16.44 **Date:** 16/12/2005
EC (uS/cm): 26400 **TDS (mg/L):** 15969 **Date:** 06/01/2006
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): 49.14 **Ground Elevation (m):** 48.04 **Date:** 02/06/2006

Location Information

MGA Easting: 479947 **MGA Northing:** 6220853 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 56.87 **Decimal:** 140.7824640
Latitude - degrees: 34 **minutes:** 9 **seconds:** 10.95 **Decimal:** 34.1530426

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 18 **2,500 map sheet:** d

Hundred: MURTHO **Plan:** **Parcel:** **Title:** /

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	36.00	80	PVC	P	0.00	30.00	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
36.00	48.00	80	SC	PVC	1	Class 12 PVC
48.00	49.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	3.5	Perched Aquifer in some areas	Woorinen Formation
3.5	5.5	Aquitard	Blanchetown Clay
5.5	> 50	Watertable Aquifer	Loxton Parilla Sands (Upper Loxton Sands 5.5 ~ 40m, Lower Loxton Sands ~ 40 – 50m)

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	1	SAND	--	orange/brown silty fine sand, loamy
1	2	SAND	--	as above with calcrete
2	3.5	CALC.	--	pale brown fine gritty silt, sticky, lots of hard calcrete clumps
3.5	4	CLAY	--	clay content increases, just becoming plastic, pale reddish brown gritty silty clay
4	5.5	CLAY	--	dark red/brown, consistent colour, high/moderate density, gritty clay, moderately plastic
5.5	6	CLAY	--	gritty silty clay (contaminated sample)
6	9	SAND	--	multicolour fine - medium sand
9	10	SAND	--	as above with off white semi-consolidated sand, friable
10	11	SAND	--	orange/brown fine to predominantly medium sand with grains upto 1mm
11	12	SAND	--	as above with increased silt content
12	15	SAND	--	yellow/orange medium sand with somecoarse grains upto 2mm
15	18	SAND	--	gravelly sand rounded quartz upto 4mm
18	22	SAND	--	as above, colour change to off white/grey
22	24	GRAVEL	--	as above, slightly coarser sandy gravel
24	26	SAND	--	same as 18-22m, contaminated
26	28	SAND	--	reddish white coarse sand/fine gravel with fines

Drillhole Details

Unit Number: 7029-2204 **Drillhole Name:** SMO 1

Obs Number: MTH024 **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
28	32	SAND	--	as above with a small percentage of silt
32	34	SAND	--	as above with a very small percentage medium gravel, sub rounded quartz upto 10mm
34	36	SAND	--	contaminated sample, mixtureof fine sands - medium gravel
36	40	SAND	--	medium/coarse sand 1-2mm upto 4mm with some fines
40	44	GRAVEL	--	grey sandy gravel, cleargravel, rounded quartz upto 10mm, predominantly 2-4mm, micaceous
44	45	GRAVEL	--	as above (may be contamination of sample from above)
45	48	SAND	--	grey fine/medium sand upto 0.5mm, micaceous
48	50	SAND	--	as above, contains lignite

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2206 **Drillhole Name:** SMO 2
Obs Number: MTH025 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 50 **Date:** 20/12/2005
Maximum Depth (m): 50 **Date:** 20/12/2005
Latest Open Depth (m): 46 **Date:** 20/12/2005

General Information

Latest Status: **Date:**
Cased to (m): 33 **Min diameter (mm):** 80 **Latest Permit No:** 110005
Purpose: MON **Aquifer:** Tpl

Latest Hydro Information

SWL (m): 30.44 **RSWL (mAHD):** 16.56 **Date:** 20/12/2005
EC (uS/cm): 41900 **TDS (mg/L):** 26680 **Date:** 06/01/2006
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): 48.14 **Ground Elevation (m):** 47 **Date:** 02/06/2006

Location Information

MGA Easting: 480218 **MGA Northing:** 6222666 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 7.62 **Decimal:** 140.7854486
Latitude - degrees: 34 **minutes:** 8 **seconds:** 12.10 **Decimal:** 34.1366952

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** m

Hundred: MURTHO **Plan:** F142873 **Parcel:** Q2 **Title:** CT 5262/108

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	33.00	80	PVC	P	0.00	28.50	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
33.00	45.00	80	SC	PVC	1	Class 12 PVC
45.00	46.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	1	Perched Aquifer in some areas	Woorinen Formation
1	3	Aquitard	Blanchetown Clay
3	> 50	Watertable Aquifer	Loxton Parilla Sands (Upper Loxton Sands 3 ~ 38m, Lower Loxton Sands ~ 38 – 50m)

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	SAND	--	off white/light brown silty fine sand contains small traces of grey moderate density plastic clay with green/brown silt interbeded
2	4	CLAY	--	red/brown medium sandy clay, moderate density, slightly plastic
4	5	SAND	--	white yellow fine/medium sands and silt
5	6	SILT	--	fine sandy silt, moderate density clay and hard calcrete. possible contaminated sample due to very slow drilling
6	8	SAND	--	light grey/off white silty predominantly fine to medium sand
8	10	SAND	--	light grey/white silty fine to medium sand, slightly coarser than above, small percentage of sticky clay
10	12	SAND	--	white and yellow fine to coarse sands and fines upto 2mm and light brown clayey silt
12	14	SAND	--	medium to predominantly coarse sand upto 2mm with clayey silt and clayey sand, mixed sample
14	18	SAND	--	cleanish off white medium to predominantly coarse sand upto 2mm
18	20	SAND	--	off white/yellow coarse sand upto 2mm, small percentage fine sand/silt
20	22	SAND	--	as above with small percentage fine gravel upto 3mm
22	30	SAND	--	as above with small percentage gravel upto 5-10mm
30	32	SAND	--	fine to predominantly coarse sand, yellow/orange upto 3mm
32	36	SAND	--	as above upto 4mm
36	38	SAND	--	mixed colours fine to predominantly medium sand with coarse sand/fine gravel upto 4mm, contains dark grey/brown silty clayey fine sand

Drillhole Details

Unit Number: 7029-2206 **Drillhole Name:** SMO 2

Obs Number: MTH025 **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
38	42	SAND	--	white/yellow silty fine/medium sand and an increased percentage of brown/grey clayey silty fine/medium sand. Contains some coarse sand/fine gravel upto 4mm
42	46	SAND	--	fine to predominantly medium/coarse sand, cleaner than above sample, grains upto 4mm
46	48	SAND	--	fine to predominantly coarse sand/fine gravel, and a small percentage of fines
48	50	SAND	--	grey relatively clean fine to predominantly coarse sand 2mm, some grains upto 4mm

Drillhole Details

Unit Number: 7029-2229 **Drillhole Name:** SMO 3A
Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): **Date:**
Maximum Depth (m): 36 **Date:** 09/12/2005
Latest Open Depth (m): 36 **Date:** 09/12/2005

General Information

Latest Status: **Date:**
Cased to (m): **Min diameter (mm):** **Latest Permit No:**
Purpose: INV **Aquifer:**

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): **TDS (mg/L):** **Date:**
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): **Ground Elevation (m):** 16.88 **Date:**

Location Information

MGA Easting: 480036 **MGA Northing:** 6222628 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 0.50 **Decimal:** 140.7834730
Latitude - degrees: 34 **minutes:** 8 **seconds:** 13.32 **Decimal:** 34.1370334

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** m

Hundred: MURTHO **Plan:** F142873 **Parcel:** Q2 **Title:** CT 5262/108

Construction Information

Completion Date	Const / Survey	Total Depth (m)	Final Depth (m)	Current Depth (m)	Permit No	Bkf Ind	Comments
09/12/2005	C	36.00	36.00	36.00		N	Investigation air hole, permit not required. Sampled under PN 110004

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4.5	Aquitard	Coonambidgal Clay
4.5	26.5	Aquifer	Monoman Formation
26.5	35	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
35	> 36	Aquitard	Bookpurnong Beds Proper

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	3	CLAY	SAND	Medium greyish to greenish grey coloured gritty clay. Samples have moderate density and low plasticity. Reasonably sticky.
3	4.5	CLAY	SILT	Light greyish coloured gritty, silty clay. Samples have low to moderate density and low plasticity.
4.5	8	SAND	GRAVEL	light greyish orange coloured medium to predominantly coarse sand and fine gravels. Clear and ferruginous, sub-angular quartz grains up to 2.5mm in diameter.
8	11.5	SAND	--	Light greyish orange coloured sands as above, predominantly coarse grained, up to approximately 2mm in diameter.
11.5	14	SAND	SILT	Light greyish coloured predominantly fine sand. Clear, sub-rounded quartz grains, generally less than 0.2mm but up to 0.6 - 0.8mm in diameter. Slightly micaceous.
14	15	SAND	CLAY	Light greyish coloured silty clayey sand. Fine sands as above with introduction of soft, low density clay. Sample is micaceous but not overly sticky.
15	17	SAND	--	Light greyish coloured fine to medium sand. Clear quartz grains generally below 0.5mm in diameter, with small percentage of silt.
17	21	SAND	SILT	Light greyish coloured silty fine sand. Fine sands as above with significant increase in silt content. Micaceous.
21	22	SILT	SAND	Light greyish coloured fine sandy silt.
22	23	SAND	GRAVEL	Light greyish coloured medium to coarse grained sand. Predominantly clear, sub-rounded quartz grains 0.2 - 2mm in diameter with small percentage of fine gravel to 2.5 - 3mm.
23	24	SILT	CLAY	Light greyish fine sandy silt with introduction of medium grey coloured soft, moderately plastic clay towards bottom of interval.
24	25	SILT	S/STONE	Light greyish fine sandy silt as above, with absence of clay. Thin hard band believed to be moderately consolidated siltstone.
25	26.5	SAND	--	Light greyish coloured predominantly coarse grained sand. Clear, sub-angular quartz grains from approximately 0.6 - 1.5mm in diameter. Reasonably clean samples with only minor fines present.
26.5	32	CLAY	SILT	Light to medium greyish coloured silty clay. Moderately dense clays becoming increasingly plastic with depth. Micaceous.
32	35	CLAY	--	Medium grey to olive grey coloured moderate to highly dense clays. Samples have high plasticity and rollability.
35	36	CLAY	FOSSILS	Olive green coloured moderate to very dense clay. Clay has high plasticity and rollability and abundant large shell fragments to 5 - 6mm in size.

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2207 **Drillhole Name:** SMO 3
Obs Number: MTH026 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 15 **Date:** 20/12/2005
Maximum Depth (m): 15 **Date:** 20/12/2005
Latest Open Depth (m): 15 **Date:** 20/12/2005

General Information

Latest Status: **Date:**
Cased to (m): 15 **Min diameter (mm):** 80 **Latest Permit No:** 110004
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): 0.93 **RSWL (mAHD):** 16.22 **Date:** 20/12/2005
EC (uS/cm): 32000 **TDS (mg/L):** 19721 **Date:** 21/12/2005
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): 18.21 **Ground Elevation (m):** 17.14 **Date:** 02/06/2006

Location Information

MGA Easting: 480043 **MGA Northing:** 6222633 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 0.77 **Decimal:** 140.7835460
Latitude - degrees: 34 **minutes:** 8 **seconds:** 13.15 **Decimal:** 34.1369861

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** m

Hundred: MURTHO **Plan:** F142873 **Parcel:** Q2 **Title:** CT 5262/108

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	15.00	80	PVC	G	0.00	3.50	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
5.00	14.00	80	SC	PVC	1	Class 12 PVC
14.00	15.00		SB			Sump

Hydro Stratigraphic Log (as logged from corresponding air-core site SMO3A)

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4.5	Aquitard	Coonambidgal Clay
4.5	26.5	Aquifer	Monoman Formation
26.5	35	Aquitard	Lower Loxton Clays, considered part of the Bookpurnong Beds regional confining layer
35	> 36	Aquitard	Bookpurnong Beds Proper

Lithological Log (as logged from corresponding air-core site SMO3A)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	3	CLAY	SAND	Medium greyish to greenish grey coloured gritty clay. Samples have moderate density and low plasticity. Reasonably sticky.
3	4.5	CLAY	SILT	Light greyish coloured gritty, silty clay. Samples have low to moderate density and low plasticity.
4.5	8	SAND	GRAVEL	light greyish orange coloured medium to predominantly coarse sand and fine gravels. Clear and ferruginous, sub-angular quartz grains up to 2.5mm in diameter.
8	11.5	SAND	--	Light greyish orange coloured sands as above, predominantly coarse grained, up to approximately 2mm in diameter.
11.5	14	SAND	SILT	Light greyish coloured predominantly fine sand. Clear, sub-rounded quartz grains, generally less than 0.2mm but up to 0.6 - 0.8mm in diameter. Slightly micaceous.
14	15	SAND	CLAY	Light greyish coloured silty clayey sand. Fine sands as above with introduction of soft, low density clay. Sample is micaceous but not overly sticky.
15	17	SAND	--	Light greyish coloured fine to medium sand. Clear quartz grains generally below 0.5mm in diameter, with small percentage of silt.
17	21	SAND	SILT	Light greyish coloured silty fine sand. Fine sands as above with significant increase in silt content. Micaceous.
21	22	SILT	SAND	Light greyish coloured fine sandy silt.
22	23	SAND	GRAVEL	Light greyish coloured medium to coarse grained sand. Predominantly clear, sub-rounded quartz grains 0.2 - 2mm in diameter with small percentage of fine gravel to 2.5 - 3mm.
23	24	SILT	CLAY	Light greyish fine sandy silt with introduction of medium grey coloured soft, moderately plastic clay towards bottom of interval.
24	25	SILT	S/STONE	Light greyish fine sandy silt as above, with absence of clay. Thin hard band believed to be moderately consolidated siltstone.

Drillhole Details

Unit Number: 7029-2207 **Drillhole Name:** SMO 3

Obs Number: MTH026 **Class:** Water Well

Lithological Log (Continued)

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
25	26.5	SAND	--	Light greyish coloured predominantly coarse grained sand. Clear, sub-angular quartz grains from approximately 0.6 - 1.5mm in diameter. Reasonably clean samples with only minor fines present.
26.5	32	CLAY	SILT	Light to medium greyish coloured silty clay. Moderately dense clays becoming increasingly plastic with depth. Micaceous.
32	35	CLAY	--	Medium grey to olive grey coloured moderate to highly dense clays. Samples have high plasticity and rollability.
35	36	CLAY	FOSSILS	Olive green coloured moderate to very dense clay. Clay has high plasticity and rollability and abundant large shell fragments to 5 - 6mm in size.

Drillhole Details

Unit Number: 7029-2218 **Drillhole Name:** EF 1
Obs Number: MTH034 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 14 **Date:** 18/12/2005
Maximum Depth (m): 14 **Date:** 18/12/2005
Latest Open Depth (m): 13 **Date:** 18/12/2005

General Information

Latest Status: **Date:**
Cased to (m): 9 **Min diameter (mm):** 80 **Latest Permit No:** 110003
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): 43400 **TDS (mg/L):** 27767 **Date:** 21/12/2005
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): 18.65 **Ground Elevation (m):** 17.46 **Date:** 02/06/2006

Location Information

MGA Easting: 480322 **MGA Northing:** 6224514 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 11.83 **Decimal:** 140.7866186
Latitude - degrees: 34 **minutes:** 7 **seconds:** 12.11 **Decimal:** 34.1200299

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** e

Hundred: MURTHO **Plan:** D55550 **Parcel:** Q19 **Title:** CT 5861/764

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	9.00	80	PVC	G	0.00	5.20	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
9.00	12.00	80	SC	PVC	1	Class 12 PVC
12.00	13.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	3	Aquitard	Coonambidgal Clay
3	> 14	Aquifer	Monoman Formation

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	CLAY	--	grey plastic clay and fine sand/clay, moderate density, micaceous
2	4	CLAY	--	brown/grey plastic clay and medium sand
4	6	SAND	--	medium/coarse sand, orange, micaceous occasional grains upto 1mm
6	8	SAND	--	orange/grey/brown fine to predominantly medium sand, contains clay as above, lignitic, grains upto 1mm
8	10	SAND	--	grey medium to predominantly coarse sand about 1mm but upto 2mm
10	12	SAND	--	clean coarse sand upto 2mm, some fine gravel upto 4mm
12	14	GRAVEL	--	grey sandy gravel 1-2mm, upto 10mm, relatively clean

Drillhole Details

Unit Number: 7029-2219 **Drillhole Name:** EF 2
Obs Number: MTH035 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 11 **Date:** 03/02/2006
Maximum Depth (m): 11 **Date:** 03/02/2006
Latest Open Depth (m): 10 **Date:** 03/02/2006

General Information

Latest Status: **Date:**
Cased to (m): 6 **Min diameter (mm):** 80 **Latest Permit No:** 110002
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): 31800 **TDS (mg/L):** 19598 **Date:** 05/02/2006
Yield (L/sec): 1.5 **Date:** 03/02/2006

Latest Elevation Information

Reference Elevation (m): 18.4 **Ground Elevation (m):** 17.23 **Date:** 02/06/2006

Location Information

MGA Easting: 479586 **MGA Northing:** 6224620 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 46 **seconds:** 43.11 **Decimal:** 140.7786413
Latitude - degrees: 34 **minutes:** 7 **seconds:** 8.62 **Decimal:** 34.1190626

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 13 **2,500 map sheet:** e

Hundred: MURTHO **Plan:** D55550 **Parcel:** Q19 **Title:** CT 5861/764

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	6.00	80	PVC	G	0.00	5.00	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
6.00	9.00	80	SC	PVC	1	Class 12 PVC
9.00	11.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	3	Aquitard	Coonambidgal Clay
3	> 11	Aquifer	Monoman Formation

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	1	CLAY	--	Stiff/dense dark grey clay
1	2	CLAY	--	As above becoming less dense with moderate amount of root matter
2	3	CLAY	--	Silty clay, light grey with orange silt layering
3	4	SAND	--	Orange/grey silt becoming sandy with depth
4	5	SAND	--	Medium to coarse sand, 0.5 to 2mm, orange iron staining. Minor gravel to 3mm. Abundant grey clay suspected to be contamination from above
5	6	SAND	--	Sand as above, reduced iron staining, moderately sorted
6	7	SAND	--	Grey medium sand moderate to well sorted
7	8	SAND	--	Sand as above (poor sample)
8	9	SAND	--	Grey sand some iron staining, moderately sorted 0.4 to 2mm
9	10	SAND	--	Sand as above with layer of dark grey silt containing full and fragmented snail shells
10	11	SAND	--	Sand, well sorted 0.5 to 1.5mm, grey, sub rounded. Minor shell fragments

Drillhole Details

Unit Number: 7029-2220 **Drillhole Name:** EF 5
Obs Number: MTH036 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): **Date:**
Maximum Depth (m): 11 **Date:** 09/01/2006
Latest Open Depth (m): 10 **Date:** 09/01/2006

General Information

Latest Status: **Date:**
Cased to (m): 6 **Min diameter (mm):** 80 **Latest Permit No:** 109992
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): 60600 **TDS (mg/L):** 42420 **Date:** 11/01/2006
Yield (L/sec): 0.75 **Date:** 09/01/2006

Latest Elevation Information

Reference Elevation (m): 19.12 **Ground Elevation (m):** 18.05 **Date:** 02/06/2006

Location Information

MGA Easting: 477240 **MGA Northing:** 6229773 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 45 **seconds:** 12.02 **Decimal:** 140.7533388
Latitude - degrees: 34 **minutes:** 4 **seconds:** 21.13 **Decimal:** 34.0725369

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** f

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	6.00	80	PVC	G	0.00	4.70	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
6.00	9.00	80	SC	PVC	1	Class 12 PVC
9.00	10.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	1	Aquitard	Coonambidgal Clay
1	> 11	Aquifer	Monoman Formation

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	SAND	--	loamy fine sand and silty clay, some plastic clay
2	4	SAND	--	clayey fine sand
4	6	SAND	--	orange micaceous relatively clean medium to predominantly coarse sand
6	8	SAND	--	as above, changed to off white/grey, predominantly medium grain size
8	10	SAND	--	grey medium sand with black/brown organic chunks
10	11	SAND	--	silty fine to predominantly medium/coarse sand with some clay chunks

Drillhole Details

Unit Number: 7029-2221 **Drillhole Name:** EF 7
Obs Number: MTH037 **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Summary Information

Depth Information

Original Drilled Depth (m): 14 **Date:** 07/01/2006
Maximum Depth (m): 14 **Date:** 07/01/2006
Latest Open Depth (m): 13 **Date:** 07/01/2006

General Information

Latest Status: **Date:**
Cased to (m): 9 **Min diameter (mm):** 80 **Latest Permit No:** 109995
Purpose: MON **Aquifer:** Qam

Latest Hydro Information

SWL (m): **RSWL (mAHD):** **Date:**
EC (uS/cm): 45500 **TDS (mg/L):** 29295 **Date:** 11/01/2006
Yield (L/sec): **Date:**

Latest Elevation Information

Reference Elevation (m): 17.98 **Ground Elevation (m):** 16.84 **Date:** 02/06/2006

Location Information

MGA Easting: 481114 **MGA Northing:** 6228817 **MGA Zone:** 54

Longitude - degrees: 140 **minutes:** 47 **seconds:** 43.08 **Decimal:** 140.7952989
Latitude - degrees: 34 **minutes:** 4 **seconds:** 52.46 **Decimal:** 34.0812379

250,000 map sheet: SI5410 RENMARK **100,000 map sheet:** 7029 Renmark **50,000 map sheet:** 1 **10,000 map sheet:** 8 **2,500 map sheet:** m

Hundred: MURTHO **Plan:** H710600 **Parcel:** S42 **Title:** CR 5772/942

Construction Information

Summary | Casing & Production Zone | Drilling & Well Development | Water Cut

Casing

Depth From (m)	Depth To (m)	Diameter (mm)	Material	Cement Type	Cement From (m)	Cement To (m)	Comments
0.00	9.00	80	PVC	G	0.00	4.70	Cement

Production Zone

Depth From (m)	Depth To (m)	Diameter (mm)	Type	Material	Aperture (mm)	Comments
9.00	12.00	80	SC	PVC	1	Class 12 PVC
12.00	13.00		SB			Sump

Hydro Stratigraphic Log

Depth From (m)	Depth To (m)	Hydrogeological Unit	Stratigraphic Unit
0	4	Aquitard	Coonambidgal Clay
4	> 14	Aquifer	Monoman Formation

Lithological Log

Depth From (m)	Depth To (m)	Major Lithology	Minor Lithology	Description
0	2	CLAY	--	clay, moderately consolidated, moderate density, plastic, contains silt
2	4	CLAY	--	olive/grey micaceous sandy clay and plastic silty clay
4	6	SAND	--	mixed sample. predominantly medium/fine sand, contains plastic clay and clayey fine sand chips
6	8	SAND	--	relatively clean, medium to predominantly coarse sand, grains upto 3mm, sample contains clay, possibly from above
8	10	SAND	--	as above, slightly less clay pieces
10	12	SAND	--	cleanish medium to predominantly coarse sand, lignitic, small percentage of organics present
12	14	SAND	--	fine to predominantly medium sand, colour changed to chocolate brown

B. PUMPING TEST SALINITY DATA

DRILLHOLE ENQUIRY SYSTEM | Map Search | Text Search | View Definitions | Contact Us | Help | DES Home

Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2208 **Drillhole Name:** CMP 1

Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Salinity Information

Collect Date	TDS (mg/L)	EC (uS/cm)	pH	Sample Type	Anom Ind	Test Place	Extract Method	Measured During	Data Source	
16/02/2006	21600	34700		S	N	GL	AIRL	U	DWLBC	CMP 1 1st AIRLIFT
16/02/2006	22296	35700		S	N	GL	AIRL	U	DWLBC	CMP 1 2nd AIRLIFT
16/02/2006	23637	37600		S	N	GL	AIRL	U	DWLBC	CMP 1 3rd AIRLIFT 35 mins AIRLIFTING
16/02/2006	26193	41200		S	N	GL	AIRL	U	DWLBC	END 3rd AIRLIFT 90 mins AIRLIFTING
17/02/2006	25118	39700		S	N	GL	AIRL	U	DWLBC	CMP 1 START 4th AIRLIFT 5mins AIRLIFTING
17/02/2006	25666	40500		S	N	GL	AIRL	U	DWLBC	CMP 1 4th AIRLIFT 40 mins AIRLIFTING
27/04/2006	18457	30100		S	N	GL	PUMP	A	DWLBC	CMP 1 MURTHO START DEVELOPMENT 5 mins PUMPING
03/05/2006	23637	37600		S	N	GL	PUMP	W	DWLBC	CMP 1 LINDERS MURTHO START CD TEST 10 mins PUMPING
03/05/2006	26489	41600		S	N	GL	PUMP	W	DWLBC	CMP 1 LINDNERS MURTHO CD TEST END 1st STEP 100 mins PUMPING
03/05/2006	26130	41100		S	N	GL	PUMP	W	DWLBC	CMP 1 LINDNERS MURTHO CD TEST EXTENSION 200 mins PUMPING
03/05/2006	26130	41100		S	N	GL	PUMP	W	DWLBC	CMP 1 LINDNERS MURTHO CD TEST EXTENSION 300 mins PUMPING END OF TEST

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2210 **Drillhole Name:** CMP 2

Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Salinity Information

Collect Date	TDS (mg/L)	EC (uS/cm)	pH	Sample Type	Anom Ind	Test Place	Extract Method	Measured During	Data Source	
05/02/2006	38990	55700		S	N	GL	AIRL	S	DWLBC	CMP 2 30 mins DEVELOPMENT
31/05/2006	44940	64200		S	N	GL	PUMP	A	DWLBC	CMP 2 MURTHO END OF DEVELOPMENT @ 180 mins
01/06/2006	44940	64200		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO START OF 4 X 100 mins STEP TEST @ 1.5 lt/sec
01/06/2006	44450	63500		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO END 1st STEP 100 mins @ 1.5 lt/sec
01/06/2006	44170	63100		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO END 2nd STEP 200 mins @ 3 lt/sec
01/06/2006	44170	63100		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO END 3rd STEP 300 mins @ 4.5 lt/sec
01/06/2006	44240	63200		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO END 4th STEP 400 mins @ 6 lt/sec
02/06/2006	43680	62400		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO START CD TEST @ 4 lt/sec
03/06/2006	44310	63300		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO CD TEST 1500 mins @ 4 lt/sec
04/06/2006	44310	63300		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO CD TEST 2880 mins @ 4 lt/sec
05/06/2006	46270	66100		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO END CD TEST 4410 mins @ 4 lt/sec
06/06/2006	45850	65500		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO STEP TEST 10 mins @ 1.5 lt/sec
06/06/2006	45360	64800		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO 100 mins @ 3 lt/sec
06/06/2006	45080	64400		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO STEP TESTS 200 mins
06/06/2006	45010	64300		S	N	GL	PUMP	W	DWLBC	CMP 2 MURTHO STEP TESTS 300 mins

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Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2217 **Drillhole Name:** CMP 4

Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Salinity Information

Collect Date	TDS (mg/L)	EC (uS/cm)	pH	Sample Type	Anom Ind	Test Place	Extract Method	Measured During	Data Source	
13/01/2006	67760	84700		S	N	GL	AIRL	S	DWLBC	CMP 4
24/05/2006	49490	70700		S	N	GL	PUMP	W	DWLBC	CMP 4 MURTHO START OF 4 X 100 min STEP TEST @ 3 lt/sec
24/05/2006	49140	70200		S	N	GL	PUMP	W	DWLBC	CMP 4 MURTHO END 1st STEP @ 3 lt/sec
24/05/2006	49630	70900		S	N	GL	PUMP	W	DWLBC	CMP 4 MURTHO END 2nd STEP @ 5 lt/sec
24/05/2006	49210	70300		S	N	GL	PUMP	W	DWLBC	CMP 4 MURTHO END 3rd STEP @ 7 lt/sec
24/05/2006	49630	70900		S	N	GL	PUMP	W	DWLBC	CMP 4 MURTHO END STEP TEST @ 10 lt/sec
25/05/2006	49420	70600		S	N	GL	PUMP	W	DWLBC	CMP 4 MURTHO START CD TEST @ 7 lt/sec
26/05/2006	49350	70500		S	N	GL	PUMP	W	DWLBC	CMP 4 MURTHO CD TEST 1440 mins @ 7 lt/sec
27/05/2006	49140	70200		S	N	GL	PUMP	W	DWLBC	CMP 4 MURTHO CD TEST 2880 mins @ 7 lt/sec
28/05/2006	49280	70400		S	N		PUMP	W	DWLBC	CMP 4 MURTHO END OF CD TEST @ 7 lt/sec END OF TEST

DRILLHOLE ENQUIRY SYSTEM | Map Search | Text Search | View Definitions | Contact Us | Help | DES Home

Summary | Water Level | Salinity | Well Yield | Water Chemistry | Construction | Lithological Log | Drillers Log

Drillhole Details

Unit Number: 7029-2203 **Drillhole Name:** SMP 1

Obs Number: **Class:** Water Well

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Salinity Information

Collect Date	TDS (mg/L)	EC (uS/cm)	pH	Sample Type	Anom Ind	Test Place	Extract Method	Measured During	Data Source	
03/05/2006	19721	32000		S	N	GL	PUMP	A	DWLBC	SMP 1 ROVERS CRES. MURTHO DEVELOPMENT 26 mins PUMPING
04/05/2006	21538	34600		S	N	GL	PUMP	W	DWLBC	SMP 1 ROVERS CRES. MURTHO START STEP TEST 5mins PUMPING
04/05/2006	20063	32500		S	N	GL	PUMP	W	DWLBC	SMP 1 ROVERS CRES. MURTHO END 1st STEP 100 mins PUMPING
04/05/2006	17448	28600		S	N	GL	PUMP	W	DWLBC	SMP 1 ROVERS CRES. MURTHO END OF TEST 151 mins PUMPING

Drillhole Details

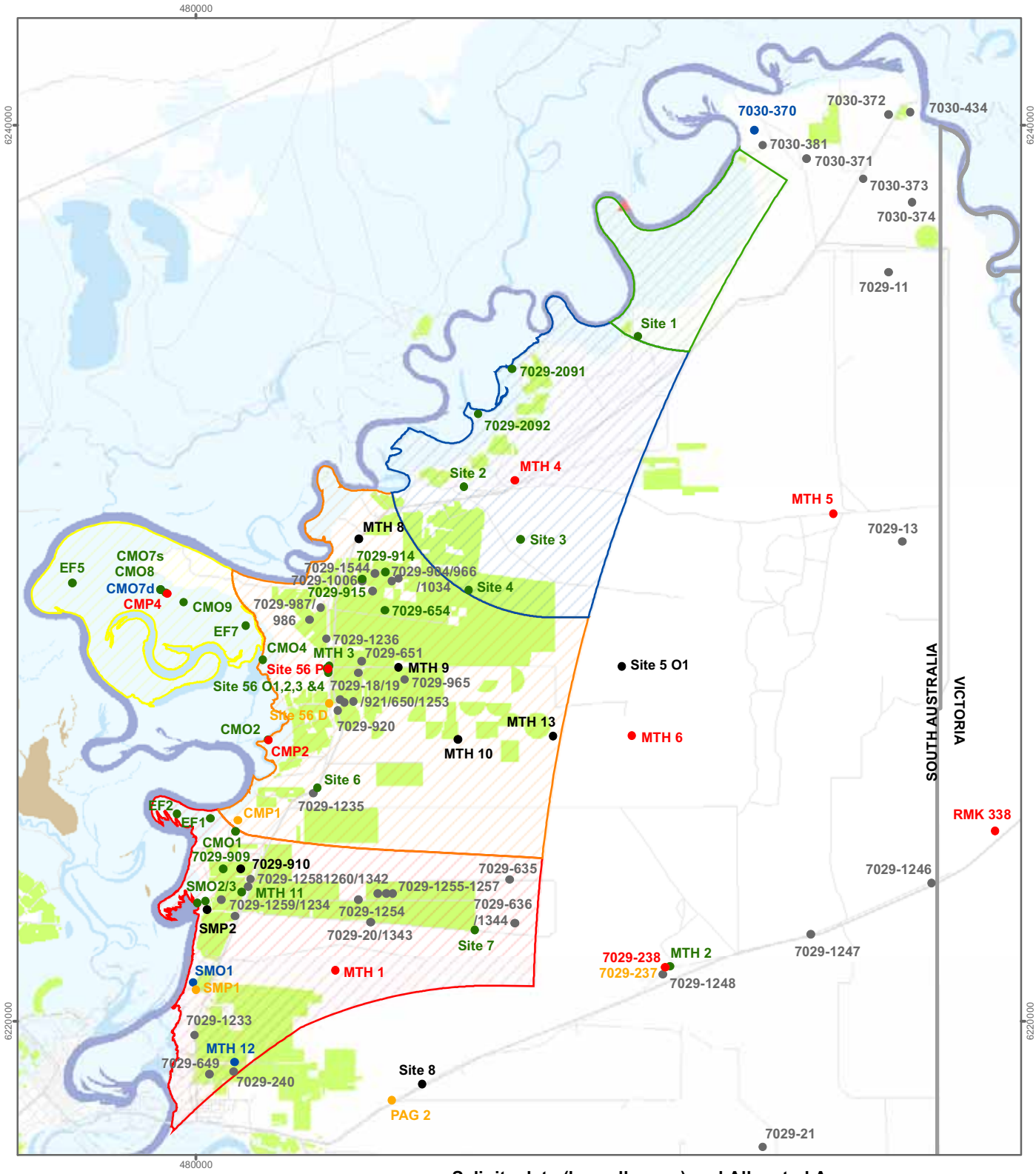
Unit Number: 7029-2205 **Drillhole Name:** SMP 2

Obs Number: **Class:** Water Well

Salinity Information

Collect Date	TDS (mg/L)	EC (uS/cm)	pH	Sample Type	Anom Ind	Test Place	Extract Method	Measured During	Data Source	
17/02/2006	3956	7020		S	N	GL	AIRL	U	DWLBC	2nd AIRLIFT 25 mins AIRLIFTING
17/02/2006	5240	9220		S	N	GL	AIRL	U	DWLBC	SMP 2 3rd AIRLIFT 10 mins AIRLIFTING
17/02/2006	5760	10090		S	N	GL	AIRL	U	DWLBC	3rd AIRLIFT END 50 mins AIRLIFTING
17/02/2006	6016	10520		S	N	GL	AIRL	U	DWLBC	SMP 2 FINAL SURGE 5 mins LIFTING
26/04/2006	7000	12170		S	N	GL	PUMP	A	DWLBC	SMP 2 MURTHO 35 mins PUMPING DEVELOPMENT
27/04/2006	7052	12260		S	N	GL	PUMP	W	DWLBC	SMP 2 MURTHO 100 mins STEP TEST 10 mins PUMPING
27/04/2006	7896	13650		S	N	GL	PUMP	W	DWLBC	SMP 2 MURTHO END STEP TEST 100 mins PUMPING

C. MURTHO GROUNDWATER SALINITY REVIEW



- Locks
- Roads
- Wetlands
- Evaporation basins
- Irrigated areas (2003)
- River Murray Floodplain (1956 flood extent)

Salinity data (by well name) and Allocated Areas

- Quality is very high (eg Chem Analysis)
- Quality is high (eg prolonged pumping)
- Quality is medium (typical airlift sample)
- Quality is low (poor conditions or value)
- Data is considered anomalous
- No data found against well
- A - Zone 51
- B - Zone 3
- C - Zones 4, 15, 16 & 17
- D - Zones 13, 14 & 18
- E - Zones 5, 6 & 12

N W E S

0 0.5 1 1.5 2 Kilometres

GDA

Figure C-1

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Wells used and allocated areas created for Murtho numerical modelling groundwater salinity analysis

Table C-2. Salinity review data for Pike Murtho region

ID	ID_Type	Name	Easting[1]	Northing[1]	Drilled	EC	TDS (mg/L)	Anom[2]	Comment	Method	TDS Calculated From	X = TDS / EC	Quality[3] (of TDS Value)
110013	Permit_Number	CMO1	480879.881	6224227.991	2005_06	41500	26384	No	Poor yielding?	Airlift	EC - SAGEODATA	0.636	Medium
110000	Permit_Number	CMO2	481610.487	6226274.475	2005_06	62700	43890	No	Effects of Evapotranspiration.	Airlift	EC - SAGEODATA	0.700	Medium
109994	Permit_Number	CMO4	481498.048	6228064.288	2005_06	51400	33710	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.656	Medium
109991	Permit_Number	CMO7d	479212.671	6229624.050	2005_06	55700	38990	Possible	Poor yield, sufficient development?	Airlift	EC - SAGEODATA	0.700	Low
109990	Permit_Number	CMO7s	479214.921	6229623.229	2005_06	57200	40040	Possible	No yield information.	Airlift	EC - SAGEODATA	0.700	Medium
109993	Permit_Number	CMO8	479333.430	6229555.011	2005_06	68100	47670	Possible	No yield information.	Airlift	EC - SAGEODATA	0.700	Medium
110009	Permit_Number	CMO9	479731.899	6229343.303	2005_06	59200	41440	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.700	Medium
110014	Permit_Number	CMP1	480942.032	6224466.289	2005_06	41100	26130	No	Plentiful data - Pumped (300mins).	Pump	EC - SAGEODATA	0.636	High
110001	Permit_Number	CMP2	481630.111	6226255.066	2005_06	See_Analysis	44200	No	TDS by Calc (AWQC) End of Constant Discharge Test (~3 days @ 4L/s)	Pump	Calc - AWQC	See_Analysis	Very_High
110010	Permit_Number	CMP4	479361.366	6229527.843	2005_06	See_Analysis	49100	No	TDS by Calc (AWQC) End of Constant Discharge Test (~3 days @ 7L/s)	Pump	Calc - AWQC	See_Analysis	Very_High
110003	Permit_Number	EF1	480322.437	6224514.677	2005_06	43400	27767	Possible	No yield information.	Airlift	EC - SAGEODATA	0.640	Medium
110002	Permit_Number	EF2	479586.552	6224620.358	2005_06	31800	19598	Possible	Yield should have been ok. Enough time?	Airlift	EC - SAGEODATA	0.616	Medium
109992	Permit_Number	EF5	477240.730	6229773.789	2005_06	60600	42420	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.700	Medium
109995	Permit_Number	EF7	481114.305	6228817.559	2005_06	45500	29295	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.644	Medium
110008	Permit_Number	SMO1	479947.108	6220853.380	2005_06	26400	15969	Possible	Appears low, comparable with SMP1. More development required?	Airlift	EC - SAGEODATA	0.605	Low
110005	Permit_Number	SMO2	480218.425	6222666.590	2005_06	41900	26680	No	No yield information.	Airlift	EC - SAGEODATA	0.637	Medium
110004	Permit_Number	SMO3	480043.076	6222633.958	2005_06	32000	19721	No	Thought this may have been higher.	Airlift	EC - SAGEODATA	0.616	Medium
110007	Permit_Number	SMP1	480007.057	6220689.998	2005_06	28600	17448	Possible	Final sample, accurate (after initial chlorine dosing then 151mins pumping).	Pump	EC - SAGEODATA	0.610	High
110006	Permit_Number	SMP2	480254.254	6222480.685	2005_06	13650	7896	Yes	Very low yield, thus low volume pumped (100mins).	Pump	EC - SAGEODATA	0.578	Anom
65048	Permit_Number	Site 1	489874.100	6235279.900	2004	46500	30032	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.646	Medium
65049	Permit_Number	Site 2	485981.800	6231918.000	2004	45300	29166	Possible	May be slightly low, very small yield.	Airlift	EC - SAGEODATA	0.644	Medium
65050	Permit_Number	Site 3	487243.000	6230748.200	2004	41200	26193	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.636	Medium
65051	Permit_Number	Site 4	486089.200	6229615.100	2004	45200	29102	No	Poor yield.	Airlift	EC - SAGEODATA	0.644	Medium
65134	Permit_Number	Site 5 O1	489506.200	6227906.200	2004	20380	12070	Yes	Development not sufficient.	Airlift	EC - SAGEODATA	0.592	Anom
65054	Permit_Number	Site 6	482715.700	6225199.300	2004	46700	30208	No	Poor yield - Capful of Chlorine added to aid breakdown of polymer.	Airlift	EC - SAGEODATA	0.647	Medium
65055	Permit_Number	Site 7	486228.200	6222022.300	2004	50900	33332	No	Poor yield - Capful of Chlorine added to aid breakdown of polymer.	Airlift	EC - SAGEODATA	0.655	Medium
65056	Permit_Number	Site 8	485051.000	6218583.700	2004	13120	7575	Yes	Development not sufficient.	Airlift	EC - SAGEODATA	0.577	Anom
65057	Permit_Number	Site 9	482743.800	6214568.900	2004	41100	26130	No	Reasonable development.	Airlift	EC - SAGEODATA	0.636	Medium
65058	Permit_Number	Site 10	494483.300	6214087.800	2004	49300	32137	No	Chlorine used to aid breakdown of polymer. Possible residual polymer.	Airlift	EC - SAGEODATA	0.652	Medium
65140	Permit_Number	Site 11 O1	484787.800	6210522.900	2004	90000	72000	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.800	Medium
65141	Permit_Number	Site 11 O2	484774.000	6210508.600	2004	89700	71760	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.800	Medium
65142	Permit_Number	Site 11 O3	484744.800	6210474.700	2004	88600	70880	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.800	Medium
65144	Permit_Number	Site 11 O4	484786.400	6210524.100	2004	13460	7771	Yes	Very poor yielding well, insufficient development.	Airlift	EC - SAGEODATA	0.577	Anom
100324	Permit_Number	Site 11 O5	484743.200	6210476.000	2004	80500	64400	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.800	Medium
65139	Permit_Number	Site 11 P	484811.200	6210548.800	2004	See_Analysis	70500	No	TDS by Calc (AWQC) End of Constant Discharge Test (~19 days @ 3.3L/s)	Pump	Calc - AWQC	See_Analysis	Very_High
65143	Permit_Number	Site 11 D	484236.500	6209845.200	2004	73100	51170	No	Plentiful data - Pumped.	Pump	EC - SAGEODATA	0.700	High
65060	Permit_Number	Site 12	468095.500	6209341.400	2004	4840	2704	No	Reliable. Ec is low due to flushing effect.	Airlift	EC - SAGEODATA	0.559	Medium
65146	Permit_Number	Site 13 O1	480117.500	6207865.800	2004	67700	47390	Yes	Incomplete development of well. Poor yielding. Compare with 13 P aquifer test.	Airlift	EC - SAGEODATA	0.700	Anom
65147	Permit_Number	Site 13 O2	480137.600	6207865.300	2004	79100	55370	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.700	Medium
65148	Permit_Number	Site 13 O3	480182.400	6207863.600	2004	82000	65600	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.800	Medium
65149	Permit_Number	Site 13 O4	480082.000	6207903.200	2004	84800	67840	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.800	Medium
100322	Permit_Number	Site 13 O5	480117.500	6207863.500	2004	23000	13743	Yes	Incomplete development of well. Very poor yielding.	Airlift	EC - SAGEODATA	0.598	Anom
100323	Permit_Number	Site 13 O6	480182.600	6207861.400	2004	47900	31080	Yes	Incomplete development of well. Very poor yielding.	Airlift	EC - SAGEODATA	0.649	Anom
65145	Permit_Number	Site 13 P	480082.300	6207866.400	2004	See_Analysis	63600	No	TDS by Calc (AWQC) End of Constant Discharge Test (~27 days @ 5L/s)	Pump	Calc - AWQC	See_Analysis	Very_High
65721	Permit_Number	Site 13 D	481090.300	6207859.900	2004	91400	73120	No	Plentiful data - Pumped (720mins).	Pump	EC - SAGEODATA	0.800	High
65062	Permit_Number	Site 14	471980.200	6205704.300	2004	49300	32137	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.652	Medium
65063	Permit_Number	Site 15	476409.100	6205827.600	2004	55500	38850	Possible	Salinity value may be low, very small yield.	Airlift	EC - SAGEODATA	0.700	Medium
65064	Permit_Number	Site 16	490241.600	6206244.000	2004	75300	52710	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.700	Medium
65173	Permit_Number	Site 17 O1	476680.000	6201989.900	2004	98700	78960	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.800	Medium
65174	Permit_Number	Site 17 O2	476700.000	6201989.900	2004	97900	78320	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.800	Medium
65175	Permit_Number	Site 17 O3	476745.500	6201990.200	2004	95600	76480	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.800	Medium
65172	Permit_Number	Site 17 P	476645.000	6201989.700	2004	See_Analysis	75800	No	TDS by Calc (AWQC) End of Constant Discharge Test (~19 days @ 2.4L/s)	Pump	Calc - AWQC	See_Analysis	Very_High
65176	Permit_Number	Site 17 D	475630.500	6201963.400	2004	85400	68320	No	Plentiful data - Pumped (720mins).	Pump	EC - SAGEODATA	0.800	High
65066	Permit_Number	Site 18	496656.600	6202000.000	2004	41100	26130	Possible	Poor yield - Capful of Chlorine to aid development. More development required?	Airlift	EC - SAGEODATA	0.636	Medium
65151	Permit_Number	Site 56 P	482963.500	6227861.700	2004	See_Analysis	37700	No	TDS by Calc (AWQC) End of Constant Discharge Test (~29 days @ 8L/s)	Pump	Calc - AWQC	See_Analysis	Very_High
65152	Permit_Number	Site 56 O1	482962.500	6227826.700	2004	50100	32757	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.654	Medium
65153	Permit_Number	Site 56 O2	482962.000	6227806.700	2004	50100	32757	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.654	Medium
65154	Permit_Number	Site 56 O3	482960.400	6227762.000	2004	52800	34785	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.659	Medium
65155	Permit_Number	Site 56 O4	482931.500	6227863.700	2004	50100	32757	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.654	Medium
65722	Permit_Number	Site 56 D	482977.200	6227083.400	2004	48100	31258	No	Plentiful data - Pumped (720mins).	Pump	EC - SAGEODATA	0.650	High
702901035	Unit_Number	GDN 51	461962.030	6198557.190	1987	50000	32643	No	Reasonable. Airlifted until constant salinity. Accuracy to nearest 5000 EC?	Bail	EC - SAGEODATA	0.653	Medium
702901036	Unit_Number	GDN 52	461652.980	6199684.210	1987	50000	32643	No	Reasonable. Airlifted until constant salinity. Accuracy to nearest 5000 EC?	Bail	EC - SAGEODATA	0.653	Medium

Table C-2. Salinity review data for Pike Murtho region

ID	ID_Type	Name	Easting[1]	Northing[1]	Drilled	EC	TDS (mg/L)	Anom[2]	Comment	Method	TDS Calculated From	X = TDS / EC	Quality[3] (of TDS Value)
702901298	Unit_Number	GDN 65	465570.040	6201947.190	1998	57900	40530	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.700	Medium
702901299	Unit_Number	GDN 66	463107.010	6201034.150	1998	931	512	Yes	AWE Drillhole Document Image. Taken at 16.5 Degrees C. No other Info.	Airlift	EC - SAGEODATA	0.550	Anom
702901300	Unit_Number	GDN 67	463422.030	6199008.140	1998	8520	4829	Yes	AWE Drillhole Document Image. Taken at 16.2 Degrees C. No other Info.	Airlift	EC - SAGEODATA	0.567	Anom
702901332	Unit_Number	GDN 69	462052.010	6200639.010	2000	No-Data	No-Data	No-Data	AWE Hole. No salinity data in State Database. Possibly in a report.	No-Data	No-Data	No-Data	No-Data
702901424	Unit_Number	GDN 127	466662.000	6198941.000	2002	See_Analysis	4630	No	Salinity value seems suspiciously low. Possibly not enough development.	Airlift	Calc - UNKN	See_Analysis	Low
702901427	Unit_Number	GDN 130	463208.000	6201459.000	2002	See_Analysis	39600	No	Should be considered reliable.	Airlift	Calc - UNKN	See_Analysis	Very_High
702901428	Unit_Number	GDN 131	463204.000	6201432.000	2002	See_Analysis	40400	No	Should be considered reliable.	Jetting	Calc - UNKN	See_Analysis	Very_High
702901430	Unit_Number	GDN 133	462255.000	6199133.000	2002	See_Analysis	46100	No	Should be considered reliable.	Airlift	Calc - UNKN	See_Analysis	Very_High
702901431	Unit_Number	GDN 134	462851.000	6200123.000	2002	See_Analysis	37000	No	Should be considered reliable.	Airlift	Calc - UNKN	See_Analysis	Very_High
702901502	Unit_Number	GDN 135	465099.420	6200364.490	2002	No-Data	No-Data	No-Data	AWE Hole. No salinity data in State Database. Possibly in a report.	No-Data	No-Data	No-Data	No-Data
702901503	Unit_Number	GDN 136	466496.840	6201471.390	2002	See_Analysis	55700	No	Should be considered reliable.	Airlift	Calc - UNKN	See_Analysis	Very_High
702901545	Unit_Number	GDN 137	461219.000	6199826.000	2002	See_Analysis	26200	No	Should be considered reliable.	Jetting	Calc - UNKN	See_Analysis	Very_High
702901546	Unit_Number	GDN 138	461261.900	6199651.770	2003	See_Analysis	8790	No	Initially thought to be low, seems reasonable. Flushing zone near lock?	Airlift	Calc - UNKN	0.700	Very_High
702901549	Unit_Number	GDN 141	461666.410	6200200.720	2002	See_Analysis	28900	No	Should be considered reliable.	Airlift	Calc - UNKN	See_Analysis	Very_High
702901550	Unit_Number	GDN 142	461333.510	6199290.500	2002	No-Data	No-Data	No-Data	AWE Hole. No salinity data in State Database. Possibly in a report.	No-Data	No-Data	No-Data	No-Data
702901551	Unit_Number	GDN 143	461745.020	6199086.570	2002	No-Data	No-Data	No-Data	AWE Hole. No salinity data in State Database. Possibly in a report.	No-Data	No-Data	No-Data	No-Data
702901579	Unit_Number	GDN 145	461234.000	6199787.000	2002	No-Data	No-Data	No-Data	AWE Hole. No salinity data in State Database. Possibly in a report.	No-Data	No-Data	No-Data	No-Data
702901630	Unit_Number	GDN 146	462107.920	6198545.110	2003	See_Analysis	19100	No	Airlifted with reasonable yields.	Airlift	Calc - UNKN	See_Analysis	Very_High
702901631	Unit_Number	GDN 147	461171.380	6199371.080	2003	See_Analysis	846	Yes	Low yielding obswell. Poor development? Proximity to lock / flushing zone.	Airlift	Calc - UNKN	See_Analysis	Anom
702901633	Unit_Number	GDN 148	461255.290	6199682.410	2003	See_Analysis	10800	No	Initially thought to be low, seems reasonable. Flushing zone near lock?	Airlift	Calc - UNKN	See_Analysis	Very_High
702901632	Unit_Number	GDN 150	461149.330	6199355.170	2003	See_Analysis	2020	Yes	Low yielding, poor development with possible contamination from drilling fluid.	Airlift	Calc - UNKN	See_Analysis	Anom
702900235	Unit_Number	MTH 1	483120.050	6221124.190	1973	See_Analysis	32596	No	Chem analysis (1973) Also have monitoring data from 1994.	When_Drilled	Calc - Amdel	See_Analysis	Very_High
702900236	Unit_Number	MTH 2	490575.000	6221213.000	1968	See_Analysis	32900	No	Seems reasonable - Considering Bailed (1969). E&WS Well, missing data.	When_Drilled	See_Analysis	See_Analysis	Medium
702900017	Unit_Number	MTH 3	482976.000	6227924.000	1973	42220	26927	No	Sampled in 1994. Duplicate MTH 1 data shown on microfiche.	Pump	EC - SAGEODATA	0.638	Medium
702900014	Unit_Number	MTH 4	487119.110	6232062.290	1973	See_Analysis	30670	No	Chem analysis (1973).	When_Drilled	Calc - Amdel	See_Analysis	Very_High
702900012	Unit_Number	MTH 5	494236.000	6231316.000	1973	See_Analysis	27301	No	Chem analysis (1973).	When_Drilled	Calc - Amdel ?	See_Analysis	Very_High
702900015	Unit_Number	MTH 6	489729.000	6226369.000	1973	See_Analysis	34785	No	Chem analysis (1973).	When_Drilled	Calc - Amdel ?	See_Analysis	Very_High
702901334	Unit_Number	MTH 8	483636.010	6230760.000	2000	18000	10565	Yes	Method used by Woodward Clyde needs investigating. See LAP Report.	When_Drilled	EC - SAGEODATA	0.587	Anom
702901335	Unit_Number	MTH 9	484521.990	6227889.040	2000	23000	13743	Yes	Method used by Woodward Clyde needs investigating. See LAP Report.	When_Drilled	EC - SAGEODATA	0.598	Anom
702901336	Unit_Number	MTH 10	485848.010	6226286.020	2000	17700	10389	Yes	Method used by Woodward Clyde needs investigating. See LAP Report.	When_Drilled	EC - SAGEODATA	0.587	Anom
702901350	Unit_Number	MTH 11	481023.960	6222873.950	2001	45700	29470	No	Seems reasonable. R.E.M.	Airlift	EC - SAGEODATA	0.645	Medium
702901351	Unit_Number	MTH 12	480860.020	6219068.050	2001	20230	11981	Possible	Initially thought to be low, seems reasonable. R.E.M. Needs confirming.	Airlift	EC - SAGEODATA	0.592	Low
702901543	Unit_Number	MTH 13	487973.000	6226350.000	2002	5420	3035	Yes	Most likely a zero was left off of the end of the EC value. Pumped in 2003.	Pump	EC - SAGEODATA	0.560	Anom
702900257	Unit_Number	PAG 1	471443.000	6205054.000	1968	See_Analysis	50000	No	E&WS Water sampling. Uncertaintainty about how TDS value was calculated.	Bail	See_Analysis	See_Analysis	Low
702900239	Unit_Number	PAG 2	484381.000	6218222.000	1968	See_Analysis	34300	No	Uncertainty about how TDS value was derived. Dilution Test? AMDEL 1969.	Bail	See_Analysis	See_Analysis	High
702900027	Unit_Number	PAG 4	484634.110	6210206.190	1975	See_Analysis	49000	No	E&WS Water sample analysis (1975). Dilution method.	Unknown	See_Analysis	See_Analysis	High
702900032	Unit_Number	PAG 5	492229.980	6206782.040	1973	See_Analysis	49148	No	Chem analysis (1973) Also have monitoring data from 1994.	Unknown	Calc - Amdel	See_Analysis	Very_High
702900031	Unit_Number	PAG 6	486286.000	6202012.000	1973	See_Analysis	32900	Possible	Salinity may be low - Note on SAGeodata regarding drilling fluid contamination.	Unknown	Calc - Amdel	See_Analysis	Medium
702900024	Unit_Number	PAG 7	480260.000	6201996.000	1973	73300	51310	No	Should be considered reliable.	Unknown	EC - SAGEODATA	0.700	Medium
702900120	Unit_Number	PAG 8	472539.000	6201969.000	1968	See_Analysis	25581	Possible	Salinity may be low - Note on SAGeodata regarding drilling fluid contamination.	When_Drilled	Calc - Amdel	See_Analysis	High
702900256	Unit_Number	PAG 9	474984.060	6205925.210	1968	35342	22000	No	Should be reliable. Multiple salinity records (higher and lower) for this well.	When_Drilled	Assumed EC	See_Analysis	Medium
702901127	Unit_Number	PAG 20	475629.020	6207057.160	1990	45000	28927	No	Leigh Warman, developed until constant salinity obtained.	Pumped	EC - SAGEODATA	0.643	Medium
702901137	Unit_Number	PAG 30	474161.000	6206421.000	1990	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901138	Unit_Number	PAG 31	476178.000	6206842.000	1990	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901140	Unit_Number	PAG 33	476406.490	6205795.630	1990	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901142	Unit_Number	PAG 35	476875.000	6205355.000	1990	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901207	Unit_Number	PAG 37	472586.000	6206200.000	1992	25000	15043	No	Leigh Warman, airlifted until constant salinity obtained.	Airlift	EC - SAGEODATA	0.602	Medium
702901209	Unit_Number	PAG 39	471055.000	6207970.000	1992	24000	14391	No	Leigh Warman, airlifted until constant salinity obtained.	Airlift	EC - SAGEODATA	0.600	Medium
702901210	Unit_Number	PAG 41	470701.000	6206932.000	1992	34000	21094	No	Leigh Warman, airlifted until constant salinity obtained.	Airlift	EC - SAGEODATA	0.620	Medium
702901212	Unit_Number	PAG 43	478657.130	6205343.220	1992	70000	49000	No	Leigh Warman, airlifted until constant salinity obtained.	Airlift	EC - SAGEODATA	0.700	Medium
702901213	Unit_Number	PAG 44	483872.000	6206386.000	1992	65000	45500	No	Leigh Warman, airlifted until constant salinity obtained.	Airlift	EC - SAGEODATA	0.700	Medium
702901214	Unit_Number	PAG 45	483465.000	6207581.000	1992	45000	28927	Yes	Compared with consistant neighbouring wells, this value is anomalous.	Airlift	EC - SAGEODATA	0.643	Anom
702901215	Unit_Number	PAG 46	484172.040	6208328.150	1992	60000	42000	No	Leigh Warman, airlifted until constant salinity obtained.	Airlift	EC - SAGEODATA	0.700	Medium
702901226	Unit_Number	PAG 47	470441.940	6206092.980	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901232	Unit_Number	PAG 48	471695.000	6206898.000	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901221	Unit_Number	PAG 50	472796.000	6206871.000	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901218	Unit_Number	PAG 53	477841.000	6206125.000	1994	93500	74800	No	Seems to be getting regionally very high. No evidence of contributing factor.	When_Drilled	EC - SAGEODATA	0.800	Medium
702901227	Unit_Number	PAG 55	470029.000	6207155.000	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901228	Unit_Number	PAG 57	471059.000	6205976.000	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901225	Unit_Number	PAG 58	474226.000	6204626.000	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901216	Unit_Number	PAG 59	484201.000	6206609.000	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901217	Unit_Number	PAG 60	486312.000	6205636.000	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data

Table C-2. Salinity review data for Pike Murtho region

ID	ID_Type	Name	Easting[1]	Northing[1]	Drilled	EC	TDS (mg/L)	Anom[2]	Comment	Method	TDS Calculated From	X = TDS / EC	Quality [3] (of TDS Value)
702901352	Unit_Number	PAG 65	470024.960	6207156.990	2001	10920	6245	No	After 24 hours of pumping (assumed aquifer test).	Pump	EC - SAGEODATA	0.572	High
702901637	Unit_Number	PAG 87	487999.000	6213904.000	2003	9300	5285	Yes	Not enough development, without presence of Hydrogeologist.	Airlift	EC - SAGEODATA	0.568	Anom
702901542	Unit_Number	PAG 88	474333.000	6204005.000	2002	53900	35617	No	Monitoring in 2003. Pumped 3 well volumes.	Pump	EC - SAGEODATA	0.661	Medium
7941	Bore_ID	RMK 331	499044.080	6231856.160	1985	No-Data	No-Data	No-Data	No salinity data found on record.	N/A	No-Data	No-Data	No-Data
7942	Bore_ID	RMK 332	499444.070	6225656.150	1985	See_Analysis	37922	No	Should be considered reliable - DWLBC, Major Ions. Monitoring (No date).	Unknown	Calc - UNKN	See_Analysis	Very_High
27006	Bore_ID	RMK 335	499422.000	6229378.000	1986	See_Analysis	23604	No	Full chem analysis - Website (1989).	Pumped	Calc - SKM	See_Analysis	Very_High
86776	Bore_ID	RMK 338	497837.000	6224235.000	1988	See_Analysis	43200	No	Full chem analysis - Multiple site, highest TDS aquifer - Website (1996).	Pumped	Calc - SKM	See_Analysis	Very_High
702900002	Unit_Number	7029-2	498589.030	6228723.210	1964	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900011	Unit_Number	7029-11	495464.030	6236706.060	1967	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900013	Unit_Number	7029-13	495767.160	6230698.100	Unknown	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900018	Unit_Number	7029-18	483630.100	6227765.220	1973	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900019	Unit_Number	7029-19	483316.140	6227109.250	1973	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900020	Unit_Number	7029-20	483902.130	6222198.240	1973	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900021	Unit_Number	7029-21	492649.150	6217182.200	1967	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900025	Unit_Number	7029-25	480215.190	6202029.950	1973	32840	20307	Yes	Microfiche note - Suspect contamination from fresh drilling fluid.	Pump	Dilution Method	See_Analysis	Anom
702900026	Unit_Number	7029-26	480214.110	6202042.070	1975	37060	23259	Yes	Microfiche note - Suspect contamination from fresh drilling fluid.	Pump	Dilution Method	See_Analysis	Anom
702900028	Unit_Number	7029-28	483081.970	6207018.140	1975	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900029	Unit_Number	7029-29	486305.010	6202063.140	1975	See_Analysis	78000	No	Microfiche record (end of pump testing), analysis method unknown.	Unknown	Dilution Method	See_Analysis	High
702900030	Unit_Number	7029-30	486318.040	6202063.160	1975	See_Analysis	78000	No	Microfiche record (end of 2nd pump test), analysis method unknown.	Pump	Dilution Method	See_Analysis	High
702900041	Unit_Number	7029-41	485535.030	6198963.070	1959	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900042	Unit_Number	7029-42	485488.970	6198836.140	1959	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900237	Unit_Number	7029-237	490472.120	6221190.110	1969	See_Analysis	35450	No	Uncertainty about how TDS value was derived. Dilution Test?	Bail	See_Analysis	See_Analysis	High
702900238	Unit_Number	7029-238	490472.120	6221190.110	1969	See_Analysis	39001	No	Chem analysis (1969).	Unknown	Calc - Amdel	See_Analysis	Very_High
702900240	Unit_Number	7029-240	480846.090	6218858.140	1975	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900634	Unit_Number	7029-634	463131.910	6199208.040	1980	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900635	Unit_Number	7029-635	487002.120	6223148.330	1980	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900636	Unit_Number	7029-636	487122.040	6222178.280	1980	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900637	Unit_Number	7029-637	461635.950	6198995.300	1980	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900638	Unit_Number	7029-638	462061.980	6198898.130	1980	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900639	Unit_Number	7029-639	462246.030	6198734.100	1980	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900649	Unit_Number	7029-649	480300.050	6218807.110	1980	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900650	Unit_Number	7029-650	483220.210	6227161.080	1977	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900651	Unit_Number	7029-651	483699.110	6228026.130	1977	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900652	Unit_Number	7029-652	463316.940	6199328.310	1977	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900654	Unit_Number	7029-654	484216.020	6229156.220	1981	47200	30579	No	Should be considered reliable. 1984, likely when developed during deepening.	Airlift	EC - SAGEODATA	0.648	Medium
702900904	Unit_Number	7029-904	484382.100	6229818.010	1981	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900905	Unit_Number	7029-905	463316.940	6199328.310	1982	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900906	Unit_Number	7029-906	483401.930	6207118.180	1985	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900909	Unit_Number	7029-909	480609.060	6223391.170	1983	See_Analysis	25830	No	Derived from data found on microfiche. Uncertain about EC to TDS conversion.	Airlift	Unknown	See_Analysis	Medium
702900910	Unit_Number	7029-910	481005.090	6223386.220	1983	2650	1468	Yes	Too low to be considered regionally representative.	Airlift	EC - SAGEODATA	0.554	Anom
702900911	Unit_Number	7029-911	462833.040	6198830.170	1983	3560	1979	Yes	Too low to be considered regionally representative. Drainage well.	Unknown	EC - SAGEODATA	0.556	Anom
702900912	Unit_Number	7029-912	483502.120	6207558.230	1984	60100	42070	No	May be higher, contradiction with Micofiche, which suggests 50000 mg/L +	Unknown	EC - SAGEODATA	0.700	Low
702900914	Unit_Number	7029-914	484234.130	6230018.350	1984	46300	29903	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.646	Medium
702900915	Unit_Number	7029-915	483715.100	6229861.230	1984	47600	30885	No	Should be considered reliable.	Airlift	EC - SAGEODATA	0.649	Medium
702900916	Unit_Number	7029-916	462241.070	6199458.290	1985	60100	42070	No	May be higher, contradiction with Micofiche, which suggests 50000 mg/L +	Bail	EC - SAGEODATA	0.700	Low
702900917	Unit_Number	7029-917	463027.090	6199292.340	1985	12258	7051	Yes	Does not seem regionally representative. Lack of data.	Bail	EC - SAGEODATA	0.575	Anom
702900920	Unit_Number	7029-920	483174.000	6226930.000	1985	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900921	Unit_Number	7029-921	483523.100	6227132.010	1985	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900923	Unit_Number	7029-923	472581.060	6206783.130	1985	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900924	Unit_Number	7029-924	472815.040	6206468.120	1985	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900925	Unit_Number	7029-925	483201.900	6206867.990	1985	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900965	Unit_Number	7029-965	484662.050	6227614.170	1986	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900966	Unit_Number	7029-966	483942.920	6229592.180	1986	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900986	Unit_Number	7029-986	482532.080	6228943.120	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702900987	Unit_Number	7029-987	482791.090	6229224.120	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901006	Unit_Number	7029-1006	483712.140	6229813.210	1987	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901034	Unit_Number	7029-1034	484525.030	6229872.250	1990	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901223	Unit_Number	7029-1223	476462.060	6204903.040	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901224	Unit_Number	7029-1224	475976.780	6204745.010	1994	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901233	Unit_Number	7029-1233	479972.120	6219678.170	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901234	Unit_Number	7029-1234	480871.990	6222328.360	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901235	Unit_Number	7029-1235	482622.190	6225078.200	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data

Table C-2. Salinity review data for Pike Murtho region

ID	ID_Type	Name	Easting[1]	Northing[1]	Drilled	EC	TDS (mg/L)	Anom[2]	Comment	Method	TDS Calculated From	X = TDS / EC	Quality[3] (of TDS Value)
702901236	Unit_Number	7029-1236	482921.990	6228528.030	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901238	Unit_Number	7029-1238	480372.100	6202028.210	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901239	Unit_Number	7029-1239	480772.120	6205178.180	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901240	Unit_Number	7029-1240	481422.110	6207528.030	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901246	Unit_Number	7029-1246	496421.900	6223078.120	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901247	Unit_Number	7029-1247	493721.980	6221928.170	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901248	Unit_Number	7029-1248	490421.910	6221028.100	1989	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901253	Unit_Number	7029-1253	483220.200	6227167.290	1996	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901254	Unit_Number	7029-1254	483622.070	6222708.030	1987	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901255	Unit_Number	7029-1255	484062.100	6222838.190	1971	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901256	Unit_Number	7029-1256	484252.130	6222838.180	1971	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901257	Unit_Number	7029-1257	484401.950	6222838.090	1971	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901258	Unit_Number	7029-1258	481221.960	6223158.130	1971	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901259	Unit_Number	7029-1259	480562.070	6222708.040	1975	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901260	Unit_Number	7029-1260	481172.050	6222988.050	1975	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901342	Unit_Number	7029-1342	481171.990	6222988.010	2000	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901343	Unit_Number	7029-1343	483902.010	6222198.050	2000	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901344	Unit_Number	7029-1344	487121.960	6222177.950	2000	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901544	Unit_Number	7029-1544	483994.060	6229988.170	1978	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901685	Unit_Number	BHP 7	463336.670	6201099.260	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901686	Unit_Number	BHP 8	461940.000	6201175.000	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901687	Unit_Number	BHP 9	461447.000	6199987.000	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901688	Unit_Number	BHP 10	463201.740	6201442.040	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901689	Unit_Number	BHP 11	461943.000	6200938.000	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901690	Unit_Number	BHP 12	461943.000	6200938.000	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901691	Unit_Number	BHP 13	461943.000	6200938.000	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901692	Unit_Number	BHP 13	461943.000	6200938.000	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702901925	Unit_Number	7029-1925	462573.000	6201252.000	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702902028	Unit_Number	BHP 6	463212.000	6201456.000	2004	38000	23888	No	AWE Drillhole Document Image. No other Info.	Jetting	EC - SAGEODATA	0.629	Medium
702902091	Unit_Number	7029-2091	487058.000	6234547.000	2005	34200	21254	No	Multiple salinity records.	Unknown	EC - SAGEODATA	0.621	Medium
702902092	Unit_Number	7029-2092	486305.000	6233545.000	2005	36400	22770	No	Multiple salinity records.	Unknown	EC - SAGEODATA	0.626	Medium
702902097	Unit_Number	7029-2097	461265.000	6199612.000	2005	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702902098	Unit_Number	7029-2098	461198.000	6199898.000	2005	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702902099	Unit_Number	7029-2099	461269.000	6199824.000	2005	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702902100	Unit_Number	7029-2100	461227.000	6199741.000	2004	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702902101	Unit_Number	7029-2101	461960.000	6201045.000	2005	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702902102	Unit_Number	7029-2102	461919.000	6200861.000	2005	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702902103	Unit_Number	7029-2103	461957.000	6201239.000	2005	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702902104	Unit_Number	7029-2104	462243.000	6201248.000	2005	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
702902105	Unit_Number	7029-2105	461916.000	6201112.000	2004	54400	36001	No	Should be considered reliable.	Unknown	EC - SAGEODATA	0.662	Medium
702902106	Unit_Number	7029-2106	462097.000	6201278.000	2005	42700	27276	No	Should be considered reliable.	Unknown	EC - SAGEODATA	0.639	Medium
702902112	Unit_Number	7029-2112	462108.000	6198539.000	2003	8450	4788	Yes	Does not seem regionally representative. Lack of data.	Unknown	EC - SAGEODATA	0.567	Anom
703000370	Unit_Number	7030-370	492460.000	6239880.220	1967	8549	4844	Possible	Even though this was just a bail sample in 1967, this value looks reliable.	Bail	EC - SAGEODATA	0.567	Low
703000371	Unit_Number	7030-371	493622.960	6239247.200	1967	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
703000372	Unit_Number	7030-372	495461.000	6240228.000	1967	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
703000373	Unit_Number	7030-373	494896.030	6238796.150	1967	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
703000374	Unit_Number	7030-374	495986.050	6238274.010	1967	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
703000381	Unit_Number	7030-381	492653.980	6239544.370	1967	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data
703000434	Unit_Number	7030-434	495942.040	6240282.110	1978	No-Data	No-Data	No-Data	No salinity data found on record.	No-Data	No-Data	No-Data	No-Data

Note 1 – GDA 94 MGA Zone 54
Note 2 – Anomalous indicator
Note 3 – Assigned on knowledge of region and details which contribute to how the TDS value is calculated. See Description below.

Quality Rating Description:	Very High	Typical of full chemical analysis.
	High	Typical of sample derived from aquifer test (prolonged pumping period), submitted to Glenside.
	Medium	Typical of airlifted sample which has been submitted to Glenside.
	Low	Typical of sample which, for some reason (short development time) doesn't look as regionally representative as expected.
	Anom	Sample has been flagged as anomalous (due to some contributing factor) as TDS value presented is not considered an accurate representation of regional groundwater conditions.

Appendix C-3: Full Chemistry Analysis Data

Sample Details			Laboratory Analysis																										
Sample Name	**Sample Date**	**Analysed by**	Calcium (mg/L)	Ion balance (%)	Iron - Total (mg/L)	Aluminium (mg/L)	Langelier Index	Magnesium (mg/L)	Potassium (mg/L)	Sodium Adsorption Ratio Calculation	Sodium (mg/L)	Sulphate (mg/L)	Total Hardness as CaCO3 (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Bromide (mg/L)	Boron (mg/L)	Nitrate + Nitrite as N (mg/L)	Nitrate + Nitrite as NO3 (mg/L)	Silica - Reactive (mg/L)	Alkalinity, generally as Calcium Carbonate (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	pH	Conductivity (µScm)	Total Dissolved Solids (by EC)	X = TDS / EC	TDS (Addition of parts shown in blue)	TDS (Calculated by Lab)
CMP2	05/06/2006	AWQC	937	-2.7	1.35		0.26	1690	116	57.3	12700	3870	9300	24800	0.65			< 0.005	< 0.02	15	120	147	0	6.8	60200	40500	0.673	44250	**44200**
CMP4	28/05/2006	AWQC	1220	-3.2	7.22		0.72	1880	66.6	57.8	13800	4560	10800	27400	0.24			< 0.005	< 0.02	15	210	256	0	6.9	65500	44800	0.684	49159	**49100**
Site 11 P	28/10/2004	AWQC?	826		4.69			2300	244		21500	6950	11530	38600	0.59			0.09	0.021	15	78.7	96		6.5	90800	66000	0.727	70519	**70500**
Site 13P	18/10/2004	AWQC?	64		4.8			1940	275		19700	6190	10210	34500	1			0.02	< 0.005	19	52.4	64		6.1	84400	61000	0.723	62741	**63600**
Site 17P	15/11/2004	AWQC?	555		5.05			2020	335		24100	8880	9710	39800	0.61			0.02	< 0.005	< 1	145	177		6.6	98800	74000	0.749	75841	**75800**
Site 56P	02/12/2004	AWQC?	801		1.37			1560	123		10900	3380	8410	20900	0.62			< 0.02	< 0.005	13	92.6	113		6.3	55500	37000	0.667	37772	**37700**
GDN 127	06/04/2002	Unknown	29.8					56.5	30.2		1550	444		2270			0.705	0.013	0.06			484	12	8.5	7970	4500	0.564617	4381	**4630**
GDN 130	14/06/2002	Unknown	326			7.74		1150	169		12700	4780		20300			1.68	0.018	0.08			382		7.6	55800	37000	0.663082	39435	**39600**
GDN 131	14/06/2002	Unknown	249					1150	191		12500	4660		21600			2.09	0.387	1.72			55		5.7	58100	39000	0.671256	40354	**40400**
GDN 133	06/04/2002	Unknown	470					1380	216		14600	6110		23000			2.76	0.324	1.44			474	27	8.5	62600	42000	0.670927	45781	**46100**
GDN 134	06/04/2002	Unknown	288					986	151		11700	4110		19600			2.31	0.019	0.08			408	25	8.4	52800	35000	0.662879	36837	**37000**
GDN 136	06/11/2002	Unknown	347					1440	305		18500	5270		29700			2.39	0.034	0.15			195		8.1	72800	51000	0.700549	55565	**55700**
GDN 137	03/09/2002	Unknown	209			3.25		683	120		8710	3930		12200			4.55	< 0.005	0.02			755		7.9	38100	24000	0.629921	25860	**26200**
GDN 138	25/06/2003	Unknown	65.4					208	51.2		2840	1280		3920			4.77	3.18	14.1			802	33	7.6	14300	8300	0.58042	8387	**8790**
GDN 141	04/09/2002	Unknown	285					849	144		9290	3350		14800				0.021	0.09			389		8.2	41900	27000	0.644391	28718	**28900**
GDN 146	11/04/2003	Unknown	177		44.1			518	94.8		5910	2700		9460	5.2			2.62	11.6			529		8.4	25300	15000	0.592885	18923	**19100**
GDN 147	25/06/2003	Unknown	28.1					13.7	6.1		176	67.7		330			0.499	0.05	0.22			447	5	8.5	1690	930	0.550296	622	**846**
GDN 148	25/06/2003	Unknown	92					248	51.2		3450	1280		5550			1.52	0.259	1.15			330	12	8.5	17700	10000	0.564972	10674	**10800**
GDN 150	25/06/2003	Unknown	18					28.4	15.9		672	427		644			2.39	3.72	16.5			394	24	8.7	3480	1900	0.545977	1828	**2020**
MTH 1	02/05/1973	AMDEL	560					1224	131	76.9	10100	2460		18050					< 1		120	145			44020			32645	**32596**
MTH 2	01/02/1969	AMDEL?	**-- Value was given in p.p.m. without any reference to an EC Value. Assumed to be sampled by E&WS (possibly using the dilution method) and sent to AMDEL. Analysis number 1627/69 --**																										**32900**
MTH 4	02/05/1973	AMDEL	556					1060	107	78.1	9620	2170		17100					< 1		95	115			42050			30708	**30670**
MTH 5	02/05/1973	AMDEL?	428					945	83		8560	1910		15300							60	75						27286	**27301**
MTH 6	02/05/1973	AMDEL?	656					1281	98		10700	2685		19150							175	215						34745	**34785**
PAG 1	15/11/1968	AMDEL?	**-- Value was given in p.p.m. without any reference to an EC Value. Assumed to be sampled by E&WS (possibly using the dilution method) and sent to AMDEL. Analysis number 5495/68 --**																										**50000**
PAG 2	21/03/1969	AMDEL	**-- Value was given in p.p.m. without any reference to an EC Value. Sampled by E&WS (using the dilution method) and sent to AMDEL. Analysis number 2641/69 --**																										**34300**
PAG 4	07/04/1975	AMDEL?	**-- Value was given in p.p.m. without any reference to an EC Value. Assumed to be sampled by E&WS (using the dilution method) and sent to AMDEL. Analysis number 3942/75 --**																										**49000**
PAG 5	30/03/1973	AMDEL	970					1590	21		15000	5650		25905							20	25			60200			49156	**49148**
PAG 6	02/05/1973	AMDEL	490					1010	140	80.3	10400	4135		16700					< 1		20	25			41110			32895	**32887**
PAG 8	20/11/1968	AMDEL	197					60			9503	2530		13200					0		150	185	91					25640	**25581**
RMK 332	Unknown	Unknown	960					1600	60		11000	3100		21000		59				13	130			6.5	51000			37922	**N/A**
RMK 335	15/03/1989	SKM?	550		2.2			780	120		7800	1000		14000				0.2			290	354		7.3	36000			24542	**23604**
RMK 338	04/06/1996	SKM?	970		22			1700	87		12000	3400		25000							74			6.6	61000			43253	**43200**
7029-29	05/03/1975	AMDEL?	**-- Value was given in p.p.m. without any reference to an EC Value. Assumed to be sampled by E&WS (using the dilution method) and sent to AMDEL. Analysis number 3941/75 --**																										**78000**
7029-30	09/05/1975	AMDEL?	**-- Value was given in p.p.m. without any reference to an EC Value. Assumed to be sampled by E&WS (using the dilution method) and sent to AMDEL. Analysis number 3940/75 --**																										**78000**
7029-237	21/02/1969	AMDEL	**-- Value was given in p.p.m. without any reference to an EC Value. Sampled by E&WS (using the dilution method) and sent to AMDEL. Analysis number 2655/69 --**																										**35450**
7029-238	28/02/1969	AMDEL	770					1570			11753	3330		21490					0		145	180						39058.00	**39001**
7029-909	01/07/1983	DME?	**-- Uncertain how TDS value was obtained. Assumed to be straight EC to TDS conversion. Sample analysis number 4261/83 --**																					35700					**25830**

Table C-4. Mean and median groundwater salinity values for allocated areas at Murtho

Area	Name	Easting	Northing	Drilled	Anomalous	EC	TDS
A	Site 1	489874.100	6235279.900	2004	No	46500	30032
Without including anomalous values.						Mean	30032
						Median	30032
Including values flagged as anomalous.						Mean	30032
						Median	30032
Area	**Name**	**Easting**	**Northing**	**Drilled**	**Anomalous**	**EC**	**TDS**
B	Site 3	487243.000	6230748.200	2004	No	41200	26193
B	Site 4	486089.200	6229615.100	2004	No	45200	29102
B	7029-2091	487058.000	6234547.000	2005	No	34200	21254
B	7029-2092	486305.000	6233545.000	2005	No	36400	22770
B	MTH 4	487119.110	6232062.290	1973	No	N/A	30670
B	Site 2	485981.800	6231918.000	2004	Possible	45300	29166
Without including anomalous values.						Mean	26526
						Median	27648
Including values flagged as anomalous.						Mean	26526
						Median	27648
Area	**Name**	**Easting**	**Northing**	**Drilled**	**Anomalous**	**EC**	**TDS**
C	56 D	482977.200	6227083.400	2004	No	48100	31258
C	56 O1	482962.500	6227826.700	2004	No	50100	32757
C	56 O2	482962.000	6227806.700	2004	No	50100	32757
C	56 O3	482960.400	6227762.000	2004	No	52800	34785
C	56 O4	482931.500	6227863.700	2004	No	50100	32757
C	56 P	482963.500	6227861.700	2004	No	N/A	37700
C	Site 6	482715.700	6225199.300	2004	No	46700	30208
C	7029-654	484216.020	6229156.220	1981	No	47200	30579
C	7029-914	484234.130	6230018.350	1984	No	46300	29903
C	7029-915	483715.100	6229861.230	1984	No	47600	30885
C	CMO2	481610.487	6226274.475	2005/06	No	62700	43890
C	CMO4	481498.048	6228064.288	2005/06	No	51400	33710
C	CMP1	480942.032	6224466.289	2005/06	No	41100	26130
C	CMP2	481630.111	6226255.066	2005/06	No	N/A	44200
C	MTH 3	482976.000	6227924.000	1973	No	42220	26927
C	7029-1006	483712.140	6229813.210	1987	No-Data	N/A	N/A
C	7029-1034	484525.030	6229872.250	1990	No-Data	N/A	N/A
C	7029-1235	482622.190	6225078.200	1989	No-Data	N/A	N/A
C	7029-1236	482921.990	6228528.030	1989	No-Data	N/A	N/A
C	7029-1253	483220.200	6227167.290	1996	No-Data	N/A	N/A
C	7029-1544	483994.060	6229988.170	1978	No-Data	N/A	N/A
C	7029-18	483630.100	6227765.220	1973	No-Data	N/A	N/A

C	7029-19	483316.140	6227109.250	1973	No-Data	N/A	N/A
C	7029-650	483220.210	6227161.080	1977	No-Data	N/A	N/A
C	7029-651	483699.110	6228026.130	1977	No-Data	N/A	N/A
C	7029-904	484382.100	6229818.010	1981	No-Data	N/A	N/A
C	7029-920	483174.000	6226930.000	1985	No-Data	N/A	N/A
C	7029-921	483523.100	6227132.010	1985	No-Data	N/A	N/A
C	7029-965	484662.050	6227614.170	1986	No-Data	N/A	N/A
C	7029-966	483942.920	6229592.180	1986	No-Data	N/A	N/A
C	7029-986	482532.080	6228943.120	1989	No-Data	N/A	N/A
C	7029-987	482791.090	6229224.120	1989	No-Data	N/A	N/A
C	MTH 10	485848.010	6226286.020	2000	Yes	17700	10389
C	MTH 13	487973.000	6226350.000	2002	Yes	5420	3035
C	MTH 8	483636.010	6230760.000	2000	Yes	18000	10565
C	MTH 9	484521.990	6227889.040	2000	Yes	23000	13743
Without including anomalous values.						Mean	33230
						Median	32757
Including values flagged as anomalous.						Mean	28220
						Median	30885

Area	Name	Easting	Northing	Drilled	Anomalous	EC	TDS
D	CMO9	479731.899	6229343.303	2005–06	No	59200	41440
D	CMP4	479361.366	6229527.843	2005–06	No	N/A	49100
D	EF5	477240.730	6229773.789	2005–06	No	60600	42420
D	EF7	481114.305	6228817.559	2005–06	No	45500	29295
D	CMO7d	479212.671	6229624.050	2005–06	Possible	55700	38990
D	CMO7s	479214.921	6229623.229	2005–06	Possible	57200	40040
D	CMO8	479333.430	6229555.011	2005–06	Possible	68100	47670
Without including anomalous values.						Mean	41279
						Median	41440
Including values flagged as anomalous.						Mean	41279
						Median	41440

Area	Name	Easting	Northing	Drilled	Anomalous	EC	TDS
E	Site 7	486228.200	6222022.300	2004	No	50900	33332
E	7029-909	480609.060	6223391.170	1983	No	N/A	25830
E	CMO1	480879.881	6224227.991	2005–06	No	41500	26384
E	MTH 1	483120.050	6221124.190	1973	No	N/A	32596
E	MTH 11	481023.960	6222873.950	2001	No	45700	29470
E	SMO2	480218.425	6222666.590	2005–06	No	41900	26680
E	SMO3	480043.076	6222633.958	2005–06	No	32000	19721
E	7029-1233	479972.120	6219678.170	1989	No-Data	N/A	N/A
E	7029-1234	480871.990	6222328.360	1989	No-Data	N/A	N/A
E	7029-1254	483622.070	6222708.030	1987	No-Data	N/A	N/A
E	7029-1255	484062.100	6222838.190	1971	No-Data	N/A	N/A

E	7029-1256	484252.130	6222838.180	1971	No-Data	N/A	N/A
E	7029-1257	484401.950	6222838.090	1971	No-Data	N/A	N/A
E	7029-1258	481221.960	6223158.130	1971	No-Data	N/A	N/A
E	7029-1259	480562.070	6222708.040	1975	No-Data	N/A	N/A
E	7029-1260	481172.050	6222988.050	1975	No-Data	N/A	N/A
E	7029-1342	481171.990	6222988.010	2000	No-Data	N/A	N/A
E	7029-1343	483902.010	6222198.050	2000	No-Data	N/A	N/A
E	7029-1344	487121.960	6222177.950	2000	No-Data	N/A	N/A
E	7029-20	483902.130	6222198.240	1973	No-Data	N/A	N/A
E	7029-240	480846.090	6218858.140	1975	No-Data	N/A	N/A
E	7029-635	487002.120	6223148.330	1980	No-Data	N/A	N/A
E	7029-636	487122.040	6222178.280	1980	No-Data	N/A	N/A
E	7029-649	480300.050	6218807.110	1980	No-Data	N/A	N/A
E	EF1	480322.437	6224514.677	2005–06	Possible	43400	27767
E	EF2	479586.552	6224620.358	2005–06	Possible	31800	19598
E	MTH 12	480860.020	6219068.050	2001	Possible	20230	11981
E	SMO1	479947.108	6220853.380	2005–06	Possible	26400	15969
E	SMP1	480007.057	6220689.998	2005–06	Possible	28600	17448
E	7029-910	481005.090	6223386.220	1983	Yes	2650	1468
E	SMP2	480254.254	6222480.685	2005–06	Yes	13650	7896
Without including anomalous values.						Mean	23898
						Median	26107
Including values flagged as anomalous.						Mean	21153
						Median	22776

D. PUMPING TEST DATA

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP4		
Permit Number	110010		
Comment	Production Well		
Completion	11m of 200mm ID Slotted Casing (1mm slots 9 - 20m, Sump 20 - 22m) with 8/16 Gravel Pack		
Address	Woolenook Bend - Floodplain		
Test type	Initial development with Grundfos 9.2kW electric submersible pump		
Pumping commenced	23/05/06 at 15:15		
Pumping ceased	23/05/06 at 16:40		
Are measurements for pumped well ?	Yes		
Standing water level	3.060	metres below	measured point (conduit)
Standing water level	15.597	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	21.700	metres below	top of flange
Pump setting	18.6 (intake at 17.9)	metres below	top of flange
Casing height (top of flange)	0.310	metres above	ground level
Head above pump intake	15.230	metres	
Head above top of production zone	6.640	metres	
Rates	Varied, 6 - 10.67	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
23/05	15:15	0	0.000	3.060	15.597	6	Endeavour to pump 6 L / s from commencement.
23/05	15:30	15	2.340	5.400	13.257	6	
23/05	15:38	23	3.810	6.870	11.787	9.6	
23/05	15:41	26	3.830	6.890	11.767	9.5	
23/05	15:45	30	3.760	6.820	11.837	9.4	
23/05	15:55	40	3.620	6.680	11.977	9.06	
23/05	16:05	50	3.570	6.630	12.027	8.88	
23/05	16:15	60	3.590	6.650	12.007	8.9	
23/05	16:22	67	4.200	7.260	11.397	10.67	
23/05	16:25	70	4.290	7.350	11.307	10.61	
23/05	16:29	74	4.260	7.320	11.337	10.59	
23/05	16:40	85	4.310	7.370	11.287	0	End ot test. No recovery data.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP4		
Permit Number	110010		
Comment	Production Well		
Completion	11m of 200mm ID Slotted Casing (1mm slots 9 - 20m, Sump 20 - 22m) with 8/16 Gravel Pack		
Address	Woolenook Bend - Floodplain		
Test type	4 X 100 Minute Step Test using Grundfos 9.2kW electric submersible pump		
Pumping commenced	24/05/06 at 09:00		
Pumping ceased	24/05/06 at 15:40		
Are measurements for pumped well ?	Yes		
Standing water level	3.090	metres below	measured point (conduit)
Standing water level	15.567	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	21.700	metres below	top of flange
Pump setting	14.3 (intake at 13.6)	metres below	top of flange
Casing height (top of flange)	0.310	metres above	ground level
Head above pump intake	10.900	metres	
Head above top of production zone	6.610	metres	
Rates	3, 5, 7 & 10	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
24/05	9:00	0	0.000	3.090	15.567	3	Endeavour to pump 3 L / s from commencement.
24/05	9:01	1	0.800	3.890	14.767	3	
24/05	9:02	2	0.940	4.030	14.627	3	
24/05	9:03	3	1.020	4.110	14.547	3	
24/05	9:04	4	1.060	4.150	14.507	3	
24/05	9:05	5	1.060	4.150	14.507	3	
24/05	9:06	6	1.080	4.170	14.487	3	
24/05	9:07	7	1.090	4.180	14.477	3	
24/05	9:08	8	1.110	4.200	14.457	3	
24/05	9:09	9	1.120	4.210	14.447	3	
24/05	9:10	10	1.130	4.220	14.437	3	
24/05	9:12	12	1.110	4.200	14.457	3	
24/05	9:14	14	1.140	4.230	14.427	3	
24/05	9:16	16	1.120	4.210	14.447	3	
24/05	9:18	18	1.125	4.215	14.442	3	
24/05	9:20	20	1.120	4.210	14.447	3	
24/05	9:22	22	1.130	4.220	14.437	3	
24/05	9:24	24	1.140	4.230	14.427	3	
24/05	9:26	26	1.130	4.220	14.437	3	
24/05	9:28	28	1.120	4.210	14.447	3	
24/05	9:30	30	1.130	4.220	14.437	3	
24/05	9:35	35	1.150	4.240	14.417	3	
24/05	9:40	40	1.160	4.250	14.407	3	
24/05	9:45	45	1.170	4.260	14.397	3	
24/05	9:50	50	1.165	4.255	14.402	3	
24/05	9:55	55	1.170	4.260	14.397	3	
24/05	10:00	60	1.170	4.260	14.397	3	
24/05	10:10	70	1.190	4.280	14.377	3	
24/05	10:20	80	1.190	4.280	14.377	3	
24/05	10:30	90	1.190	4.280	14.377	3	
24/05	10:40	100	1.195	4.285	14.372	5	Increase discharge rate from 100 mins.
24/05	10:41	101	1.820	4.910	13.747	5	
24/05	10:42	102	1.930	5.020	13.637	5	
24/05	10:43	103	1.910	5.000	13.657	5	
24/05	10:44	104	1.920	5.010	13.647	5	
24/05	10:45	105	1.950	5.040	13.617	5	
24/05	10:46	106	1.955	5.045	13.612	5	
24/05	10:47	107	1.950	5.040	13.617	5	
24/05	10:48	108	1.950	5.040	13.617	5	
24/05	10:49	109	1.960	5.050	13.607	5	
24/05	10:50	110	1.965	5.055	13.602	5	
24/05	10:52	112	1.960	5.050	13.607	5	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
24/05	10:54	114	1.970	5.060	13.597	5	
24/05	10:56	116	1.970	5.060	13.597	5	
24/05	10:58	118	1.980	5.070	13.587	5	
24/05	11:00	120	1.980	5.070	13.587	5	
24/05	11:02	122	1.990	5.080	13.577	5	
24/05	11:04	124	2.000	5.090	13.567	5	
24/05	11:06	126	1.990	5.080	13.577	5	
24/05	11:08	128	2.000	5.090	13.567	5	
24/05	11:10	130	2.000	5.090	13.567	5	
24/05	11:15	135	2.010	5.100	13.557	5	
24/05	11:20	140	2.000	5.090	13.567	5	
24/05	11:25	145	2.010	5.100	13.557	5	
24/05	11:30	150	2.020	5.110	13.547	5	
24/05	11:35	155	2.020	5.110	13.547	5	
24/05	11:40	160	2.020	5.110	13.547	5	
24/05	11:50	170	2.030	5.120	13.537	5	
24/05	12:00	180	2.020	5.110	13.547	5	
24/05	12:10	190	2.030	5.120	13.537	5	
24/05	12:20	200	2.040	5.130	13.527	7	Increase discharge rate from 200 mins.
24/05	12:21	201	2.710	5.800	12.857	7	
24/05	12:22	202	2.820	5.910	12.747	7	
24/05	12:23	203	2.810	5.900	12.757	7	
24/05	12:24	204	2.820	5.910	12.747	7	
24/05	12:25	205	2.825	5.915	12.742	7	
24/05	12:26	206	2.840	5.930	12.727	7	
24/05	12:27	207	2.850	5.940	12.717	7	
24/05	12:28	208	2.850	5.940	12.717	7	
24/05	12:29	209	2.850	5.940	12.717	7	
24/05	12:30	210	2.860	5.950	12.707	7	
24/05	12:32	212	2.870	5.960	12.697	7	
24/05	12:34	214	2.870	5.960	12.697	7	
24/05	12:36	216	2.880	5.970	12.687	7	
24/05	12:38	218	2.885	5.975	12.682	7	
24/05	12:40	220	2.885	5.975	12.682	7	
24/05	12:42	222	2.890	5.980	12.677	7	
24/05	12:44	224	2.890	5.980	12.677	7	
24/05	12:46	226	2.890	5.980	12.677	7	
24/05	12:48	228	2.890	5.980	12.677	7	
24/05	12:50	230	2.890	5.980	12.677	7	
24/05	12:55	235	2.900	5.990	12.667	7	
24/05	13:00	240	2.900	5.990	12.667	7	
24/05	13:05	245	2.905	5.995	12.662	7	
24/05	13:10	250	2.910	6.000	12.657	7	
24/05	13:15	255	2.920	6.010	12.647	7	
24/05	13:20	260	2.910	6.000	12.657	7	
24/05	13:30	270	2.925	6.015	12.642	7	
24/05	13:40	280	2.915	6.005	12.652	7	
24/05	13:50	290	2.930	6.020	12.637	7	
24/05	14:00	300	2.940	6.030	12.627	10	Increase discharge rate from 300 mins.
24/05	14:01	301	4.020	7.110	11.547	10	
24/05	14:02	302	4.070	7.160	11.497	10	
24/05	14:03	303	4.080	7.170	11.487	10	
24/05	14:04	304	4.100	7.190	11.467	10	
24/05	14:05	305	4.120	7.210	11.447	10	
24/05	14:06	306	4.130	7.220	11.437	10	
24/05	14:07	307	4.130	7.220	11.437	10	
24/05	14:08	308	4.140	7.230	11.427	10	
24/05	14:09	309	4.140	7.230	11.427	10	
24/05	14:10	310	4.150	7.240	11.417	10	
24/05	14:12	312	4.160	7.250	11.407	10	
24/05	14:14	314	4.160	7.250	11.407	10	
24/05	14:16	316	4.170	7.260	11.397	10	
24/05	14:18	318	4.180	7.270	11.387	10	
24/05	14:20	320	4.180	7.270	11.387	10	
24/05	14:22	322	4.195	7.285	11.372	10	
24/05	14:24	324	4.190	7.280	11.377	10	
24/05	14:26	326	4.200	7.290	11.367	10	
24/05	14:28	328	4.200	7.290	11.367	10	
24/05	14:30	330	4.200	7.290	11.367	10	
24/05	14:35	335	4.205	7.295	11.362	10	
24/05	14:40	340	4.210	7.300	11.357	10	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
24/05	14:45	345	4.220	7.310	11.347	10	
24/05	14:50	350	4.230	7.320	11.337	10	
24/05	14:55	355	4.220	7.310	11.347	10	
24/05	15:00	360	4.230	7.320	11.337	10	
24/05	15:10	370	4.240	7.330	11.327	10	
24/05	15:20	380	4.240	7.330	11.327	10	
24/05	15:30	390	4.250	7.340	11.317	10	
24/05	15:40	400	4.250	7.340	11.317	0	End of Test, Start Recovery from 400 mins.
24/05	15:41	401	0.920	4.010	14.647	0	Recovery.
24/05	15:42	402	0.740	3.830	14.827	0	
24/05	15:43	403	0.640	3.730	14.927	0	
24/05	15:44	404	0.580	3.670	14.987	0	
24/05	15:45	405	0.540	3.630	15.027	0	
24/05	15:46	406	0.510	3.600	15.057	0	
24/05	15:47	407	0.470	3.560	15.097	0	
24/05	15:48	408	0.460	3.550	15.107	0	
24/05	15:49	409	0.440	3.530	15.127	0	
24/05	15:50	410	0.410	3.500	15.157	0	
24/05	15:52	412	0.380	3.470	15.187	0	
24/05	15:54	414	0.350	3.440	15.217	0	
24/05	15:56	416	0.330	3.420	15.237	0	
24/05	15:58	418	0.310	3.400	15.257	0	
24/05	16:00	420	0.295	3.385	15.272	0	
24/05	16:02	422	0.280	3.370	15.287	0	
24/05	16:04	424	0.260	3.350	15.307	0	
24/05	16:06	426	0.240	3.330	15.327	0	
24/05	16:08	428	0.230	3.320	15.337	0	
24/05	16:10	430	0.220	3.310	15.347	0	
24/05	16:15	435	0.200	3.290	15.367	0	
24/05	16:20	440	0.180	3.270	15.387	0	
24/05	16:25	445	0.160	3.250	15.407	0	
24/05	16:30	450	0.140	3.230	15.427	0	
24/05	16:35	455	0.130	3.220	15.437	0	
24/05	16:40	460	0.110	3.200	15.457	0	
24/05	16:50	470	0.095	3.185	15.472	0	
24/05	17:00	480	0.080	3.170	15.487	0	
24/05	17:10	490	0.070	3.160	15.497	0	
24/05	17:20	500	0.060	3.150	15.507	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO8
Permit Number	109993
Comment	Obs well, 39m from production well
Completion	3m of 80mm ID Slotted Casing (1mm slots 15 - 18m and Sump 18 - 19m) with 8/16 Gravel Pack
Address	Woolenook Bend - Floodplain
Test type	4 X 100 Minute Step Test - CMP4 using Grundfos 9.2kW electric submersible pump
Pumping commenced	24/05/06 at 09:00
Pumping ceased	24/05/06 at 15:40
Are measurements for pumped well ?	No

Standing water level	3.570	metres below	measured point (standpipe)
Standing water level	15.574	metres above	Australian Height Datum
Reference point (standpipe)	1.085	metres above	ground level (calculated from survey data)
Rates	3, 5, 7 & 10	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
24/05	9:00	0	0.000	3.570	15.574	3	Endeavour to pump 3 L / s from commencement.
24/05	9:01	1	-0.030	3.540	15.604	3	Value not plotted, possibly human error.
24/05	9:02	2	0.070	3.640	15.504	3	Value not plotted, possibly higher discharge.
24/05	9:03	3	0.030	3.600	15.544	3	
24/05	9:04	4	0.050	3.620	15.524	3	
24/05	9:05	5	0.070	3.640	15.504	3	
24/05	9:06	6	0.070	3.640	15.504	3	
24/05	9:07	7	0.070	3.640	15.504	3	
24/05	9:08	8	0.080	3.650	15.494	3	
24/05	9:09	9	0.080	3.650	15.494	3	
24/05	9:10	10	0.090	3.660	15.484	3	
24/05	9:12	12	0.100	3.670	15.474	3	
24/05	9:14	14	0.110	3.680	15.464	3	
24/05	9:16	16	0.120	3.690	15.454	3	
24/05	9:18	18	0.120	3.690	15.454	3	
24/05	9:20	20	0.120	3.690	15.454	3	
24/05	9:22	22	0.130	3.700	15.444	3	
24/05	9:24	24	0.130	3.700	15.444	3	
24/05	9:26	26	0.140	3.710	15.434	3	
24/05	9:28	28	0.140	3.710	15.434	3	
24/05	9:30	30	0.150	3.720	15.424	3	
24/05	9:35	35	0.150	3.720	15.424	3	
24/05	9:40	40	0.160	3.730	15.414	3	
24/05	9:45	45	0.170	3.740	15.404	3	
24/05	9:50	50	0.170	3.740	15.404	3	
24/05	9:55	55	0.180	3.750	15.394	3	
24/05	10:00	60	0.180	3.750	15.394	3	
24/05	10:10	70	0.190	3.760	15.384	3	
24/05	10:20	80	0.200	3.770	15.374	3	
24/05	10:30	90	0.200	3.770	15.374	3	
24/05	10:40	100	0.200	3.770	15.374	5	Increase discharge rate from 100 mins.
24/05	10:41	101	0.210	3.780	15.364	5	
24/05	10:42	102	0.220	3.790	15.354	5	
24/05	10:43	103	0.220	3.790	15.354	5	
24/05	10:44	104	0.230	3.800	15.344	5	
24/05	10:45	105	0.240	3.810	15.334	5	
24/05	10:46	106	0.240	3.810	15.334	5	
24/05	10:47	107	0.250	3.820	15.324	5	
24/05	10:48	108	0.260	3.830	15.314	5	
24/05	10:49	109	0.260	3.830	15.314	5	
24/05	10:50	110	0.260	3.830	15.314	5	
24/05	10:52	112	0.270	3.840	15.304	5	
24/05	10:54	114	0.270	3.840	15.304	5	
24/05	10:56	116	0.280	3.850	15.294	5	
24/05	10:58	118	0.290	3.860	15.284	5	
24/05	11:00	120	0.290	3.860	15.284	5	
24/05	11:02	122	0.290	3.860	15.284	5	
24/05	11:04	124	0.290	3.860	15.284	5	
24/05	11:06	126	0.300	3.870	15.274	5	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
24/05	11:08	128	0.300	3.870	15.274	5	
24/05	11:10	130	0.300	3.870	15.274	5	
24/05	11:15	135	0.310	3.880	15.264	5	
24/05	11:20	140	0.320	3.890	15.254	5	
24/05	11:25	145	0.320	3.890	15.254	5	
24/05	11:30	150	0.330	3.900	15.244	5	
24/05	11:35	155	0.330	3.900	15.244	5	
24/05	11:40	160	0.330	3.900	15.244	5	
24/05	11:50	170	0.340	3.910	15.234	5	
24/05	12:00	180	0.340	3.910	15.234	5	
24/05	12:10	190	0.350	3.920	15.224	5	
24/05	12:20	200	0.350	3.920	15.224	7	Increase discharge rate from 200 mins.
24/05	12:21	201	0.350	3.920	15.224	7	
24/05	12:22	202	0.370	3.940	15.204	7	
24/05	12:23	203	0.380	3.950	15.194	7	
24/05	12:24	204	0.390	3.960	15.184	7	
24/05	12:25	205	0.390	3.960	15.184	7	
24/05	12:26	206	0.400	3.970	15.174	7	
24/05	12:27	207	0.410	3.980	15.164	7	
24/05	12:28	208	0.410	3.980	15.164	7	
24/05	12:29	209	0.410	3.980	15.164	7	
24/05	12:30	210	0.420	3.990	15.154	7	
24/05	12:32	212	0.420	3.990	15.154	7	
24/05	12:34	214	0.430	4.000	15.144	7	
24/05	12:36	216	0.430	4.000	15.144	7	
24/05	12:38	218	0.440	4.010	15.134	7	
24/05	12:40	220	0.440	4.010	15.134	7	
24/05	12:42	222	0.450	4.020	15.124	7	
24/05	12:44	224	0.450	4.020	15.124	7	
24/05	12:46	226	0.460	4.030	15.114	7	
24/05	12:48	228	0.460	4.030	15.114	7	
24/05	12:50	230	0.460	4.030	15.114	7	
24/05	12:55	235	0.470	4.040	15.104	7	
24/05	13:00	240	0.470	4.040	15.104	7	
24/05	13:05	245	0.480	4.050	15.094	7	
24/05	13:10	250	0.480	4.050	15.094	7	
24/05	13:15	255	0.490	4.060	15.084	7	
24/05	13:20	260	0.490	4.060	15.084	7	
24/05	13:30	270	0.500	4.070	15.074	7	
24/05	13:40	280	0.500	4.070	15.074	7	
24/05	13:50	290	0.500	4.070	15.074	7	
24/05	14:00	300	0.510	4.080	15.064	10	Increase discharge rate from 300 mins.
24/05	14:01	301	0.510	4.080	15.064	10	
24/05	14:02	302	0.530	4.100	15.044	10	
24/05	14:03	303	0.550	4.120	15.024	10	
24/05	14:04	304	0.560	4.130	15.014	10	
24/05	14:05	305	0.560	4.130	15.014	10	
24/05	14:06	306	0.580	4.150	14.994	10	
24/05	14:07	307	0.590	4.160	14.984	10	
24/05	14:08	308	0.590	4.160	14.984	10	
24/05	14:09	309	0.600	4.170	14.974	10	
24/05	14:10	310	0.600	4.170	14.974	10	
24/05	14:12	312	0.610	4.180	14.964	10	
24/05	14:14	314	0.620	4.190	14.954	10	
24/05	14:16	316	0.620	4.190	14.954	10	
24/05	14:18	318	0.630	4.200	14.944	10	
24/05	14:20	320	0.640	4.210	14.934	10	
24/05	14:22	322	0.640	4.210	14.934	10	
24/05	14:24	324	0.650	4.220	14.924	10	
24/05	14:26	326	0.650	4.220	14.924	10	
24/05	14:28	328	0.660	4.230	14.914	10	
24/05	14:30	330	0.660	4.230	14.914	10	
24/05	14:35	335	0.670	4.240	14.904	10	
24/05	14:40	340	0.680	4.250	14.894	10	
24/05	14:45	345	0.690	4.260	14.884	10	
24/05	14:50	350	0.700	4.270	14.874	10	
24/05	14:55	355	0.700	4.270	14.874	10	
24/05	15:00	360	0.700	4.270	14.874	10	
24/05	15:10	370	0.710	4.280	14.864	10	
24/05	15:20	380	0.720	4.290	14.854	10	
24/05	15:30	390	0.720	4.290	14.854	10	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
24/05	15:40	400	0.730	4.300	14.844	0	End of Test, Start Recovery from 400 mins.
24/05	15:41	401	0.710	4.280	14.864	0	Recovery.
24/05	15:42	402	0.660	4.230	14.914	0	
24/05	15:43	403	0.620	4.190	14.954	0	
24/05	15:44	404	0.580	4.150	14.994	0	
24/05	15:45	405	0.530	4.100	15.044	0	
24/05	15:46	406	0.510	4.080	15.064	0	
24/05	15:47	407	0.540	4.110	15.034	0	
24/05	15:48	408	0.470	4.040	15.104	0	
24/05	15:49	409	0.460	4.030	15.114	0	
24/05	15:50	410	0.440	4.010	15.134	0	
24/05	15:52	412	0.400	3.970	15.174	0	
24/05	15:54	414	0.380	3.950	15.194	0	
24/05	15:56	416	0.350	3.920	15.224	0	
24/05	15:58	418	0.330	3.900	15.244	0	
24/05	16:00	420	0.320	3.890	15.254	0	
24/05	16:02	422	0.300	3.870	15.274	0	
24/05	16:04	424	0.280	3.850	15.294	0	
24/05	16:06	426	0.270	3.840	15.304	0	
24/05	16:08	428	0.250	3.820	15.324	0	
24/05	16:10	430	0.240	3.810	15.334	0	
24/05	16:15	435	0.220	3.790	15.354	0	
24/05	16:20	440	0.200	3.770	15.374	0	
24/05	16:25	445	0.180	3.750	15.394	0	
24/05	16:30	450	0.160	3.730	15.414	0	
24/05	16:35	455	0.150	3.720	15.424	0	
24/05	16:40	460	0.140	3.710	15.434	0	
24/05	16:50	470	0.120	3.690	15.454	0	
24/05	17:00	480	0.110	3.680	15.464	0	
24/05	17:10	490	0.090	3.660	15.484	0	
24/05	17:20	500	0.080	3.650	15.494	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO7S
Permit Number	109990
Comment	Obs well, 174.8m from production well
Completion	2m of 80mm ID Slotted Casing (1mm slots 7 - 9m and Sump 9 - 10m) with 8/16 Gravel Pack
Address	Woolenook Bend - Floodplain
Test type	4 X 100 Minute Step Test - CMP4 using Grundfos 9.2kW electric submersible pump
Pumping commenced	24/05/06 at 09:00
Pumping ceased	24/05/06 at 15:40
Are measurements for pumped well ?	No

Standing water level	3.700	metres below	measured point (standpipe)
Standing water level	15.599	metres above	Australian Height Datum
Reference point (standpipe)	0.985	metres above	ground level (calculated from survey data)
Rates	3, 5, 7 & 10	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
24/05	9:00	0	0.000	3.700	15.599	3	Endeavour to pump 3 L / s from commencement.
24/05	9:05	5	0.000	3.700	15.599	3	
24/05	9:10	10	0.000	3.700	15.599	3	
24/05	9:15	15	0.000	3.700	15.599	3	
24/05	9:20	20	0.000	3.700	15.599	3	
24/05	9:25	25	0.010	3.710	15.589	3	
24/05	9:30	30	0.010	3.710	15.589	3	
24/05	9:35	35	0.010	3.710	15.589	3	
24/05	9:40	40	0.010	3.710	15.589	3	
24/05	9:45	45	0.015	3.715	15.584	3	
24/05	9:50	50	0.015	3.715	15.584	3	
24/05	10:00	60	0.020	3.720	15.579	3	
24/05	10:10	70	0.025	3.725	15.574	3	
24/05	10:20	80	0.030	3.730	15.569	3	
24/05	10:30	90	0.030	3.730	15.569	3	
24/05	10:40	100	0.030	3.730	15.569	5	Increase discharge rate from 100 mins.
24/05	10:50	110	0.035	3.735	15.564	5	
24/05	11:00	120	0.040	3.740	15.559	5	
24/05	11:10	130	0.040	3.740	15.559	5	
24/05	11:20	140	0.045	3.745	15.554	5	
24/05	11:30	150	0.050	3.750	15.549	5	
24/05	11:40	160	0.050	3.750	15.549	5	
24/05	11:50	170	0.055	3.755	15.544	5	
24/05	12:00	180	0.060	3.760	15.539	5	
24/05	12:10	190	0.060	3.760	15.539	5	
24/05	12:20	200	0.060	3.760	15.539	7	Increase discharge rate from 200 mins.
24/05	12:30	210	0.065	3.765	15.534	7	
24/05	12:40	220	0.065	3.765	15.534	7	
24/05	13:00	240	0.075	3.775	15.524	7	
24/05	13:10	250	0.080	3.780	15.519	7	
24/05	13:30	270	0.085	3.785	15.514	7	
24/05	13:50	290	0.090	3.790	15.509	7	
24/05	14:10	310	0.095	3.795	15.504	10	Increase discharge rate from 300 mins.
24/05	14:30	330	0.105	3.805	15.494	10	
24/05	14:50	350	0.115	3.815	15.484	10	
24/05	15:00	360	0.120	3.820	15.479	10	
24/05	15:20	380	0.130	3.830	15.469	10	
24/05	15:30	390	0.130	3.830	15.469	10	
24/05	15:35	395	0.130	3.830	15.469	10	Final Reading. No recovery data.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO7D
Permit Number	109991
Comment	Obs well, 177.1m from production well
Completion	3m of 80mm ID Slotted Casing (1mm slots 28 - 31m and Sump 31 - 32m) with 8/16 Gravel Pack
Address	Woolenook Bend - Floodplain
Test type	4 X 100 Minute Step Test - CMP4 using Grundfos 9.2kW electric submersible pump
Pumping commenced	24/05/06 at 09:00
Pumping ceased	24/05/06 at 15:40
Are measurements for pumped well ?	No

Standing water level	3.610	metres below	measured point (standpipe)
Standing water level	15.731	metres above	Australian Height Datum
Reference point (standpipe)	1.080	metres above	ground level (calculated from survey data)
Rates	3, 5, 7 & 10	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
24/05	9:00	0	0.000	3.610	15.731	3	Endeavour to pump 3 L / s from commencement.
24/05	9:05	5	0.000	3.610	15.731	3	
24/05	9:10	10	0.000	3.610	15.731	3	
24/05	9:15	15	0.000	3.610	15.731	3	
24/05	9:20	20	0.000	3.610	15.731	3	
24/05	9:25	25	0.000	3.610	15.731	3	
24/05	9:30	30	0.000	3.610	15.731	3	
24/05	9:35	35	0.000	3.610	15.731	3	
24/05	9:40	40	0.000	3.610	15.731	3	
24/05	9:45	45	0.000	3.610	15.731	3	
24/05	9:50	50	0.000	3.610	15.731	3	
24/05	10:00	60	0.000	3.610	15.731	3	
24/05	10:10	70	0.005	3.615	15.726	3	
24/05	10:20	80	0.005	3.615	15.726	3	
24/05	10:30	90	0.005	3.615	15.726	3	
24/05	10:40	100	0.005	3.615	15.726	5	Increase discharge rate from 100 mins.
24/05	10:50	110	0.005	3.615	15.726	5	
24/05	11:00	120	0.005	3.615	15.726	5	
24/05	11:10	130	0.005	3.615	15.726	5	
24/05	11:20	140	0.005	3.615	15.726	5	
24/05	11:30	150	0.005	3.615	15.726	5	
24/05	11:40	160	0.005	3.615	15.726	5	
24/05	11:50	170	0.005	3.615	15.726	5	
24/05	12:00	180	0.005	3.615	15.726	5	
24/05	12:10	190	0.005	3.615	15.726	5	
24/05	12:20	200	0.005	3.615	15.726	7	Increase discharge rate from 200 mins.
24/05	12:30	210	0.005	3.615	15.726	7	
24/05	12:40	220	0.005	3.615	15.726	7	
24/05	13:00	240	0.005	3.615	15.726	7	
24/05	13:10	250	0.005	3.615	15.726	7	
24/05	13:30	270	0.005	3.615	15.726	7	
24/05	13:50	290	0.005	3.615	15.726	7	
24/05	14:10	310	0.005	3.615	15.726	10	Increase discharge rate from 300 mins.
24/05	14:30	330	0.005	3.615	15.726	10	
24/05	14:50	350	0.010	3.620	15.721	10	
24/05	15:00	360	0.010	3.620	15.721	10	
24/05	15:20	380	0.010	3.620	15.721	10	
24/05	15:30	390	0.010	3.620	15.721	10	
24/05	15:35	395	0.010	3.620	15.721	10	Final Reading. No recovery data.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP4		
Permit Number	110010		
Comment	Production Well		
Completion	11m of 200mm ID Slotted Casing (1mm slots 9 - 20m, Sump 20 - 22m) with 8/16 Gravel Pack		
Address	Woolenook Bend - Floodplain		
Test type	3-Day Constant Discharge Test - CMP4 with Grundfos 9.2kW electric submersible pump		
Pumping commenced	25/05/06 at 12:30		
Pumping ceased	28/05/06 at 12:30		
Are measurements for pumped well ?	Yes		
Standing water level	3.090	metres below	measured point (conduit)
Standing water level	15.567	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	21.700	metres below	top of flange
Pump setting	14.3 (intake at 13.6)	metres below	top of flange
Casing height (top of flange)	0.310	metres above	ground level
Head above pump intake	10.900	metres	
Head above top of production zone	6.610	metres	
Rates	7	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
25/05	12:30	0	0.000	3.090	15.567	7	Endeavour to pump 7 L / s from commencement.
25/05	12:31	1	2.310	5.400	13.257	7	
25/05	12:32	2	2.290	5.380	13.277	7	
25/05	12:33	3	2.380	5.470	13.187	7	
25/05	12:34	4	2.420	5.510	13.147	7	
25/05	12:35	5	2.410	5.500	13.157	7	
25/05	12:36	6	2.490	5.580	13.077	7	
25/05	12:37	7	2.490	5.580	13.077	7	
25/05	12:38	8	2.480	5.570	13.087	6.8	Slight fluctuation in discharge rate.
25/05	12:39	9	2.550	5.640	13.017	7	
25/05	12:40	10	2.550	5.640	13.017	7	
25/05	12:42	12	2.575	5.665	12.992	7	
25/05	12:44	14	2.590	5.680	12.977	7	
25/05	12:46	16	2.620	5.710	12.947	7	
25/05	12:48	18	2.630	5.720	12.937	7	
25/05	12:50	20	2.650	5.740	12.917	7	
25/05	12:52	22	2.660	5.750	12.907	7	
25/05	12:54	24	2.670	5.760	12.897	7	
25/05	12:56	26	2.680	5.770	12.887	7	
25/05	12:58	28	2.690	5.780	12.877	7	
25/05	13:00	30	2.700	5.790	12.867	7	
25/05	13:05	35	2.720	5.810	12.847	7	
25/05	13:10	40	2.740	5.830	12.827	7	
25/05	13:15	45	2.750	5.840	12.817	7	
25/05	13:20	50	2.770	5.860	12.797	7	
25/05	13:25	55	2.780	5.870	12.787	7	
25/05	13:30	60	2.780	5.870	12.787	7	
25/05	13:40	70	2.795	5.885	12.772	7	
25/05	13:50	80	2.815	5.905	12.752	7	
25/05	14:00	90	2.820	5.910	12.747	7	
25/05	14:10	100	2.830	5.920	12.737	7	
25/05	14:30	120	2.850	5.940	12.717	7	
25/05	14:50	140	2.845	5.935	12.722	7	
25/05	15:10	160	2.870	5.960	12.697	7	
25/05	15:30	180	2.870	5.960	12.697	7	
25/05	15:50	200	2.880	5.970	12.687	7	
25/05	16:40	250	2.890	5.980	12.677	7	
25/05	17:30	300	2.900	5.990	12.667	7	
25/05	18:20	350	2.900	5.990	12.667	7	
25/05	19:10	400	2.900	5.990	12.667	7	
25/05	20:00	450	2.910	6.000	12.657	7	
25/05	20:50	500	2.920	6.010	12.647	7	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
25/05	21:40	550	2.910	6.000	12.657	7	
25/05	22:30	600	2.910	6.000	12.657	7	
26/05	0:10	700	2.910	6.000	12.657	7	
26/05	1:50	800	2.935	6.025	12.632	7	
26/05	3:30	900	2.930	6.020	12.637	7	
26/05	5:10	1000	2.940	6.030	12.627	7	
26/05	6:50	1100	2.950	6.040	12.617	7	
26/05	8:30	1200	2.950	6.040	12.617	7	
26/05	10:10	1300	2.960	6.050	12.607	7	
26/05	11:50	1400	2.970	6.060	12.597	7	
26/05	13:30	1500	2.970	6.060	12.597	7	
26/05	15:10	1600	2.970	6.060	12.597	7	
26/05	16:50	1700	2.970	6.060	12.597	7	
26/05	18:30	1800	2.970	6.060	12.597	7	
26/05	20:10	1900	2.985	6.075	12.582	7	
26/05	21:50	2000	2.980	6.070	12.587	7	
26/05	23:30	2100	2.980	6.070	12.587	7	
27/05	1:10	2200	2.985	6.075	12.582	7	
27/05	2:50	2300	2.985	6.075	12.582	7	
27/05	4:30	2400	2.990	6.080	12.577	7	
27/05	6:10	2500	2.990	6.080	12.577	7	
27/05	7:50	2600	2.990	6.080	12.577	7	
27/05	9:30	2700	3.010	6.100	12.557	7	
27/05	11:10	2800	3.020	6.110	12.547	7	
27/05	12:50	2900	3.010	6.100	12.557	7	
27/05	14:30	3000	3.010	6.100	12.557	7	
27/05	16:10	3100	3.020	6.110	12.547	7	
27/05	17:50	3200	3.020	6.110	12.547	7	
27/05	19:30	3300	3.020	6.110	12.547	7	
27/05	21:10	3400	3.015	6.105	12.552	7	
27/05	22:50	3500	3.010	6.100	12.557	7	
28/05	0:30	3600	3.010	6.100	12.557	7	
28/05	2:10	3700	3.015	6.105	12.552	7	
28/05	3:50	3800	3.010	6.100	12.557	7	
28/05	5:30	3900	3.010	6.100	12.557	7	
28/05	7:10	4000	3.010	6.100	12.557	7	
28/05	8:50	4100	3.015	6.105	12.552	7	
28/05	10:30	4200	3.015	6.105	12.552	7	
28/05	12:30	4320	3.035	6.125	12.532	0	End of Test, Start Recovery from 4320 minutes.
28/05	12:31	4321	0.810	3.900	14.757	0	Recovery.
28/05	12:32	4322	0.690	3.780	14.877	0	
28/05	12:33	4323	0.630	3.720	14.937	0	
28/05	12:34	4324	0.580	3.670	14.987	0	
28/05	12:35	4325	0.550	3.640	15.017	0	
28/05	12:36	4326	0.525	3.615	15.042	0	
28/05	12:37	4327	0.500	3.590	15.067	0	
28/05	12:38	4328	0.490	3.580	15.077	0	
28/05	12:39	4329	0.470	3.560	15.097	0	
28/05	12:40	4330	0.455	3.545	15.112	0	
28/05	12:42	4332	0.430	3.520	15.137	0	
28/05	12:44	4334	0.415	3.505	15.152	0	
28/05	12:46	4336	0.400	3.490	15.167	0	
28/05	12:48	4338	0.380	3.470	15.187	0	
28/05	12:50	4340	0.360	3.450	15.207	0	
28/05	12:52	4342	0.360	3.450	15.207	0	
28/05	12:54	4344	0.340	3.430	15.227	0	
28/05	12:56	4346	0.335	3.425	15.232	0	
28/05	12:58	4348	0.320	3.410	15.247	0	
28/05	13:00	4350	0.315	3.405	15.252	0	
28/05	13:05	4355	0.300	3.390	15.267	0	
28/05	13:10	4360	0.290	3.380	15.277	0	
28/05	13:15	4365	0.270	3.360	15.297	0	
28/05	13:20	4370	0.260	3.350	15.307	0	
28/05	13:25	4375	0.250	3.340	15.317	0	
28/05	13:30	4380	0.245	3.335	15.322	0	
28/05	13:40	4390	0.230	3.320	15.337	0	
28/05	13:50	4400	0.210	3.300	15.357	0	
28/05	14:00	4410	0.200	3.290	15.367	0	
28/05	14:10	4420	0.190	3.280	15.377	0	
28/05	15:30	4500	0.160	3.250	15.407	0	
28/05	15:50	4520	0.150	3.240	15.417	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO8		
Permit Number	109993		
Comment	Obs well, 39m from production well		
Completion	3m of 80mm ID Slotted Casing (1mm slots 15 - 18m and Sump 18 - 19m) with 8/16 Gravel Pack		
Address	Woolenook Bend - Floodplain		
Test type	3-Day Constant Discharge Test - CMP4 with Grundfos 9.2kW electric submersible pump		
Pumping commenced	25/05/06 at 12:30		
Pumping ceased	28/05/06 at 12:30		
Are measurements for pumped well ?	No		
Standing water level	3.580	metres below	measured point (standpipe)
Standing water level	15.564	metres above	Australian Height Datum
Reference point (standpipe)	1.085	metres above	ground level (calculated from survey data)
Rates	7	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
25/05	12:30	0	0.000	3.580	15.564	7	Endeavour to pump 7 L / s from commencement.
25/05	12:31	1	0.020	3.600	15.544	7	
25/05	12:32	2	0.050	3.630	15.514	7	
25/05	12:33	3	0.090	3.670	15.474	7	
25/05	12:34	4	0.110	3.690	15.454	7	
25/05	12:35	5	0.140	3.720	15.424	7	
25/05	12:36	6	0.150	3.730	15.414	7	
25/05	12:37	7	0.170	3.750	15.394	7	
25/05	12:38	8	0.190	3.770	15.374	6.8	Slight fluctuation in discharge rate.
25/05	12:39	9	0.200	3.780	15.364	7	
25/05	12:40	10	0.210	3.790	15.354	7	
25/05	12:42	12	0.230	3.810	15.334	7	
25/05	12:44	14	0.270	3.850	15.294	7	
25/05	12:46	16	0.280	3.860	15.284	7	
25/05	12:48	18	0.280	3.860	15.284	7	
25/05	12:50	20	0.300	3.880	15.264	7	
25/05	12:52	22	0.310	3.890	15.254	7	
25/05	12:54	24	0.320	3.900	15.244	7	
25/05	12:56	26	0.330	3.910	15.234	7	
25/05	12:58	28	0.340	3.920	15.224	7	
25/05	13:00	30	0.340	3.920	15.224	7	
25/05	13:05	35	0.360	3.940	15.204	7	
25/05	13:10	40	0.380	3.960	15.184	7	
25/05	13:15	45	0.400	3.980	15.164	7	
25/05	13:20	50	0.405	3.985	15.159	7	
25/05	13:25	55	0.420	4.000	15.144	7	
25/05	13:30	60	0.425	4.005	15.139	7	
25/05	13:40	70	0.440	4.020	15.124	7	
25/05	13:50	80	0.450	4.030	15.114	7	
25/05	14:00	90	0.460	4.040	15.104	7	
25/05	14:10	100	0.470	4.050	15.094	7	
25/05	14:32	122	0.485	4.065	15.079	7	
25/05	14:52	142	0.495	4.075	15.069	7	
25/05	15:12	162	0.500	4.080	15.064	7	
25/05	15:31	181	0.505	4.085	15.059	7	
25/05	15:52	202	0.515	4.095	15.049	7	
25/05	16:41	251	0.520	4.100	15.044	7	
25/05	17:32	302	0.530	4.110	15.034	7	
25/05	18:22	352	0.540	4.120	15.024	7	
25/05	19:11	401	0.545	4.125	15.019	7	
25/05	20:02	452	0.545	4.125	15.019	7	
25/05	20:52	502	0.550	4.130	15.014	7	
25/05	21:43	553	0.570	4.150	14.994	7	Value not plotted in chart.
25/05	22:33	603	0.560	4.140	15.004	7	
26/05	0:11	701	0.560	4.140	15.004	7	
26/05	1:52	802	0.570	4.150	14.994	7	
26/05	3:33	903	0.570	4.150	14.994	7	
26/05	5:11	1001	0.580	4.160	14.984	7	
26/05	6:51	1101	0.580	4.160	14.984	7	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
26/05	8:31	1201	0.585	4.165	14.979	7	
26/05	10:11	1301	0.590	4.170	14.974	7	
26/05	11:52	1402	0.590	4.170	14.974	7	
26/05	13:31	1501	0.595	4.175	14.969	7	
26/05	15:11	1601	0.600	4.180	14.964	7	
26/05	16:51	1701	0.600	4.180	14.964	7	
26/05	18:33	1803	0.615	4.195	14.949	7	
26/05	20:11	1901	0.620	4.200	14.944	7	
26/05	21:52	2002	0.620	4.200	14.944	7	
26/05	23:32	2102	0.620	4.200	14.944	7	
27/05	1:12	2202	0.620	4.200	14.944	7	
27/05	2:51	2301	0.620	4.200	14.944	7	
27/05	4:31	2401	0.630	4.210	14.934	7	
27/05	6:12	2502	0.630	4.210	14.934	7	
27/05	7:51	2601	0.635	4.215	14.929	7	
27/05	9:34	2704	0.630	4.210	14.934	7	
27/05	11:11	2801	0.630	4.210	14.934	7	
27/05	12:52	2902	0.640	4.220	14.924	7	
27/05	14:31	3001	0.640	4.220	14.924	7	
27/05	16:15	3105	0.645	4.225	14.919	7	
27/05	17:52	3202	0.650	4.230	14.914	7	
27/05	19:34	3304	0.655	4.235	14.909	7	
27/05	21:11	3401	0.650	4.230	14.914	7	
27/05	22:51	3501	0.650	4.230	14.914	7	
28/05	0:31	3601	0.655	4.235	14.909	7	
28/05	2:11	3701	0.655	4.235	14.909	7	
28/05	3:51	3801	0.660	4.240	14.904	7	
28/05	5:31	3901	0.660	4.240	14.904	7	
28/05	7:11	4001	0.660	4.240	14.904	7	
28/05	8:51	4101	0.665	4.245	14.899	7	
28/05	10:31	4201	0.670	4.250	14.894	7	
28/05	12:20	4310	0.670	4.250	14.894	7	Just prior to end of test. No recovery data taken.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO7S
Permit Number	109990
Comment	Obs well, 174.8m from production well
Completion	2m of 80mm ID Slotted Casing (1mm slots 7 - 9m and Sump 9 - 10m) with 8/16 Gravel Pack
Address	Woolenook Bend - Floodplain
Test type	3-Day Constant Discharge Test - CMP4 with Grundfos 9.2kW electric submersible pump
Pumping commenced	25/05/06 at 12:30
Pumping ceased	28/05/06 at 12:30
Are measurements for pumped well ?	No

Standing water level	3.700	metres below	measured point (standpipe)
Standing water level	15.599	metres above	Australian Height Datum
Reference point (standpipe)	0.985	metres above	ground level (calculated from survey data)
Rates	7	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
25/05	12:30	0	0.000	3.700	15.599	7	Endeavour to pump 7 L / s from commencement.
25/05	12:35	5	0.000	3.700	15.599	7	Slight fluctuation in discharge rate at 8 mins.
25/05	12:40	10	0.000	3.700	15.599	7	
25/05	12:50	20	0.010	3.710	15.589	7	
25/05	13:00	30	0.020	3.720	15.579	7	
25/05	13:10	40	0.035	3.735	15.564	7	
25/05	13:20	50	0.040	3.740	15.559	7	
25/05	13:30	60	0.050	3.750	15.549	7	
25/05	13:40	70	0.055	3.755	15.544	7	
25/05	13:50	80	0.060	3.760	15.539	7	
25/05	14:00	90	0.065	3.765	15.534	7	
25/05	14:10	100	0.067	3.767	15.532	7	
25/05	14:35	125	0.080	3.780	15.519	7	
25/05	14:55	145	0.080	3.780	15.519	7	
25/05	15:05	155	0.085	3.785	15.514	7	
25/05	15:34	184	0.090	3.790	15.509	7	
25/05	15:55	205	0.095	3.795	15.504	7	
25/05	16:45	255	0.100	3.800	15.499	7	
25/05	17:35	305	0.110	3.810	15.489	7	
25/05	18:25	355	0.115	3.815	15.484	7	
25/05	19:15	405	0.115	3.815	15.484	7	
25/05	20:05	455	0.120	3.820	15.479	7	
25/05	20:56	506	0.120	3.820	15.479	7	
25/05	21:46	556	0.130	3.830	15.469	7	
25/05	22:39	609	0.120	3.820	15.479	7	
26/05	0:15	705	0.130	3.830	15.469	7	
26/05	1:56	806	0.140	3.840	15.459	7	
26/05	3:36	906	0.140	3.840	15.459	7	
26/05	5:15	1005	0.150	3.850	15.449	7	
26/05	6:54	1104	0.150	3.850	15.449	7	
26/05	8:33	1203	0.150	3.850	15.449	7	
26/05	10:14	1304	0.155	3.855	15.444	7	
26/05	11:55	1405	0.155	3.855	15.444	7	
26/05	13:34	1504	0.160	3.860	15.439	7	
26/05	15:14	1604	0.160	3.860	15.439	7	
26/05	16:55	1705	0.165	3.865	15.434	7	
26/05	18:36	1806	0.170	3.870	15.429	7	
26/05	20:14	1904	0.175	3.875	15.424	7	
26/05	21:56	2006	0.180	3.880	15.419	7	
26/05	23:34	2104	0.180	3.880	15.419	7	
27/05	1:14	2204	0.180	3.880	15.419	7	
27/05	2:54	2304	0.180	3.880	15.419	7	
27/05	4:35	2405	0.185	3.885	15.414	7	
27/05	6:15	2505	0.185	3.885	15.414	7	
27/05	7:56	2606	0.185	3.885	15.414	7	
27/05	9:38	2708	0.195	3.895	15.404	7	
27/05	11:14	2804	0.200	3.900	15.399	7	
27/05	12:55	2905	0.200	3.900	15.399	7	
27/05	14:34	3004	0.200	3.900	15.399	7	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
27/05	16:18	3108	0.200	3.900	15.399	7	
27/05	17:55	3205	0.205	3.905	15.394	7	
27/05	19:37	3307	0.210	3.910	15.389	7	
27/05	21:25	3415	0.210	3.910	15.389	7	
27/05	22:55	3505	0.210	3.910	15.389	7	
28/05	0:34	3604	0.210	3.910	15.389	7	
28/05	2:15	3705	0.215	3.915	15.384	7	
28/05	3:55	3805	0.215	3.915	15.384	7	
28/05	5:34	3904	0.215	3.915	15.384	7	
28/05	7:15	4005	0.220	3.920	15.379	7	
28/05	8:54	4104	0.220	3.920	15.379	7	
28/05	10:34	4204	0.225	3.925	15.374	7	
28/05	12:10	4300	0.220	3.920	15.379	7	Just prior to end of test. No recovery data taken.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO7D
Permit Number	109991
Comment	Obs well, 177.1m from production well
Completion	3m of 80mm ID Slotted Casing (1mm slots 28 - 31m and Sump 31 - 32m) with 8/16 Gravel Pack
Address	Woolenook Bend - Floodplain
Test type	3-Day Constant Discharge Test - CMP4 with Grundfos 9.2kW electric submersible pump
Pumping commenced	25/05/06 at 12:30
Pumping ceased	28/05/06 at 12:30
Are measurements for pumped well ?	No

Standing water level	3.605	metres below	measured point (standpipe)
Standing water level	15.736	metres above	Australian Height Datum
Reference point (standpipe)	1.080	metres above	ground level (calculated from survey data)
Rates	7	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
25/05	12:30	0	0.000	3.605	15.736	7	Endeavour to pump 7 L / s from commencement.
25/05	12:35	5	0.000	3.605	15.736	7	Slight fluctuation in discharge rate at 8 mins.
25/05	12:40	10	0.000	3.605	15.736	7	
25/05	12:50	20	0.000	3.605	15.736	7	
25/05	13:00	30	0.003	3.608	15.733	7	
25/05	13:10	40	0.004	3.609	15.732	7	
25/05	13:20	50	0.005	3.610	15.731	7	
25/05	13:30	60	0.005	3.610	15.731	7	
25/05	13:40	70	0.005	3.610	15.731	7	
25/05	13:50	80	0.005	3.610	15.731	7	
25/05	14:00	90	0.005	3.610	15.731	7	
25/05	14:10	100	0.005	3.610	15.731	7	
25/05	14:37	127	0.005	3.610	15.731	7	
25/05	14:56	146	0.005	3.610	15.731	7	
25/05	15:05	155	0.005	3.610	15.731	7	
25/05	15:35	185	0.005	3.610	15.731	7	
25/05	15:56	206	0.005	3.610	15.731	7	
25/05	16:46	256	0.005	3.610	15.731	7	
25/05	17:36	306	0.010	3.615	15.726	7	
25/05	18:26	356	0.015	3.620	15.721	7	
25/05	19:16	406	0.015	3.620	15.721	7	
25/05	20:07	457	0.020	3.625	15.716	7	
25/05	20:57	507	0.025	3.630	15.711	7	
25/05	21:48	558	0.025	3.630	15.711	7	
25/05	22:40	610	0.025	3.630	15.711	7	
26/05	0:16	706	0.035	3.640	15.701	7	
26/05	1:57	807	0.040	3.645	15.696	7	
26/05	3:37	907	0.045	3.650	15.691	7	
26/05	5:16	1006	0.045	3.650	15.691	7	
26/05	6:55	1105	0.055	3.660	15.681	7	
26/05	8:33	1203	0.055	3.660	15.681	7	
26/05	10:15	1305	0.065	3.670	15.671	7	
26/05	11:56	1406	0.070	3.675	15.666	7	
26/05	13:35	1505	0.070	3.675	15.666	7	
26/05	15:15	1605	0.075	3.680	15.661	7	
26/05	16:56	1706	0.080	3.685	15.656	7	
26/05	18:37	1807	0.085	3.690	15.651	7	
26/05	20:16	1906	0.095	3.700	15.641	7	
26/05	21:58	2008	0.095	3.700	15.641	7	
26/05	23:35	2105	0.100	3.705	15.636	7	
27/05	1:14	2204	0.105	3.710	15.631	7	
27/05	2:55	2305	0.105	3.710	15.631	7	
27/05	4:36	2406	0.115	3.720	15.621	7	
27/05	6:16	2506	0.115	3.720	15.621	7	
27/05	7:57	2607	0.115	3.720	15.621	7	
27/05	9:39	2709	0.125	3.730	15.611	7	
27/05	11:15	2805	0.125	3.730	15.611	7	
27/05	12:56	2906	0.130	3.735	15.606	7	
27/05	14:35	3005	0.130	3.735	15.606	7	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
27/05	16:19	3109	0.135	3.740	15.601	7	
27/05	17:57	3207	0.140	3.745	15.596	7	
27/05	19:39	3309	0.145	3.750	15.591	7	
27/05	21:26	3416	0.145	3.750	15.591	7	
27/05	22:56	3506	0.150	3.755	15.586	7	
28/05	0:35	3605	0.150	3.755	15.586	7	
28/05	2:15	3705	0.155	3.760	15.581	7	
28/05	3:55	3805	0.155	3.760	15.581	7	
28/05	5:35	3905	0.160	3.765	15.576	7	
28/05	7:16	4006	0.160	3.765	15.576	7	
28/05	8:55	4105	0.165	3.770	15.571	7	
28/05	10:36	4206	0.165	3.770	15.571	7	
28/05	12:10	4300	0.165	3.770	15.571	7	Just prior to end of test. No recovery data taken.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO9
Permit Number	110009
Comment	Obs well, 413.9m from production well
Completion	3m of 80mm ID Slotted Casing (1mm slots 11 - 14m and Sump 14 - 15m) with 8/16 Gravel Pack
Address	Woolenook Bend - Floodplain
Test type	3-Day Constant Discharge Test - CMP4 with Grundfos 9.2kW electric submersible pump
Pumping commenced	25/05/06 at 12:30
Pumping ceased	28/05/06 at 12:30
Are measurements for pumped well ?	No

Standing water level	3.355	metres below	measured point (standpipe)
Standing water level	15.658	metres above	Australian Height Datum
Reference point (standpipe)	1.136	metres above	ground level (calculated from survey data)
Rates	7	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
25/05	12:30	0	0.000	3.355	15.658	7	Endeavour to pump 7 L / s from commencement.
25/05	13:00	30	0.005	3.360	15.653	7	
25/05	13:35	65	0.010	3.365	15.648	7	
25/05	14:15	105	0.020	3.375	15.638	7	
25/05	15:20	170	0.030	3.385	15.628	7	
25/05	17:48	318	0.035	3.390	15.623	7	
25/05	19:26	416	0.045	3.400	15.613	7	
25/05	20:52	502	0.045	3.400	15.613	7	
25/05	22:47	617	0.050	3.405	15.608	7	
26/05	0:24	714	0.060	3.415	15.598	7	
26/05	2:05	815	0.065	3.420	15.593	7	
26/05	3:45	915	0.065	3.420	15.593	7	
26/05	5:24	1014	0.065	3.420	15.593	7	
26/05	7:00	1110	0.070	3.425	15.588	7	
26/05	8:55	1225	0.070	3.425	15.588	7	
26/05	12:15	1425	0.075	3.430	15.583	7	
26/05	15:24	1614	0.085	3.440	15.573	7	
26/05	18:48	1818	0.090	3.445	15.568	7	
26/05	22:03	2013	0.090	3.445	15.568	7	
27/05	1:24	2214	0.085	3.440	15.573	7	Value not plotted in chart.
27/05	4:42	2412	0.095	3.450	15.563	7	
27/05	8:17	2627	0.105	3.460	15.553	7	
27/05	11:26	2816	0.110	3.465	15.548	7	
27/05	14:45	3015	0.115	3.470	15.543	7	
27/05	18:06	3216	0.120	3.475	15.538	7	
27/05	21:00	3390	0.120	3.475	15.538	7	
28/05	0:44	3614	0.120	3.475	15.538	7	
28/05	4:06	3816	0.125	3.480	15.533	7	
28/05	7:23	4013	0.130	3.485	15.528	7	
28/05	10:46	4216	0.135	3.490	15.523	7	
28/05	12:00	4290	0.135	3.490	15.523	7	Just prior to end of test. No recovery data taken.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP2		
Permit Number	110001		
Comment	Production Well		
Completion	4m of 200mm ID Slotted Casing (1mm slots 7 - 11m and Sump 11 - 13m) with 8/16 Gravel Pack		
Address	Floodplain - Murtho		
Test type	Initial development with Grundfos 9.2kW electric submersible pump		
Pumping commenced	31/05/06 at 13:00		
Pumping ceased	31/05/06 at 16:30		
Are measurements for pumped well ?	Yes		
Standing water level	1.840	metres below	measured point (conduit)
Standing water level	16.215	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	13.680	metres below	top of flange
Pump setting	10.3 (intake at 9.6)	metres below	top of flange
Casing height (top of flange)	0.300	metres above	ground level
Head above pump intake	8.160	metres	
Head above top of production zone	5.860	metres	
Rates	2, 3, 4, 5, 6 & 7	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
31/05	13:00	0	0.000	1.840	16.215	2	Endeavour to pump 2 L / s from commencement.
31/05	13:05	5	1.410	3.250	14.805	2	
31/05	13:10	10	1.370	3.210	14.845	2	
31/05	13:15	15	1.370	3.210	14.845	2	
31/05	13:23	23	1.340	3.180	14.875	3	Increase rate from 23 minutes.
31/05	13:25	25	2.010	3.850	14.205	3	
31/05	13:30	30	2.050	3.890	14.165	3	
31/05	13:35	35	2.060	3.900	14.155	3	
31/05	13:40	40	2.040	3.880	14.175	3	
31/05	13:45	45	2.080	3.920	14.135	3	
31/05	13:50	50	2.050	3.890	14.165	3	
31/05	13:55	55	2.070	3.910	14.145	3	
31/05	14:00	60	2.040	3.880	14.175	4	Increase rate from 60 minutes.
31/05	14:05	65	2.840	4.680	13.375	4	
31/05	14:10	70	2.850	4.690	13.365	4	
31/05	14:15	75	2.900	4.740	13.315	4	
31/05	14:20	80	2.910	4.750	13.305	4	
31/05	14:25	85	2.920	4.760	13.295	4	
31/05	14:30	90	2.940	4.780	13.275	4	
31/05	14:35	95	2.950	4.790	13.265	4	
31/05	14:40	100	2.970	4.810	13.245	4	
31/05	14:45	105	2.980	4.820	13.235	4	
31/05	14:50	110	2.990	4.830	13.225	--	Stopped pumping - Valve faulty.
31/05	15:20	140	0.140	1.980	16.075	5	Restarted at 5 L/s from 140 minutes.
31/05	15:25	145	3.530	5.370	12.685	5	
31/05	15:30	150	3.680	5.520	12.535	5	
31/05	15:35	155	3.730	5.570	12.485	5	
31/05	15:40	160	3.730	5.570	12.485	5	
31/05	15:45	165	3.760	5.600	12.455	5	
31/05	15:50	170	3.790	5.630	12.425	6	Increase rate from 170 minutes.
31/05	15:55	175	4.600	6.440	11.615	6	
31/05	16:00	180	4.650	6.490	11.565	6	
31/05	16:05	185	4.710	6.550	11.505	6	
31/05	16:10	190	4.740	6.580	11.475	6	
31/05	16:15	195	4.770	6.610	11.445	6	
31/05	16:20	200	4.810	6.650	11.405	7	Increase rate from 200 minutes.
31/05	16:25	205	5.690	7.530	10.525	7	
31/05	16:30	210	5.770	7.610	10.445	0	End ot test. No recovery data.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP2		
Permit Number	110001		
Comment	Production Well		
Completion	4m of 200mm ID Slotted Casing (1mm slots 7 - 11m and Sump 11 - 13m) with 8/16 Gravel Pack		
Address	Floodplain - Murtho		
Test type	4 X 100 Minute Step Test using Grundfos 9.2kW electric submersible pump		
Pumping commenced	01/06/06 at 09:10		
Pumping ceased	01/06/06 at 15:50		
Are measurements for pumped well ?	Yes		
Standing water level	1.870	metres below	measured point (conduit)
Standing water level	16.185	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	13.680	metres below	top of flange
Pump setting	10.3 (intake at 9.6)	metres below	top of flange
Casing height (top of flange)	0.300	metres above	ground level
Head above pump intake	8.130	metres	
Head above top of production zone	5.830	metres	
Rates	1.5, 3, 4.5 & 6	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
01/06	9:10	0	0.000	1.870	16.185	1.5	Endeavour to pump 1.5 L / s from commencement.
01/06	9:11	1	0.770	2.640	15.415	1.5	
01/06	9:12	2	0.820	2.690	15.365	1.5	
01/06	9:13	3	0.840	2.710	15.345	1.5	
01/06	9:14	4	0.830	2.700	15.355	1.5	
01/06	9:15	5	0.850	2.720	15.335	1.5	
01/06	9:16	6	0.880	2.750	15.305	1.5	
01/06	9:17	7	0.880	2.750	15.305	1.5	
01/06	9:18	8	0.910	2.780	15.275	1.5	
01/06	9:19	9	0.920	2.790	15.265	1.5	
01/06	9:20	10	0.920	2.790	15.265	1.5	
01/06	9:22	12	0.920	2.790	15.265	1.5	
01/06	9:24	14	0.930	2.800	15.255	1.5	
01/06	9:26	16	0.935	2.805	15.250	1.5	
01/06	9:28	18	0.940	2.810	15.245	1.5	
01/06	9:30	20	0.940	2.810	15.245	1.5	
01/06	9:32	22	0.950	2.820	15.235	1.5	
01/06	9:34	24	0.950	2.820	15.235	1.5	
01/06	9:36	26	0.960	2.830	15.225	1.5	
01/06	9:38	28	0.955	2.825	15.230	1.5	
01/06	9:40	30	0.960	2.830	15.225	1.5	
01/06	9:45	35	0.970	2.840	15.215	1.5	
01/06	9:50	40	0.980	2.850	15.205	1.5	
01/06	9:55	45	0.990	2.860	15.195	1.5	
01/06	10:00	50	1.000	2.870	15.185	1.5	
01/06	10:05	55	1.010	2.880	15.175	1.5	
01/06	10:10	60	1.020	2.890	15.165	1.5	
01/06	10:20	70	1.020	2.890	15.165	1.5	
01/06	10:30	80	1.040	2.910	15.145	1.5	
01/06	10:40	90	1.040	2.910	15.145	1.5	
01/06	10:50	100	1.060	2.930	15.125	3	Increase discharge rate from 100 mins.
01/06	10:51	101	2.030	3.900	14.155	3	
01/06	10:52	102	2.120	3.990	14.065	3	
01/06	10:53	103	2.155	4.025	14.030	3	
01/06	10:54	104	2.150	4.020	14.035	3	
01/06	10:55	105	2.180	4.050	14.005	3	
01/06	10:56	106	2.195	4.065	13.990	3	
01/06	10:57	107	2.210	4.080	13.975	3	
01/06	10:58	108	2.230	4.100	13.955	3	
01/06	10:59	109	2.230	4.100	13.955	3	
01/06	11:00	110	2.230	4.100	13.955	3	
01/06	11:02	112	2.250	4.120	13.935	3	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
01/06	11:04	114	2.280	4.150	13.905	3	
01/06	11:06	116	2.280	4.150	13.905	3	
01/06	11:08	118	2.300	4.170	13.885	3	
01/06	11:10	120	2.320	4.190	13.865	3	
01/06	11:12	122	2.330	4.200	13.855	3	
01/06	11:14	124	2.340	4.210	13.845	3	
01/06	11:16	126	2.345	4.215	13.840	3	
01/06	11:18	128	2.340	4.210	13.845	3	
01/06	11:20	130	2.350	4.220	13.835	3	
01/06	11:25	135	2.370	4.240	13.815	3	
01/06	11:30	140	2.380	4.250	13.805	3	
01/06	11:35	145	2.390	4.260	13.795	3	
01/06	11:40	150	2.400	4.270	13.785	3	
01/06	11:45	155	2.400	4.270	13.785	3	
01/06	11:50	160	2.410	4.280	13.775	3	
01/06	12:00	170	2.430	4.300	13.755	3	
01/06	12:10	180	2.465	4.335	13.720	3	
01/06	12:20	190	2.475	4.345	13.710	3	
01/06	12:30	200	2.490	4.360	13.695	4.5	Increase discharge rate from 200 mins.
01/06	12:31	201	3.550	5.420	12.635	4.5	
01/06	12:32	202	3.620	5.490	12.565	4.5	
01/06	12:33	203	3.630	5.500	12.555	4.5	
01/06	12:34	204	3.650	5.520	12.535	4.5	
01/06	12:35	205	3.680	5.550	12.505	4.5	
01/06	12:36	206	3.680	5.550	12.505	4.5	
01/06	12:37	207	3.700	5.570	12.485	4.5	
01/06	12:38	208	3.710	5.580	12.475	4.5	
01/06	12:39	209	3.720	5.590	12.465	4.5	
01/06	12:40	210	3.710	5.580	12.475	4.5	
01/06	12:42	212	3.720	5.590	12.465	4.5	
01/06	12:44	214	3.730	5.600	12.455	4.5	
01/06	12:46	216	3.740	5.610	12.445	4.5	
01/06	12:48	218	3.750	5.620	12.435	4.5	
01/06	12:50	220	3.770	5.640	12.415	4.5	
01/06	12:52	222	3.770	5.640	12.415	4.5	
01/06	12:54	224	3.780	5.650	12.405	4.5	
01/06	12:56	226	3.780	5.650	12.405	4.5	
01/06	12:58	228	3.780	5.650	12.405	4.5	
01/06	13:00	230	3.800	5.670	12.385	4.5	
01/06	13:05	235	3.810	5.680	12.375	4.5	
01/06	13:10	240	3.630	5.500	12.555	4.5	Magflow reading anomalous. Value not plotted.
01/06	13:15	245	3.790	5.660	12.395	4.5	May have been due to wet leads on meter.
01/06	13:20	250	3.810	5.680	12.375	4.5	
01/06	13:25	255	3.840	5.710	12.345	4.5	
01/06	13:30	260	3.860	5.730	12.325	4.5	
01/06	13:40	270	3.880	5.750	12.305	4.5	
01/06	13:50	280	3.900	5.770	12.285	4.5	
01/06	14:00	290	3.910	5.780	12.275	4.5	
01/06	14:10	300	3.925	5.795	12.260	6	Increase discharge rate from 300 mins.
01/06	14:11	301	4.940	6.810	11.245	6	
01/06	14:12	302	5.020	6.890	11.165	6	
01/06	14:13	303	5.050	6.920	11.135	6	
01/06	14:14	304	5.080	6.950	11.105	6	
01/06	14:15	305	5.105	6.975	11.080	6	
01/06	14:16	306	5.130	7.000	11.055	6	
01/06	14:17	307	5.140	7.010	11.045	6	
01/06	14:18	308	5.150	7.020	11.035	6	
01/06	14:19	309	5.160	7.030	11.025	6	
01/06	14:20	310	5.170	7.040	11.015	6	
01/06	14:22	312	5.185	7.055	11.000	6	
01/06	14:24	314	5.200	7.070	10.985	6	
01/06	14:26	316	5.210	7.080	10.975	6	
01/06	14:28	318	5.230	7.100	10.955	6	
01/06	14:30	320	5.240	7.110	10.945	6	
01/06	14:32	322	5.250	7.120	10.935	6	
01/06	14:34	324	5.260	7.130	10.925	6	
01/06	14:36	326	5.270	7.140	10.915	6	
01/06	14:38	328	5.280	7.150	10.905	6	
01/06	14:40	330	5.290	7.160	10.895	6	
01/06	14:45	335	5.310	7.180	10.875	6	
01/06	14:50	340	5.340	7.210	10.845	6	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
01/06	14:55	345	5.360	7.230	10.825	6	
01/06	15:00	350	5.370	7.240	10.815	6	
01/06	15:05	355	--	--	--	6	Water level reading not taken.
01/06	15:10	360	5.400	7.270	10.785	6	
01/06	15:20	370	5.450	7.320	10.735	6	
01/06	15:30	380	5.490	7.360	10.695	6	
01/06	15:40	390	5.510	7.380	10.675	6	
01/06	15:50	400	5.530	7.400	10.655	0	End of Test, Start Recovery from 400 mins.
01/06	15:51	401	0.770	2.640	15.415	0	Recovery.
01/06	15:52	402	0.495	2.365	15.690	0	
01/06	15:53	403	0.410	2.280	15.775	0	
01/06	15:54	404	0.365	2.235	15.820	0	
01/06	15:55	405	0.330	2.200	15.855	0	
01/06	15:56	406	0.310	2.180	15.875	0	
01/06	15:57	407	0.280	2.150	15.905	0	
01/06	15:58	408	0.270	2.140	15.915	0	
01/06	15:59	409	0.250	2.120	15.935	0	
01/06	16:00	410	0.240	2.110	15.945	0	
01/06	16:02	412	0.220	2.090	15.965	0	
01/06	16:04	414	0.200	2.070	15.985	0	
01/06	16:06	416	0.195	2.065	15.990	0	
01/06	16:08	418	0.185	2.055	16.000	0	
01/06	16:10	420	0.180	2.050	16.005	0	
01/06	16:12	422	0.170	2.040	16.015	0	
01/06	16:14	424	0.160	2.030	16.025	0	
01/06	16:16	426	0.150	2.020	16.035	0	
01/06	16:18	428	0.145	2.015	16.040	0	
01/06	16:20	430	0.150	2.020	16.035	0	
01/06	16:25	435	0.130	2.000	16.055	0	
01/06	16:30	440	0.120	1.990	16.065	0	
01/06	16:35	445	0.115	1.985	16.070	0	
01/06	16:40	450	0.110	1.980	16.075	0	
01/06	16:45	455	0.100	1.970	16.085	0	
01/06	16:50	460	0.100	1.970	16.085	0	
01/06	17:00	470	0.095	1.965	16.090	0	
01/06	17:10	480	0.095	1.965	16.090	0	
01/06	17:20	490	0.090	1.960	16.095	0	
01/06	17:30	500	0.080	1.950	16.105	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO2
Permit Number	110000
Comment	Obs well, 27.6 metres from production well
Completion	7m of 80mm ID Slotted Casing (1mm slots 7 - 14m and Sump 14 - 15m) with 8/16 Gravel Pack
Address	Floodplain - Murtho
Test type	4 X 100 Minute Step Test - CMP2 using Grundfos 9.2kW electric submersible pump
Pumping commenced	01/06/06 at 09:10
Pumping ceased	01/06/06 at 15:50
Are measurements for pumped well ?	No

Standing water level	2.360	metres below	measured point (standpipe)
Standing water level	16.209	metres above	Australian Height Datum
Reference point (standpipe)	1.087	metres above	ground level (calculated from survey data)
Rates	1.5, 3, 4.5 & 6	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
01/06	9:10	0	0.000	2.360	16.209	1.5	Endeavour to pump 1.5 L / s from commencement.
01/06	9:11	1	0.010	2.370	16.199	1.5	
01/06	9:12	2	0.010	2.370	16.199	1.5	
01/06	9:13	3	0.020	2.380	16.189	1.5	
01/06	9:14	4	0.020	2.380	16.189	1.5	
01/06	9:15	5	0.030	2.390	16.179	1.5	
01/06	9:16	6	0.040	2.400	16.169	1.5	
01/06	9:17	7	0.040	2.400	16.169	1.5	
01/06	9:18	8	0.050	2.410	16.159	1.5	
01/06	9:19	9	0.050	2.410	16.159	1.5	
01/06	9:20	10	0.060	2.420	16.149	1.5	
01/06	9:22	12	0.060	2.420	16.149	1.5	
01/06	9:24	14	0.060	2.420	16.149	1.5	
01/06	9:26	16	0.070	2.430	16.139	1.5	
01/06	9:28	18	0.070	2.430	16.139	1.5	
01/06	9:30	20	0.070	2.430	16.139	1.5	
01/06	9:32	22	0.070	2.430	16.139	1.5	
01/06	9:34	24	0.070	2.430	16.139	1.5	
01/06	9:36	26	0.070	2.430	16.139	1.5	
01/06	9:38	28	0.070	2.430	16.139	1.5	
01/06	9:40	30	0.080	2.440	16.129	1.5	
01/06	9:45	35	0.080	2.440	16.129	1.5	
01/06	9:50	40	0.080	2.440	16.129	1.5	
01/06	9:55	45	0.090	2.450	16.119	1.5	
01/06	10:00	50	0.090	2.450	16.119	1.5	
01/06	10:05	55	0.090	2.450	16.119	1.5	
01/06	10:10	60	0.100	2.460	16.109	1.5	
01/06	10:20	70	0.090	2.450	16.119	1.5	
01/06	10:30	80	0.090	2.450	16.119	1.5	
01/06	10:40	90	0.090	2.450	16.119	1.5	
01/06	10:50	100	0.100	2.460	16.109	3	Increase discharge rate from 100 mins.
01/06	10:51	101	0.100	2.460	16.109	3	
01/06	10:52	102	0.110	2.470	16.099	3	
01/06	10:53	103	0.120	2.480	16.089	3	
01/06	10:54	104	0.125	2.485	16.084	3	
01/06	10:55	105	0.130	2.490	16.079	3	
01/06	10:56	106	0.130	2.490	16.079	3	
01/06	10:57	107	0.140	2.500	16.069	3	
01/06	10:58	108	0.140	2.500	16.069	3	
01/06	10:59	109	0.140	2.500	16.069	3	
01/06	11:00	110	0.150	2.510	16.059	3	
01/06	11:02	112	0.155	2.515	16.054	3	
01/06	11:04	114	0.155	2.515	16.054	3	
01/06	11:06	116	0.160	2.520	16.049	3	
01/06	11:08	118	0.165	2.525	16.044	3	
01/06	11:10	120	0.165	2.525	16.044	3	
01/06	11:12	122	0.165	2.525	16.044	3	
01/06	11:14	124	0.170	2.530	16.039	3	
01/06	11:16	126	0.170	2.530	16.039	3	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
01/06	11:18	128	0.175	2.535	16.034	3	
01/06	11:20	130	0.180	2.540	16.029	3	
01/06	11:25	135	0.180	2.540	16.029	3	
01/06	11:30	140	0.180	2.540	16.029	3	
01/06	11:35	145	0.185	2.545	16.024	3	
01/06	11:40	150	0.190	2.550	16.019	3	
01/06	11:45	155	0.190	2.550	16.019	3	
01/06	11:50	160	0.190	2.550	16.019	3	
01/06	12:00	170	0.195	2.555	16.014	3	
01/06	12:10	180	0.200	2.560	16.009	3	
01/06	12:20	190	0.200	2.560	16.009	3	
01/06	12:30	200	0.205	2.565	16.004	4.5	Increase discharge rate from 200 mins.
01/06	12:31	201	0.210	2.570	15.999	4.5	
01/06	12:32	202	0.215	2.575	15.994	4.5	
01/06	12:33	203	0.220	2.580	15.989	4.5	
01/06	12:34	204	0.230	2.590	15.979	4.5	
01/06	12:35	205	0.240	2.600	15.969	4.5	
01/06	12:36	206	0.245	2.605	15.964	4.5	
01/06	12:37	207	0.245	2.605	15.964	4.5	
01/06	12:38	208	0.250	2.610	15.959	4.5	
01/06	12:39	209	0.255	2.615	15.954	4.5	
01/06	12:40	210	0.260	2.620	15.949	4.5	
01/06	12:42	212	0.265	2.625	15.944	4.5	
01/06	12:44	214	0.270	2.630	15.939	4.5	
01/06	12:46	216	0.270	2.630	15.939	4.5	
01/06	12:48	218	0.275	2.635	15.934	4.5	
01/06	12:50	220	0.275	2.635	15.934	4.5	
01/06	12:52	222	0.280	2.640	15.929	4.5	
01/06	12:54	224	0.280	2.640	15.929	4.5	
01/06	12:56	226	0.285	2.645	15.924	4.5	
01/06	12:58	228	0.285	2.645	15.924	4.5	
01/06	13:00	230	0.285	2.645	15.924	4.5	
01/06	13:05	235	0.290	2.650	15.919	4.5	
01/06	13:10	240	0.290	2.650	15.919	4.5	
01/06	13:15	245	0.290	2.650	15.919	4.5	
01/06	13:20	250	0.295	2.655	15.914	4.5	
01/06	13:25	255	0.300	2.660	15.909	4.5	
01/06	13:30	260	0.300	2.660	15.909	4.5	
01/06	13:40	270	0.305	2.665	15.904	4.5	
01/06	13:50	280	0.310	2.670	15.899	4.5	
01/06	14:00	290	0.315	2.675	15.894	4.5	
01/06	14:10	300	0.310	2.670	15.899	6	Increase discharge rate from 300 mins.
01/06	14:11	301	0.320	2.680	15.889	6	
01/06	14:12	302	0.325	2.685	15.884	6	
01/06	14:13	303	0.335	2.695	15.874	6	
01/06	14:14	304	0.340	2.700	15.869	6	
01/06	14:15	305	0.350	2.710	15.859	6	
01/06	14:16	306	0.350	2.710	15.859	6	
01/06	14:17	307	0.360	2.720	15.849	6	
01/06	14:18	308	0.365	2.725	15.844	6	
01/06	14:19	309	0.365	2.725	15.844	6	
01/06	14:20	310	0.370	2.730	15.839	6	
01/06	14:22	312	0.370	2.730	15.839	6	
01/06	14:24	314	0.380	2.740	15.829	6	
01/06	14:26	316	0.380	2.740	15.829	6	
01/06	14:28	318	0.385	2.745	15.824	6	
01/06	14:30	320	0.385	2.745	15.824	6	
01/06	14:32	322	0.390	2.750	15.819	6	
01/06	14:34	324	0.390	2.750	15.819	6	
01/06	14:36	326	0.390	2.750	15.819	6	
01/06	14:38	328	0.395	2.755	15.814	6	
01/06	14:40	330	0.395	2.755	15.814	6	
01/06	14:45	335	0.400	2.760	15.809	6	
01/06	14:50	340	0.400	2.760	15.809	6	
01/06	14:55	345	0.405	2.765	15.804	6	
01/06	15:00	350	0.410	2.770	15.799	6	
01/06	15:05	355	0.415	2.775	15.794	6	
01/06	15:10	360	0.415	2.775	15.794	6	
01/06	15:20	370	0.420	2.780	15.789	6	
01/06	15:30	380	0.420	2.780	15.789	6	
01/06	15:40	390	0.425	2.785	15.784	6	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
01/06	15:50	400	0.425	2.785	15.784	0	End of Test, Start Recovery from 400 mins.
01/06	15:51	401	0.400	2.760	15.809	0	Recovery.
01/06	15:52	402	0.390	2.750	15.819	0	
01/06	15:53	403	0.355	2.715	15.854	0	
01/06	15:54	404	0.330	2.690	15.879	0	
01/06	15:55	405	0.300	2.660	15.909	0	
01/06	15:56	406	0.280	2.640	15.929	0	
01/06	15:57	407	0.265	2.625	15.944	0	
01/06	15:58	408	0.255	2.615	15.954	0	
01/06	15:59	409	0.240	2.600	15.969	0	
01/06	16:00	410	0.230	2.590	15.979	0	
01/06	16:02	412	0.210	2.570	15.999	0	
01/06	16:04	414	0.195	2.555	16.014	0	
01/06	16:06	416	0.180	2.540	16.029	0	
01/06	16:08	418	0.175	2.535	16.034	0	
01/06	16:10	420	0.165	2.525	16.044	0	
01/06	16:12	422	0.155	2.515	16.054	0	
01/06	16:14	424	0.150	2.510	16.059	0	
01/06	16:16	426	0.145	2.505	16.064	0	
01/06	16:18	428	0.140	2.500	16.069	0	
01/06	16:20	430	0.140	2.500	16.069	0	
01/06	16:25	435	0.130	2.490	16.079	0	
01/06	16:30	440	0.120	2.480	16.089	0	
01/06	16:35	445	0.115	2.475	16.094	0	
01/06	16:40	450	0.110	2.470	16.099	0	
01/06	16:45	455	0.100	2.460	16.109	0	
01/06	16:50	460	0.100	2.460	16.109	0	
01/06	17:00	470	0.100	2.460	16.109	0	
01/06	17:10	480	0.090	2.450	16.119	0	
01/06	17:20	490	0.080	2.440	16.129	0	
01/06	17:30	500	0.080	2.440	16.129	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP2		
Permit Number	110001		
Comment	Production Well		
Completion	4m of 200mm ID Slotted Casing (1mm slots 7 - 11m and Sump 11 - 13m) with 8/16 Gravel Pack		
Address	Floodplain - Murtho		
Test type	3-Day Constant Discharge Test - CMP2 with Grundfos 9.2kW electric submersible pump		
Pumping commenced	02/06/06 at 10:30		
Pumping ceased	05/06/06 at 12:00		
Are measurements for pumped well ?	Yes		
Standing water level	1.880	metres below	measured point (conduit)
Standing water level	16.175	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	13.680	metres below	top of flange
Pump setting	10.3 (intake at 9.6)	metres below	top of flange
Casing height (top of flange)	0.300	metres above	ground level
Head above pump intake	8.120	metres	
Head above top of production zone	5.820	metres	
Rates	4	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
02/06	10:30	0	0.000	1.880	16.175	4	Endeavour to pump 4 L / s from commencement.
02/06	10:31	1	2.520	4.400	13.655	4	
02/06	10:32	2	2.710	4.590	13.465	4	
02/06	10:33	3	2.890	4.770	13.285	4	
02/06	10:34	4	2.950	4.830	13.225	4	
02/06	10:35	5	3.000	4.880	13.175	4	
02/06	10:36	6	3.110	4.990	13.065	4	
02/06	10:37	7	3.170	5.050	13.005	4	
02/06	10:38	8	3.210	5.090	12.965	4	
02/06	10:39	9	3.250	5.130	12.925	4	
02/06	10:40	10	3.280	5.160	12.895	4	
02/06	10:42	12	3.350	5.230	12.825	4	
02/06	10:44	14	3.400	5.280	12.775	4	
02/06	10:46	16	3.440	5.320	12.735	4	
02/06	10:48	18	3.455	5.335	12.720	4	
02/06	10:50	20	3.485	5.365	12.690	4	
02/06	10:52	22	3.530	5.410	12.645	4	
02/06	10:54	24	3.550	5.430	12.625	4	
02/06	10:56	26	3.570	5.450	12.605	4	
02/06	10:58	28	3.570	5.450	12.605	4	
02/06	11:00	30	3.590	5.470	12.585	4	
02/06	11:05	35	3.615	5.495	12.560	4	
02/06	11:10	40	3.650	5.530	12.525	4	
02/06	11:15	45	3.660	5.540	12.515	4	
02/06	11:20	50	3.670	5.550	12.505	4	
02/06	11:25	55	3.680	5.560	12.495	4	
02/06	11:30	60	3.690	5.570	12.485	4	
02/06	11:40	70	3.710	5.590	12.465	4	
02/06	11:50	80	3.720	5.600	12.455	4	
02/06	12:00	90	3.740	5.620	12.435	4	
02/06	12:10	100	3.730	5.610	12.445	4	
02/06	12:30	120	3.770	5.650	12.405	4	
02/06	12:50	140	3.780	5.660	12.395	4	
02/06	13:10	160	3.790	5.670	12.385	4	
02/06	13:30	180	3.795	5.675	12.380	4	
02/06	13:50	200	3.810	5.690	12.365	4	
02/06	14:40	250	3.790	5.670	12.385	4	
02/06	15:30	300	3.820	5.700	12.355	4	
02/06	16:20	350	3.830	5.710	12.345	4	
02/06	17:10	400	3.830	5.710	12.345	4	
02/06	18:00	450	3.850	5.730	12.325	4	
02/06	18:50	500	3.850	5.730	12.325	4	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
02/06	19:40	550	3.855	5.735	12.320	4	
02/06	20:30	600	3.860	5.740	12.315	4	
02/06	22:10	700	3.870	5.750	12.305	4	
02/06	23:50	800	3.880	5.760	12.295	4	
03/06	1:30	900	3.805	5.685	12.370	4	Recovery noticed.
03/06	3:10	1000	3.780	5.660	12.395	4	
03/06	4:50	1100	3.750	5.630	12.425	4	
03/06	6:30	1200	3.720	5.600	12.455	4	
03/06	8:10	1300	3.710	5.590	12.465	4	
03/06	9:50	1400	3.710	5.590	12.465	4	
03/06	11:30	1500	3.710	5.590	12.465	4	
03/06	13:10	1600	3.670	5.550	12.505	4	
03/06	14:50	1700	3.670	5.550	12.505	4	
03/06	16:30	1800	3.660	5.540	12.515	4	
03/06	18:10	1900	3.650	5.530	12.525	4	
03/06	19:50	2000	3.645	5.525	12.530	4	
03/06	21:30	2100	3.630	5.510	12.545	4	
03/06	23:10	2200	3.620	5.500	12.555	4	
04/06	0:50	2300	3.600	5.480	12.575	4	
04/06	2:30	2400	3.590	5.470	12.585	4	
04/06	4:10	2500	3.580	5.460	12.595	4	
04/06	5:50	2600	3.600	5.480	12.575	4	
04/06	7:30	2700	3.560	5.440	12.615	4	
04/06	9:10	2800	3.550	5.430	12.625	4	
04/06	10:50	2900	3.530	5.410	12.645	4	
04/06	12:30	3000	3.520	5.400	12.655	4	
04/06	14:10	3100	3.500	5.380	12.675	4	
04/06	15:50	3200	3.495	5.375	12.680	4	
04/06	17:30	3300	3.500	5.380	12.675	4	
04/06	19:10	3400	3.490	5.370	12.685	4	
04/06	20:50	3500	3.490	5.370	12.685	4	
04/06	22:30	3600	3.475	5.355	12.700	4	
05/06	0:10	3700	3.460	5.340	12.715	4	
05/06	1:50	3800	3.445	5.325	12.730	4	
05/06	3:30	3900	3.430	5.310	12.745	4	
05/06	5:10	4000	3.430	5.310	12.745	4	
05/06	6:50	4100	3.420	5.300	12.755	4	
05/06	8:30	4200	3.395	5.275	12.780	4	
05/06	10:10	4300	3.385	5.265	12.790	4	
05/06	12:00	4410	3.380	5.260	12.795	0	End of Test, Start Recovery from 4410 minutes.
05/06	12:01	4411	0.640	2.520	15.535	0	Recovery.
05/06	12:02	4412	0.500	2.380	15.675	0	
05/06	12:03	4413	0.460	2.340	15.715	0	
05/06	12:04	4414	0.430	2.310	15.745	0	
05/06	12:05	4415	0.400	2.280	15.775	0	
05/06	12:06	4416	0.385	2.265	15.790	0	
05/06	12:07	4417	0.370	2.250	15.805	0	
05/06	12:08	4418	0.360	2.240	15.815	0	
05/06	12:09	4419	0.350	2.230	15.825	0	
05/06	12:10	4420	0.340	2.220	15.835	0	
05/06	12:12	4422	0.330	2.210	15.845	0	
05/06	12:14	4424	0.320	2.200	15.855	0	
05/06	12:16	4426	0.310	2.190	15.865	0	
05/06	12:18	4428	0.300	2.180	15.875	0	
05/06	12:20	4430	0.290	2.170	15.885	0	
05/06	12:22	4432	0.290	2.170	15.885	0	
05/06	12:24	4434	0.285	2.165	15.890	0	
05/06	12:26	4436	0.285	2.165	15.890	0	
05/06	12:28	4438	0.280	2.160	15.895	0	
05/06	12:30	4440	0.270	2.150	15.905	0	
05/06	12:35	4445	0.260	2.140	15.915	0	
05/06	12:40	4450	0.250	2.130	15.925	0	
05/06	12:45	4455	0.260	2.140	15.915	0	
05/06	12:50	4460	0.250	2.130	15.925	0	
05/06	12:55	4465	0.240	2.120	15.935	0	
05/06	13:00	4470	0.230	2.110	15.945	0	
05/06	13:10	4480	0.230	2.110	15.945	0	
05/06	13:20	4490	0.225	2.105	15.950	0	
05/06	13:30	4500	0.220	2.100	15.955	0	
05/06	13:40	4510	0.210	2.090	15.965	0	
05/06	14:40	4570	0.190	2.070	15.985	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO2
Permit Number	110000
Comment	Obs well, 27.6 metres from production well
Completion	7m of 80mm ID Slotted Casing (1mm slots 7 - 14m and Sump 14 - 15m) with 8/16 Gravel Pack
Address	Floodplain - Murtho
Test type	3-Day Constant Discharge Test - CMP2 with Grundfos 9.2kW electric submersible pump
Pumping commenced	02/06/06 at 10:30
Pumping ceased	05/06/06 at 12:00
Are measurements for pumped well ?	No

Standing water level	2.370	metres below	measured point (standpipe)
Standing water level	16.199	metres above	Australian Height Datum
Reference point (standpipe)	1.087	metres above	ground level (calculated from survey data)
Rates	4	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
02/06	10:30	0	0.000	2.370	16.199	4	Endeavour to pump 4 L / s from commencement.
02/06	10:31	1	0.010	2.380	16.189	4	
02/06	10:32	2	0.030	2.400	16.169	4	
02/06	10:33	3	0.050	2.420	16.149	4	
02/06	10:34	4	0.070	2.440	16.129	4	
02/06	10:35	5	0.090	2.460	16.109	4	
02/06	10:36	6	0.100	2.470	16.099	4	
02/06	10:37	7	0.120	2.490	16.079	4	
02/06	10:38	8	0.120	2.490	16.079	4	
02/06	10:39	9	0.130	2.500	16.069	4	
02/06	10:40	10	0.140	2.510	16.059	4	
02/06	10:42	12	0.150	2.520	16.049	4	
02/06	10:44	14	0.160	2.530	16.039	4	
02/06	10:46	16	0.170	2.540	16.029	4	
02/06	10:48	18	0.175	2.545	16.024	4	
02/06	10:50	20	0.180	2.550	16.019	4	
02/06	10:52	22	0.190	2.560	16.009	4	
02/06	10:54	24	0.190	2.560	16.009	4	
02/06	10:56	26	0.195	2.565	16.004	4	
02/06	10:58	28	0.200	2.570	15.999	4	
02/06	11:00	30	0.205	2.575	15.994	4	
02/06	11:05	35	0.210	2.580	15.989	4	
02/06	11:10	40	0.220	2.590	15.979	4	
02/06	11:15	45	0.225	2.595	15.974	4	
02/06	11:20	50	0.230	2.600	15.969	4	
02/06	11:25	55	0.230	2.600	15.969	4	
02/06	11:30	60	0.235	2.605	15.964	4	
02/06	11:40	70	0.240	2.610	15.959	4	
02/06	11:50	80	0.250	2.620	15.949	4	
02/06	12:00	90	0.255	2.625	15.944	4	
02/06	12:10	100	0.260	2.630	15.939	4	
02/06	12:31	121	0.270	2.640	15.929	4	
02/06	12:51	141	0.275	2.645	15.924	4	
02/06	13:11	161	0.280	2.650	15.919	4	
02/06	13:31	181	0.290	2.660	15.909	4	
02/06	13:51	201	0.295	2.665	15.904	4	
02/06	14:42	252	0.305	2.675	15.894	4	
02/06	15:31	301	0.315	2.685	15.884	4	
02/06	16:21	351	0.320	2.690	15.879	4	
02/06	17:11	401	0.330	2.700	15.869	4	
02/06	18:01	451	0.335	2.705	15.864	4	
02/06	18:53	503	0.340	2.710	15.859	4	
02/06	19:41	551	0.345	2.715	15.854	4	
02/06	20:33	603	0.350	2.720	15.849	4	
02/06	22:12	702	0.355	2.725	15.844	4	
02/06	23:53	803	0.360	2.730	15.839	4	
03/06	1:33	903	0.370	2.740	15.829	4	
03/06	3:12	1002	0.370	2.740	15.829	4	
03/06	4:52	1102	0.380	2.750	15.819	4	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
03/06	6:32	1202	0.385	2.755	15.814	4	
03/06	8:12	1302	0.390	2.760	15.809	4	
03/06	9:52	1402	0.390	2.760	15.809	4	
03/06	11:33	1503	0.395	2.765	15.804	4	
03/06	13:12	1602	0.400	2.770	15.799	4	
03/06	14:55	1705	0.400	2.770	15.799	4	
03/06	16:31	1801	0.410	2.780	15.789	4	
03/06	18:11	1901	0.415	2.785	15.784	4	
03/06	19:52	2002	0.410	2.780	15.789	4	
03/06	21:31	2101	0.415	2.785	15.784	4	
03/06	23:12	2202	0.415	2.785	15.784	4	
04/06	0:51	2301	0.420	2.790	15.779	4	
04/06	2:32	2402	0.420	2.790	15.779	4	
04/06	4:12	2502	0.425	2.795	15.774	4	
04/06	5:52	2602	0.430	2.800	15.769	4	
04/06	7:32	2702	0.430	2.800	15.769	4	
04/06	9:14	2804	0.435	2.805	15.764	4	
04/06	10:51	2901	0.435	2.805	15.764	4	
04/06	12:32	3002	0.435	2.805	15.764	4	
04/06	14:11	3101	0.440	2.810	15.759	4	
04/06	15:51	3201	0.440	2.810	15.759	4	
04/06	17:36	3306	0.440	2.810	15.759	4	
04/06	19:13	3403	0.450	2.820	15.749	4	
04/06	20:51	3501	0.450	2.820	15.749	4	
04/06	22:32	3602	0.450	2.820	15.749	4	
05/06	0:12	3702	0.450	2.820	15.749	4	
05/06	1:52	3802	0.450	2.820	15.749	4	
05/06	3:32	3902	0.450	2.820	15.749	4	
05/06	5:12	4002	0.450	2.820	15.749	4	
05/06	6:52	4102	0.450	2.820	15.749	4	
05/06	8:33	4203	0.455	2.825	15.744	4	
05/06	10:11	4301	0.460	2.830	15.739	4	
05/06	12:00	4410	0.460	2.830	15.739	0	End of Test, no recovery data taken from CMO2.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	WB6		
Permit Number	Unit Number 7029-1828		
Comment	Obs well, 270.7m from production well		
Completion	2m of 50mm ID Slotted Casing from 2 - 4m		
Address	Floodplain - Murtho		
Test type	3-Day Constant Discharge Test - CMP2 with Grundfos 9.2kW electric submersible pump		
Pumping commenced	02/06/06 at 10:30		
Pumping ceased	05/06/06 at 12:00		
Are measurements for pumped well ?	No		
Standing water level	2.010	metres below	measured point (top of pvc)
Standing water level	16.502	metres above	Australian Height Datum
Reference point (top of pvc)	0.886	metres above	ground level (calculated from survey data)
Rates	4	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
02/06	10:30	0	0.000	2.010	16.502	4	Endeavour to pump 4 L / s from commencement.
02/06	20:40	610	0.010	2.020	16.492	4	
03/06	8:50	1340	0.020	2.030	16.482	4	
03/06	20:50	2060	0.040	2.050	16.462	4	
04/06	8:55	2785	0.050	2.060	16.452	4	
04/06	20:56	3506	0.060	2.070	16.442	4	
05/06	8:55	4225	0.070	2.080	16.432	4	Just prior to end of test. No recovery data taken.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP2		
Permit Number	110001		
Comment	Production Well		
Completion	4m of 200mm ID Slotted Casing (1mm slots 7 - 11m and Sump 11 - 13m) with 8/16 Gravel Pack		
Address	Floodplain - Murtho		
Test type	2nd - 4 X 100 Minute Step Test using Grundfos 9.2kW electric submersible pump		
Pumping commenced	06/06/06 at 08:50		
Pumping ceased	06/06/06 at 15:30		
Are measurements for pumped well ?	Yes		
Standing water level	1.905	metres below	measured point (conduit)
Standing water level	16.150	metres above	Australian Height Datum
Reference point (conduit)	0.700	metres above	ground level
Total depth	13.680	metres below	top of flange
Pump setting	10.3 (intake at 9.6)	metres below	top of flange
Casing height (top of flange)	0.300	metres above	ground level
Head above pump intake	8.095	metres	
Head above top of production zone	5.795	metres	
Rates	1.5, 3, 4.5 & 6	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
06/06	8:50	0	0.000	1.905	16.150	1.5	Endeavour to pump 1.5 L / s from commencement.
06/06	8:51	1	0.015	1.920	16.135	1.5	
06/06	8:52	2	0.005	1.910	16.145	1.5	
06/06	8:53	3	-0.005	1.900	16.155	1.5	
06/06	8:54	4	0.015	1.920	16.135	1.5	
06/06	8:55	5	0.020	1.925	16.130	1.5	
06/06	8:56	6	0.015	1.920	16.135	1.5	
06/06	8:57	7	0.025	1.930	16.125	1.5	
06/06	8:58	8	0.020	1.925	16.130	1.5	
06/06	8:59	9	0.015	1.920	16.135	1.5	
06/06	9:00	10	0.015	1.920	16.135	1.5	
06/06	9:02	12	0.010	1.915	16.140	1.5	
06/06	9:04	14	0.005	1.910	16.145	1.5	
06/06	9:06	16	0.005	1.910	16.145	1.5	
06/06	9:08	18	-0.005	1.900	16.155	1.5	
06/06	9:10	20	0.010	1.915	16.140	1.5	
06/06	9:12	22	0.005	1.910	16.145	1.5	
06/06	9:14	24	-0.015	1.890	16.165	1.5	
06/06	9:16	26	-0.015	1.890	16.165	1.5	
06/06	9:18	28	-0.025	1.880	16.175	1.5	
06/06	9:20	30	-0.030	1.875	16.180	1.5	
06/06	9:25	35	-0.020	1.885	16.170	1.5	
06/06	9:30	40	-0.040	1.865	16.190	1.5	
06/06	9:35	45	-0.030	1.875	16.180	1.5	
06/06	9:40	50	-0.025	1.880	16.175	1.5	
06/06	9:45	55	-0.050	1.855	16.200	1.5	
06/06	9:50	60	-0.145	1.760	16.295	1.5	
06/06	10:00	70	-0.055	1.850	16.205	1.5	
06/06	10:10	80	-0.055	1.850	16.205	1.5	
06/06	10:20	90	-0.050	1.855	16.200	1.5	
06/06	10:30	100	-0.055	1.850	16.205	3	Increase discharge rate from 100 mins.
06/06	10:31	101	1.875	3.780	14.275	3	
06/06	10:32	102	1.880	3.785	14.270	3	
06/06	10:33	103	1.880	3.785	14.270	3	
06/06	10:34	104	1.885	3.790	14.265	3	
06/06	10:35	105	1.895	3.800	14.255	3	
06/06	10:36	106	1.895	3.800	14.255	3	
06/06	10:37	107	1.910	3.815	14.240	3	
06/06	10:38	108	1.905	3.810	14.245	3	
06/06	10:39	109	1.900	3.805	14.250	3	
06/06	10:40	110	1.915	3.820	14.235	3	
06/06	10:42	112	1.920	3.825	14.230	3	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
06/06	10:44	114	1.925	3.830	14.225	3	
06/06	10:46	116	1.940	3.845	14.210	3	
06/06	10:48	118	1.945	3.850	14.205	3	
06/06	10:50	120	1.945	3.850	14.205	3	
06/06	10:52	122	1.955	3.860	14.195	3	
06/06	10:54	124	1.955	3.860	14.195	3	
06/06	10:56	126	1.955	3.860	14.195	3	
06/06	10:58	128	1.955	3.860	14.195	3	
06/06	11:00	130	1.955	3.860	14.195	3	
06/06	11:05	135	1.965	3.870	14.185	3	
06/06	11:10	140	1.965	3.870	14.185	3	
06/06	11:15	145	1.965	3.870	14.185	3	
06/06	11:20	150	1.965	3.870	14.185	3	
06/06	11:25	155	1.975	3.880	14.175	3	
06/06	11:30	160	1.980	3.885	14.170	3	
06/06	11:40	170	1.985	3.890	14.165	3	
06/06	11:50	180	2.005	3.910	14.145	3	
06/06	12:00	190	2.020	3.925	14.130	3	
06/06	12:10	200	2.025	3.930	14.125	4.5	Increase discharge rate from 200 mins.
06/06	12:11	201	2.935	4.840	13.215	4.5	
06/06	12:12	202	2.975	4.880	13.175	4.5	
06/06	12:13	203	3.010	4.915	13.140	4.5	
06/06	12:14	204	2.995	4.900	13.155	4.5	
06/06	12:15	205	3.045	4.950	13.105	4.5	
06/06	12:16	206	3.055	4.960	13.095	4.5	
06/06	12:17	207	3.075	4.980	13.075	4.5	
06/06	12:18	208	3.085	4.990	13.065	4.5	
06/06	12:19	209	3.085	4.990	13.065	4.5	
06/06	12:20	210	3.075	4.980	13.075	4.5	
06/06	12:22	212	3.085	4.990	13.065	4.5	
06/06	12:24	214	3.095	5.000	13.055	4.5	
06/06	12:26	216	3.100	5.005	13.050	4.5	
06/06	12:28	218	3.110	5.015	13.040	4.5	
06/06	12:30	220	3.110	5.015	13.040	4.5	
06/06	12:32	222	3.125	5.030	13.025	4.5	
06/06	12:34	224	3.135	5.040	13.015	4.5	
06/06	12:36	226	3.135	5.040	13.015	4.5	
06/06	12:38	228	3.145	5.050	13.005	4.5	
06/06	12:40	230	3.150	5.055	13.000	4.5	
06/06	12:45	235	3.165	5.070	12.985	4.5	
06/06	12:50	240	3.175	5.080	12.975	4.5	
06/06	12:55	245	3.195	5.100	12.955	4.5	
06/06	13:00	250	3.200	5.105	12.950	4.5	
06/06	13:05	255	3.215	5.120	12.935	4.5	
06/06	13:10	260	3.220	5.125	12.930	4.5	
06/06	13:20	270	3.235	5.140	12.915	4.5	
06/06	13:30	280	3.240	5.145	12.910	4.5	
06/06	13:40	290	3.255	5.160	12.895	4.5	
06/06	13:50	300	3.275	5.180	12.875	6	Increase discharge rate from 300 mins.
06/06	13:51	301	4.195	6.100	11.955	6	
06/06	13:52	302	4.235	6.140	11.915	6	
06/06	13:53	303	4.255	6.160	11.895	6	
06/06	13:54	304	4.275	6.180	11.875	6	
06/06	13:55	305	4.275	6.180	11.875	6	
06/06	13:56	306	4.295	6.200	11.855	6	
06/06	13:57	307	4.305	6.210	11.845	6	
06/06	13:58	308	4.315	6.220	11.835	6	
06/06	13:59	309	4.325	6.230	11.825	6	
06/06	14:00	310	4.330	6.235	11.820	6	
06/06	14:02	312	4.345	6.250	11.805	6	
06/06	14:04	314	4.365	6.270	11.785	6	
06/06	14:06	316	4.370	6.275	11.780	6	
06/06	14:08	318	4.375	6.280	11.775	6	
06/06	14:10	320	4.385	6.290	11.765	6	
06/06	14:12	322	4.390	6.295	11.760	6	
06/06	14:14	324	4.395	6.300	11.755	6	
06/06	14:16	326	4.395	6.300	11.755	6	
06/06	14:18	328	4.400	6.305	11.750	6	
06/06	14:20	330	4.410	6.315	11.740	6	
06/06	14:25	335	4.420	6.325	11.730	6	
06/06	14:30	340	4.445	6.350	11.705	6	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
06/06	14:35	345	4.445	6.350	11.705	6	
06/06	14:40	350	4.455	6.360	11.695	6	
06/06	14:45	355	4.455	6.360	11.695	6	
06/06	14:50	360	4.435	6.340	11.715	6	
06/06	15:00	370	4.465	6.370	11.685	6	
06/06	15:10	380	4.480	6.385	11.670	6	
06/06	15:20	390	4.495	6.400	11.655	6	
06/06	15:30	400	4.505	6.410	11.645	0	End of Test, Start Recovery from 400 mins.
06/06	15:31	401	0.725	2.630	15.425	0	Recovery.
06/06	15:32	402	0.505	2.410	15.645	0	
06/06	15:33	403	0.430	2.335	15.720	0	
06/06	15:34	404	0.395	2.300	15.755	0	
06/06	15:35	405	0.340	2.245	15.810	0	
06/06	15:36	406	0.340	2.245	15.810	0	
06/06	15:37	407	0.305	2.210	15.845	0	
06/06	15:38	408	0.285	2.190	15.865	0	
06/06	15:39	409	0.285	2.190	15.865	0	
06/06	15:40	410	0.285	2.190	15.865	0	
06/06	15:42	412	0.255	2.160	15.895	0	
06/06	15:44	414	0.245	2.150	15.905	0	
06/06	15:46	416	0.225	2.130	15.925	0	
06/06	15:48	418	0.215	2.120	15.935	0	
06/06	15:50	420	0.210	2.115	15.940	0	
06/06	15:52	422	0.195	2.100	15.955	0	
06/06	15:54	424	0.185	2.090	15.965	0	
06/06	15:56	426	0.195	2.100	15.955	0	
06/06	15:58	428	0.180	2.085	15.970	0	
06/06	16:00	430	0.175	2.080	15.975	0	
06/06	16:05	435	0.155	2.060	15.995	0	
06/06	16:10	440	0.155	2.060	15.995	0	
06/06	16:15	445	0.145	2.050	16.005	0	
06/06	16:20	450	0.145	2.050	16.005	0	
06/06	16:25	455	0.140	2.045	16.010	0	
06/06	16:30	460	0.135	2.040	16.015	0	
06/06	16:40	470	0.125	2.030	16.025	0	
06/06	16:50	480	0.125	2.030	16.025	0	
06/06	17:00	490	0.125	2.030	16.025	0	
06/06	17:10	500	0.125	2.030	16.025	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMO2
Permit Number	110000
Comment	Obs well, 27.6 metres from production well
Completion	7m of 80mm ID Slotted Casing (1mm slots 7 - 14m and Sump 14 - 15m) with 8/16 Gravel Pack
Address	Floodplain - Murtho
Test type	2nd - 4 X 100 Minute Step Test - CMP2 using Grundfos 9.2kW electric submersible pump
Pumping commenced	06/06/06 at 08:50
Pumping ceased	06/06/06 at 15:30
Are measurements for pumped well ?	No

Standing water level	2.425	metres below	measured point (standpipe)
Standing water level	16.150	metres above	Australian Height Datum
Reference point (standpipe)	1.087	metres above	ground level (calculated from survey data)
Rates	1.5, 3, 4.5 & 6	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
06/06	8:50	0	0.000	2.425	16.150	1.5	Endeavour to pump 1.5 L / s from commencement.
06/06	8:51	1	0.005	2.430	16.145	1.5	
06/06	8:52	2	0.010	2.435	16.140	1.5	
06/06	8:53	3	0.020	2.445	16.130	1.5	
06/06	8:54	4	0.025	2.450	16.125	1.5	
06/06	8:55	5	0.030	2.455	16.120	1.5	
06/06	8:56	6	0.035	2.460	16.115	1.5	
06/06	8:57	7	0.040	2.465	16.110	1.5	
06/06	8:58	8	0.045	2.470	16.105	1.5	
06/06	8:59	9	0.050	2.475	16.100	1.5	
06/06	9:00	10	0.050	2.475	16.100	1.5	
06/06	9:02	12	0.055	2.480	16.095	1.5	
06/06	9:04	14	0.060	2.485	16.090	1.5	
06/06	9:06	16	0.065	2.490	16.085	1.5	
06/06	9:08	18	0.065	2.490	16.085	1.5	
06/06	9:10	20	0.070	2.495	16.080	1.5	
06/06	9:12	22	0.075	2.500	16.075	1.5	
06/06	9:14	24	0.075	2.500	16.075	1.5	
06/06	9:16	26	0.075	2.500	16.075	1.5	
06/06	9:18	28	0.080	2.505	16.070	1.5	
06/06	9:20	30	0.080	2.505	16.070	1.5	
06/06	9:25	35	0.080	2.505	16.070	1.5	
06/06	9:30	40	0.085	2.510	16.065	1.5	
06/06	9:35	45	0.085	2.510	16.065	1.5	
06/06	9:40	50	0.085	2.510	16.065	1.5	
06/06	9:45	55	0.090	2.515	16.060	1.5	
06/06	9:50	60	0.090	2.515	16.060	1.5	
06/06	10:00	70	0.090	2.515	16.060	1.5	
06/06	10:10	80	0.095	2.520	16.055	1.5	
06/06	10:20	90	0.095	2.520	16.055	1.5	
06/06	10:30	100	0.100	2.525	16.050	3	Increase discharge rate from 100 mins.
06/06	10:31	101	0.100	2.525	16.050	3	
06/06	10:32	102	0.110	2.535	16.040	3	
06/06	10:33	103	0.115	2.540	16.035	3	
06/06	10:34	104	0.125	2.550	16.025	3	
06/06	10:35	105	0.130	2.555	16.020	3	
06/06	10:36	106	0.135	2.560	16.015	3	
06/06	10:37	107	0.140	2.565	16.010	3	
06/06	10:38	108	0.140	2.565	16.010	3	
06/06	10:39	109	0.145	2.570	16.005	3	
06/06	10:40	110	0.150	2.575	16.000	3	
06/06	10:42	112	0.155	2.580	15.995	3	
06/06	10:44	114	0.155	2.580	15.995	3	
06/06	10:46	116	0.160	2.585	15.990	3	
06/06	10:48	118	0.165	2.590	15.985	3	
06/06	10:50	120	0.165	2.590	15.985	3	
06/06	10:52	122	0.165	2.590	15.985	3	
06/06	10:54	124	0.170	2.595	15.980	3	
06/06	10:56	126	0.175	2.600	15.975	3	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
06/06	10:58	128	0.175	2.600	15.975	3	
06/06	11:00	130	0.175	2.600	15.975	3	
06/06	11:05	135	0.180	2.605	15.970	3	
06/06	11:10	140	0.185	2.610	15.965	3	
06/06	11:15	145	0.185	2.610	15.965	3	
06/06	11:20	150	0.185	2.610	15.965	3	
06/06	11:25	155	0.190	2.615	15.960	3	
06/06	11:30	160	0.195	2.620	15.955	3	
06/06	11:40	170	0.195	2.620	15.955	3	
06/06	11:50	180	0.195	2.620	15.955	3	
06/06	12:00	190	0.200	2.625	15.950	3	
06/06	12:10	200	0.205	2.630	15.945	4.5	Increase discharge rate from 200 mins.
06/06	12:11	201	0.205	2.630	15.945	4.5	
06/06	12:12	202	0.215	2.640	15.935	4.5	
06/06	12:13	203	0.220	2.645	15.930	4.5	
06/06	12:14	204	0.225	2.650	15.925	4.5	
06/06	12:15	205	0.235	2.660	15.915	4.5	
06/06	12:16	206	0.240	2.665	15.910	4.5	
06/06	12:17	207	0.245	2.670	15.905	4.5	
06/06	12:18	208	0.245	2.670	15.905	4.5	
06/06	12:19	209	0.250	2.675	15.900	4.5	
06/06	12:20	210	0.255	2.680	15.895	4.5	
06/06	12:22	212	0.260	2.685	15.890	4.5	
06/06	12:24	214	0.265	2.690	15.885	4.5	
06/06	12:26	216	0.270	2.695	15.880	4.5	
06/06	12:28	218	0.270	2.695	15.880	4.5	
06/06	12:30	220	0.275	2.700	15.875	4.5	
06/06	12:32	222	0.275	2.700	15.875	4.5	
06/06	12:34	224	0.280	2.705	15.870	4.5	
06/06	12:36	226	0.280	2.705	15.870	4.5	
06/06	12:38	228	0.285	2.710	15.865	4.5	
06/06	12:40	230	0.285	2.710	15.865	4.5	
06/06	12:45	235	0.290	2.715	15.860	4.5	
06/06	12:50	240	0.290	2.715	15.860	4.5	
06/06	12:55	245	0.290	2.715	15.860	4.5	
06/06	13:00	250	0.295	2.720	15.855	4.5	
06/06	13:05	255	0.300	2.725	15.850	4.5	
06/06	13:10	260	0.300	2.725	15.850	4.5	
06/06	13:20	270	0.305	2.730	15.845	4.5	
06/06	13:30	280	0.310	2.735	15.840	4.5	
06/06	13:40	290	0.310	2.735	15.840	4.5	
06/06	13:50	300	0.315	2.740	15.835	6	Increase discharge rate from 300 mins.
06/06	13:51	301	0.320	2.745	15.830	6	
06/06	13:52	302	0.325	2.750	15.825	6	
06/06	13:53	303	0.335	2.760	15.815	6	
06/06	13:54	304	0.345	2.770	15.805	6	
06/06	13:55	305	0.345	2.770	15.805	6	
06/06	13:56	306	0.350	2.775	15.800	6	
06/06	13:57	307	0.355	2.780	15.795	6	
06/06	13:58	308	0.360	2.785	15.790	6	
06/06	13:59	309	0.365	2.790	15.785	6	
06/06	14:00	310	0.370	2.795	15.780	6	
06/06	14:02	312	0.375	2.800	15.775	6	
06/06	14:04	314	0.380	2.805	15.770	6	
06/06	14:06	316	0.380	2.805	15.770	6	
06/06	14:08	318	0.385	2.810	15.765	6	
06/06	14:10	320	0.385	2.810	15.765	6	
06/06	14:12	322	0.390	2.815	15.760	6	
06/06	14:14	324	0.390	2.815	15.760	6	
06/06	14:16	326	0.395	2.820	15.755	6	
06/06	14:18	328	0.395	2.820	15.755	6	
06/06	14:20	330	0.395	2.820	15.755	6	
06/06	14:25	335	0.400	2.825	15.750	6	
06/06	14:30	340	0.405	2.830	15.745	6	
06/06	14:35	345	0.410	2.835	15.740	6	
06/06	14:40	350	0.410	2.835	15.740	6	
06/06	14:45	355	0.415	2.840	15.735	6	
06/06	14:50	360	0.415	2.840	15.735	6	
06/06	15:00	370	0.420	2.845	15.730	6	
06/06	15:10	380	0.425	2.850	15.725	6	
06/06	15:20	390	0.430	2.855	15.720	6	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
06/06	15:30	400	0.435	2.860	15.715	0	End of Test, Start Recovery from 400 minutes.
06/06	15:31	401	0.425	2.850	15.725	0	Recovery.
06/06	15:32	402	0.395	2.820	15.755	0	
06/06	15:33	403	0.355	2.780	15.795	0	
06/06	15:34	404	0.320	2.745	15.830	0	
06/06	15:35	405	0.305	2.730	15.845	0	
06/06	15:36	406	0.285	2.710	15.865	0	
06/06	15:37	407	0.270	2.695	15.880	0	
06/06	15:38	408	0.255	2.680	15.895	0	
06/06	15:39	409	0.240	2.665	15.910	0	
06/06	15:40	410	0.235	2.660	15.915	0	
06/06	15:42	412	0.215	2.640	15.935	0	
06/06	15:44	414	0.200	2.625	15.950	0	
06/06	15:46	416	0.190	2.615	15.960	0	
06/06	15:48	418	0.180	2.605	15.970	0	
06/06	15:50	420	0.170	2.595	15.980	0	
06/06	15:52	422	0.165	2.590	15.985	0	
06/06	15:54	424	0.155	2.580	15.995	0	
06/06	15:56	426	0.150	2.575	16.000	0	
06/06	15:58	428	0.145	2.570	16.005	0	
06/06	16:00	430	0.145	2.570	16.005	0	
06/06	16:05	435	0.135	2.560	16.015	0	
06/06	16:10	440	0.125	2.550	16.025	0	
06/06	16:15	445	0.125	2.550	16.025	0	
06/06	16:20	450	0.120	2.545	16.030	0	
06/06	16:25	455	0.110	2.535	16.040	0	
06/06	16:30	460	0.105	2.530	16.045	0	
06/06	16:40	470	0.100	2.525	16.050	0	
06/06	16:50	480	0.095	2.520	16.055	0	
06/06	17:00	490	0.090	2.515	16.060	0	
06/06	17:10	500	0.085	2.510	16.065	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP1		
Permit Number	110014		
Comment	Production Well		
Completion	8m of 200mm ID Slotted Casing (1mm slots 42 - 50m, Sump 50 - 52m) with 8/16 Gravel Pack		
Address	Central Murtho Highland		
Test type	Initial development with Legra Grundfos hydraulic submersible pump		
Pumping commenced	27/04/06 at 11:15		
Pumping ceased	27/04/06 at 12:55		
Are measurements for pumped well ?	Yes		
Standing water level	33.415	metres below	measured point (conduit)
Standing water level	16.689	metres above	Australian Height Datum
Reference point (conduit)	0.635	metres above	top of flange
Total depth	52.320	metres below	top of flange
Pump setting	51.800	metres below	top of flange
Casing height (top of flange)	0.321	metres above	ground level (calculated from survey data)
Head above pump intake	19.020	metres	
Head above top of production zone	9.541	metres	
Rates	0.2	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
27/04	11:15	0	0.000	33.415	16.689	0.2	Endeavour to pump 0.2 L / s from commencement.
27/04	11:16	1	1.835	35.250	14.854	0.2	
27/04	11:17	2	2.995	36.410	13.694	--	Adjust rate.
27/04	11:18	3	--	--	--	--	Adjust rate. No water level reading taken.
27/04	11:19	4	5.305	38.720	11.384	0.2	
27/04	11:20	5	5.605	39.020	11.084	0.2	
27/04	11:21	6	5.925	39.340	10.764	0.2	
27/04	11:22	7	6.285	39.700	10.404	0.2	
27/04	11:23	8	6.605	40.020	10.084	0.2	
27/04	11:24	9	6.850	40.265	9.839	0.2	
27/04	11:25	10	7.175	40.590	9.514	0.2	
27/04	11:27	12	7.485	40.900	9.204	0.2	
27/04	11:29	14	7.855	41.270	8.834	0.2	
27/04	11:31	16	8.355	41.770	8.334	0.2	
27/04	11:33	18	8.855	42.270	7.834	0.2	
27/04	11:35	20	9.265	42.680	7.424	0.2	
27/04	11:37	22	9.475	42.890	7.214	0.2	
27/04	11:39	24	--	--	--	--	Adjust rate. No water level reading taken.
27/04	11:41	26	--	--	--	--	Adjust rate. No water level reading taken.
27/04	11:43	28	11.095	44.510	5.594	0.2	
27/04	11:47	32	11.810	45.225	4.879	0.2	
27/04	11:50	35	12.220	45.635	4.469	0.2	
27/04	11:55	40	12.945	46.360	3.744	0.2	
27/04	12:01	46	13.505	46.920	3.184	0.2	
27/04	12:05	50	13.845	47.260	2.844	0.2	
27/04	12:10	55	14.410	47.825	2.279	0.2	
27/04	12:15	60	14.665	48.080	2.024	0.2	
27/04	12:25	70	15.485	48.900	1.204	0.2	
27/04	12:35	80	15.835	49.250	0.854	0.2	
27/04	12:45	90	16.125	49.540	0.564	0.2	
27/04	12:55	100	16.315	49.730	0.374	0.2	End of test. No recovery data taken.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	CMP1		
Permit Number	110014		
Comment	Production Well		
Completion	8m of 200mm ID Slotted Casing (1mm slots 42 - 50m, Sump 50 - 52m) with 8/16 Gravel Pack		
Address	Central Murtho Highland		
Test type	3 X 100 Minute Step Test using Legra Grundfos hydraulic submersible pump		
Pumping commenced	03/05/06 at 13:35		
Pumping ceased	03/05/06 at 18:35		
Are measurements for pumped well ?	Yes		
Standing water level	33.440	metres below	measured point (conduit)
Standing water level	16.629	metres above	Australian Height Datum
Reference point (conduit)	0.600	metres above	top of flange
Total depth	52.320	metres below	top of flange
Pump setting	51.800	metres below	top of flange
Casing height (top of flange)	0.321	metres above	ground level (calculated from survey data)
Head above pump intake	18.960	metres	
Head above top of production zone	9.481	metres	
Rates	0.1, 0.15 & 0.2	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
03/05	13:35	0	0.000	33.440	16.629	0.1	Endeavour to pump .1 L / s from commencement.
03/05	13:36	1	2.070	35.510	14.559	0.1	
03/05	13:37	2	2.430	35.870	14.199	0.1	
03/05	13:38	3	3.280	36.720	13.349	0.1	
03/05	13:39	4	3.710	37.150	12.919	0.14	Fluctuation in discharge rate.
03/05	13:40	5	5.660	39.100	10.969	0.1	
03/05	13:41	6	6.040	39.480	10.589	0.1	
03/05	13:42	7	6.110	39.550	10.519	0.1	
03/05	13:43	8	6.150	39.590	10.479	0.1	
03/05	13:44	9	6.190	39.630	10.439	0.1	
03/05	13:45	10	6.250	39.690	10.379	0.1	
03/05	13:47	12	6.310	39.750	10.319	0.1	
03/05	13:49	14	6.370	39.810	10.259	0.1	
03/05	13:51	16	6.440	39.880	10.189	0.1	
03/05	13:53	18	6.800	40.240	9.829	0.1	
03/05	13:55	20	6.930	40.370	9.699	0.1	
03/05	13:57	22	7.000	40.440	9.629	0.1	
03/05	13:59	24	6.990	40.430	9.639	0.1	
03/05	14:01	26	7.020	40.460	9.609	0.1	
03/05	14:03	28	7.090	40.530	9.539	0.1	
03/05	14:05	30	7.100	40.540	9.529	0.1	
03/05	14:10	35	7.140	40.580	9.489	0.1	
03/05	14:15	40	7.260	40.700	9.369	0.1	
03/05	14:20	45	7.280	40.720	9.349	0.1	
03/05	14:25	50	7.380	40.820	9.249	0.1	
03/05	14:30	55	7.440	40.880	9.189	0.1	
03/05	14:35	60	7.510	40.950	9.119	0.1	
03/05	14:45	70	7.600	41.040	9.029	0.1	
03/05	14:55	80	7.920	41.360	8.709	0.1	
03/05	15:07	92	7.520	40.960	9.109	0.1	
03/05	15:15	100	7.640	41.080	8.989	0.15	Increase discharge rate from 100 mins.
03/05	15:16	101	7.640	41.080	8.989	0.15	
03/05	15:17	102	7.810	41.250	8.819	0.15	
03/05	15:18	103	7.920	41.360	8.709	0.15	
03/05	15:19	104	8.080	41.520	8.549	0.15	
03/05	15:20	105	8.160	41.600	8.469	0.15	
03/05	15:21	106	8.250	41.690	8.379	0.15	
03/05	15:22	107	8.320	41.760	8.309	0.15	
03/05	15:23	108	8.430	41.870	8.199	0.15	
03/05	15:24	109	8.490	41.930	8.139	0.15	
03/05	15:25	110	8.560	42.000	8.069	0.15	
03/05	15:27	112	8.610	42.050	8.019	0.15	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
03/05	15:29	114	9.130	42.570	7.499	0.15	
03/05	15:31	116	9.300	42.740	7.329	0.15	
03/05	15:33	118	9.490	42.930	7.139	0.15	
03/05	15:35	120	9.610	43.050	7.019	0.15	
03/05	15:37	122	9.660	43.100	6.969	0.15	
03/05	15:39	124	9.860	43.300	6.769	0.15	
03/05	15:41	126	10.050	43.490	6.579	0.15	
03/05	15:43	128	10.160	43.600	6.469	0.15	
03/05	15:45	130	10.290	43.730	6.339	0.15	
03/05	15:50	135	10.570	44.010	6.059	0.15	
03/05	15:55	140	10.740	44.180	5.889	0.15	
03/05	16:00	145	11.020	44.460	5.609	0.15	
03/05	16:05	150	11.130	44.570	5.499	0.15	
03/05	16:10	155	11.290	44.730	5.339	0.15	
03/05	16:15	160	11.490	44.930	5.139	0.15	
03/05	16:25	170	11.760	45.200	4.869	0.15	
03/05	16:35	180	11.910	45.350	4.719	0.15	
03/05	16:45	190	12.070	45.510	4.559	0.15	
03/05	16:55	200	12.170	45.610	4.459	0.2	Increase discharge rate from 200 mins.
03/05	16:56	201	12.280	45.720	4.349	0.2	
03/05	16:57	202	12.430	45.870	4.199	0.2	
03/05	16:58	203	12.520	45.960	4.109	0.2	
03/05	16:59	204	12.620	46.060	4.009	0.2	
03/05	17:00	205	12.710	46.150	3.919	0.2	
03/05	17:01	206	12.820	46.260	3.809	0.2	
03/05	17:02	207	12.970	46.410	3.659	0.2	
03/05	17:03	208	13.020	46.460	3.609	0.2	
03/05	17:04	209	13.150	46.590	3.479	0.2	
03/05	17:05	210	13.290	46.730	3.339	0.2	
03/05	17:07	212	13.330	46.770	3.299	0.2	
03/05	17:09	214	13.560	47.000	3.069	0.2	
03/05	17:11	216	13.740	47.180	2.889	0.2	
03/05	17:13	218	13.920	47.360	2.709	0.2	
03/05	17:15	220	14.070	47.510	2.559	0.2	
03/05	17:17	222	14.180	47.620	2.449	0.2	
03/05	17:19	224	14.310	47.750	2.319	0.2	
03/05	17:21	226	14.460	47.900	2.169	0.2	
03/05	17:23	228	14.570	48.010	2.059	0.2	
03/05	17:25	230	14.680	48.120	1.949	0.2	
03/05	17:30	235	14.900	48.340	1.729	0.2	
03/05	17:35	240	15.180	48.620	1.449	0.2	
03/05	17:40	245	15.360	48.800	1.269	0.2	
03/05	17:45	250	15.490	48.930	1.139	0.2	
03/05	17:50	255	15.670	49.110	0.959	0.2	
03/05	17:55	260	15.710	49.150	0.919	0.2	
03/05	18:05	270	16.440	49.880	0.189	0.2	
03/05	18:15	280	16.690	50.130	-0.061	0.2	
03/05	18:25	290	16.840	50.280	-0.211	0.2	
03/05	18:35	300	17.240	50.680	-0.611	0	End of Test, Start Recovery from 300 mins.
03/05	18:36	301	11.130	44.570	5.499	0	Recovery.
03/05	18:37	302	10.800	44.240	5.829	0	
03/05	18:38	303	10.540	43.980	6.089	0	
03/05	18:39	304	10.260	43.700	6.369	0	
03/05	18:40	305	9.980	43.420	6.649	0	
03/05	18:41	306	9.900	43.340	6.729	0	
03/05	18:42	307	9.430	42.870	7.199	0	
03/05	18:43	308	9.110	42.550	7.519	0	
03/05	18:44	309	8.860	42.300	7.769	0	
03/05	18:45	310	8.630	42.070	7.999	0	
03/05	18:47	312	8.140	41.580	8.489	0	
03/05	18:49	314	7.730	41.170	8.899	0	
03/05	18:51	316	7.310	40.750	9.319	0	
03/05	18:53	318	6.920	40.360	9.709	0	
03/05	18:55	320	6.540	39.980	10.089	0	
03/05	18:57	322	6.130	39.570	10.499	0	
03/05	18:59	324	5.790	39.230	10.839	0	
03/05	19:01	326	5.460	38.900	11.169	0	
03/05	19:03	328	5.180	38.620	11.449	0	
03/05	19:05	330	4.880	38.320	11.749	0	
03/05	19:10	335	4.220	37.660	12.409	0	
03/05	19:15	340	3.640	37.080	12.989	0	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
03/05	19:20	345	3.150	36.590	13.479	0	
03/05	19:25	350	2.710	36.150	13.919	0	
03/05	19:30	355	2.360	35.800	14.269	0	
03/05	19:35	360	2.050	35.490	14.579	0	
03/05	19:47	372	1.450	34.890	15.179	0	
03/05	19:55	380	1.210	34.650	15.419	0	
03/05	20:05	390	0.930	34.370	15.699	0	
03/05	20:15	400	0.720	34.160	15.909	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	SMP2		
Permit Number	110006		
Comment	Production Well		
Completion	12m of 200mm ID Slotted Casing (0.5mm slots 35 - 47m, Sump 47 - 49m), 16/30 Gravel Pack		
Address	South Murtho Highland - Angoves Vineyard		
Test type	Initial development using Legra Grundfos hydraulic submersible pump		
Pumping commenced	26/04/06 at 15:00		
Pumping ceased	26/04/06 at 15:56		
Are measurements for pumped well ?	Yes		
Standing water level	27.650	metres below	measured point (conduit)
Standing water level	16.550	metres above	Australian Height Datum
Reference point (conduit)	0.800	metres above	ground level
Total depth	48.600	metres below	ground level
Pump setting	48.500	metres below	ground level
Casing height (top of flange)	0.187	metres above	ground level (calculated from survey data)
Head above pump intake	21.650	metres	
Head above top of production zone	8.150	metres	
Rates	0.25, 0.2 & 0.15	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
26/04	15:00	0	0.000	27.650	16.550	0.25	Endeavour to pump .25 L / s from commencement.
26/04	15:03	3	6.000	33.650	10.550	0.25	
26/04	15:04	4	6.600	34.250	9.950	0.25	
26/04	15:05	5	7.070	34.720	9.480	0.25	
26/04	15:06	6	7.660	35.310	8.890	0.25	
26/04	15:07	7	8.260	35.910	8.290	0.25	
26/04	15:08	8	8.680	36.330	7.870	0.2	
26/04	15:09	9	9.050	36.700	7.500	0.2	
26/04	15:10	10	9.350	37.000	7.200	0.2	
26/04	15:12	12	9.950	37.600	6.600	0.2	
26/04	15:14	14	10.570	38.220	5.980	0.2	
26/04	15:16	16	11.200	38.850	5.350	0.2	
26/04	15:19	19	12.330	39.980	4.220	0.2	
26/04	15:20	20	12.900	40.550	3.650	0.2	
26/04	15:22	22	13.290	40.940	3.260	0.15	
26/04	15:24	24	13.700	41.350	2.850	0.15	
26/04	15:26	26	14.040	41.690	2.510	0.15	
26/04	15:28	28	14.935	42.585	1.615	0.15	
26/04	15:30	30	15.310	42.960	1.240	0.15	
26/04	15:32	32	15.710	43.360	0.840	0.15	
26/04	15:35	35	16.340	43.990	0.210	0.15	
26/04	15:36	36	16.605	44.255	-0.055	0.15	
26/04	15:38	38	17.030	44.680	-0.480	0.15	
26/04	15:40	40	17.520	45.170	-0.970	0.15	
26/04	15:46	46	18.650	46.300	-2.100	0.15	
26/04	15:50	50	19.535	47.185	-2.985	0.15	
26/04	15:55	55	20.900	48.550	-4.350	0.15	
26/04	15:56	56	21.250	48.900	-4.700	0	End of Test, Start Recovery.
26/04	15:57	57	14.725	42.375	1.825	0	Recovery.
26/04	15:58	58	14.570	42.220	1.980	0	
26/04	15:59	59	14.440	42.090	2.110	0	
26/04	16:00	60	14.340	41.990	2.210	0	
26/04	16:01	61	14.240	41.890	2.310	0	
26/04	16:02	62	14.120	41.770	2.430	0	
26/04	16:03	63	14.020	41.670	2.530	0	
26/04	16:04	64	13.890	41.540	2.660	0	
26/04	16:05	65	13.800	41.450	2.750	0	
26/04	16:06	66	13.680	41.330	2.870	0	
26/04	16:07	67	13.595	41.245	2.955	0	
26/04	16:08	68	13.450	41.100	3.100	0	
26/04	16:09	69	13.345	40.995	3.205	0	
26/04	16:10	70	13.250	40.900	3.300	0	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
26/04	16:12	72	12.980	40.630	3.570	0	
26/04	16:14	74	12.770	40.420	3.780	0	
26/04	16:16	76	12.510	40.160	4.040	0	
26/04	16:18	78	12.320	39.970	4.230	0	
26/04	16:20	80	12.080	39.730	4.470	0	
26/04	16:22	82	11.860	39.510	4.690	0	
26/04	16:24	84	11.675	39.325	4.875	0	
26/04	16:26	86	11.430	39.080	5.120	0	
26/04	16:28	88	11.230	38.880	5.320	0	
26/04	16:30	90	10.980	38.630	5.570	0	
26/04	16:35	95	10.485	38.135	6.065	0	
26/04	16:40	100	9.965	37.615	6.585	0	
26/04	16:45	105	9.500	37.150	7.050	0	
26/04	16:50	110	8.985	36.635	7.565	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	SMP2		
Permit Number	110006		
Comment	Production Well		
Completion	12m of 200mm ID Slotted Casing (0.5mm slots 35 - 47m, Sump 47 - 49m), 16/30 Gravel Pack.		
Address	South Murtho Highland - Angoves Vineyard		
Test type	First step only of planned Step Test, using Legra Grundfos hydraulic submersible pump		
Pumping commenced	27/04/06 at 07:50		
Pumping ceased	27/04/06 at 09:30		
Are measurements for pumped well ?	Yes		
Standing water level	27.665	metres below	measured point (conduit)
Standing water level	16.585	metres above	Australian Height Datum
Reference point (conduit)	0.850	metres above	ground level
Total depth	48.600	metres below	ground level
Pump setting	48.500	metres below	ground level
Casing height (top of flange)	0.187	metres above	ground level (calculated from survey data)
Head above pump intake	21.685	metres	
Head above top of production zone	8.185	metres	
Rates	0.1	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
27/04	7:50	0	0.000	27.665	16.585	0.1	Endeavour to pump 0.1 L / s from commencement.
27/04	7:51	1	-0.015	27.650	16.600	0.1	Water level rise due to initial reading being taken
27/04	7:52	2	0.155	27.820	16.430	0.1	prior to the pump being installed.
27/04	7:53	3	1.335	29.000	15.250	0.1	
27/04	7:54	4		--	--	0.1	No water level reading taken.
27/04	7:55	5	2.285	29.950	14.300	0.1	
27/04	7:56	6	2.535	30.200	14.050	0.1	
27/04	7:57	7	3.235	30.900	13.350	0.1	
27/04	7:58	8	3.875	31.540	12.710	0.1	
27/04	7:59	9	4.155	31.820	12.430	0.1	
27/04	8:00	10	4.245	31.910	12.340	0.1	
27/04	8:02	12	4.565	32.230	12.020	0.1	
27/04	8:04	14	4.815	32.480	11.770	0.1	
27/04	8:06	16	4.980	32.645	11.605	0.1	
27/04	8:08	18	5.955	33.620	10.630	0.1	
27/04	8:10	20	6.235	33.900	10.350	0.1	
27/04	8:12	22	6.435	34.100	10.150	0.1	
27/04	8:14	24	6.645	34.310	9.940	0.1	
27/04	8:16	26	6.905	34.570	9.680	0.1	
27/04	8:18	28	7.275	34.940	9.310	0.1	
27/04	8:20	30	7.485	35.150	9.100	0.1	
27/04	8:25	35	8.975	36.640	7.610	0.1	
27/04	8:30	40	9.265	36.930	7.320	0.1	
27/04	8:35	45	9.895	37.560	6.690	0.1	
27/04	8:40	50	10.385	38.050	6.200	0.1	
27/04	8:45	55	10.955	38.620	5.630	0.1	
27/04	8:50	60	11.465	39.130	5.120	0.1	
27/04	9:00	70	12.855	40.520	3.730	0.1	
27/04	9:10	80	13.975	41.640	2.610	0.1	
27/04	9:20	90	14.835	42.500	1.750	0.1	
27/04	9:30	100	16.445	44.110	0.140	0.1	Final Reading. No recovery data.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	SMP1		
Permit Number	110007		
Comment	Production Well		
Completion	13.2m of 200mm Slotted Casing (1mm slots 42.5 - 55.7m, Sump 55.7 - 57.7m) & 8/16 G. Pack		
Address	South Murtho Highland - Rover Crescent		
Test type	Initial development with Legra Grundfos hydraulic submersible pump.		
Pumping commenced	03/05/06 at 09:40		
Pumping ceased	03/05/06 at 11:57		
Are measurements for pumped well ?	Yes		
Standing water level	32.780	metres below	measured point (conduit)
Standing water level	16.472	metres above	Australian Height Datum
Reference point (conduit)	0.900	metres above	top of flange
Total depth	57.000	metres below	top of flange
Pump setting	56.000	metres below	top of flange
Casing height (top of flange)	0.074	metres below	ground level (calculated from survey data)
Head above pump intake	24.120	metres	
Head above top of production zone	10.546	metres	
Rates	0.15 & 0.1	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
03/05	9:40	0	0.000	32.780	16.472	0.15	Endeavour to pump .15 L / s from commencement.
03/05	9:41	1	--	--	--	0.15	
03/05	9:42	2	0.980	33.760	15.492	0.15	
03/05	9:43	3	2.180	34.960	14.292	0.15	
03/05	9:44	4	3.090	35.870	13.382	0.15	
03/05	9:45	5	--	--	--	0.15	
03/05	9:46	6	4.220	37.000	12.252	0.15	
03/05	9:47	7.5	4.650	37.430	11.822	0.15	
03/05	9:48	8	4.810	37.590	11.662	0.15	
03/05	9:49	9	5.080	37.860	11.392	0.15	
03/05	9:50	10	5.530	38.310	10.942	0.15	
03/05	9:52	12	6.110	38.890	10.362	0.15	
03/05	9:54	14	6.630	39.410	9.842	0.15	
03/05	9:56	16	7.110	39.890	9.362	0.15	
03/05	9:58	18	7.480	40.260	8.992	0.15	
03/05	10:00	20	7.960	40.740	8.512	0.15	
03/05	10:02	22	8.480	41.260	7.992	0.15	
03/05	10:05	25	9.110	41.890	7.362	0.15	
03/05	10:06	26	9.300	42.080	7.172	0.15	
03/05	10:08	28	9.620	42.400	6.852	0.15	
03/05	10:10	30	9.920	42.700	6.552	0.15	
03/05	10:15	35	10.740	43.520	5.732	0.15	
03/05	10:20	40	11.640	44.420	4.832	0.15	
03/05	10:25	45	13.090	45.870	3.382	0.15	
03/05	10:30	50	12.810	45.590	3.662	0.15	
03/05	10:35	55	14.450	47.230	2.022	0.15	
03/05	10:40	60	15.100	47.880	1.372	0.15	
03/05	10:50	70	16.690	49.470	-0.218	0.15	
03/05	11:00	80	17.830	50.610	-1.358	0.15	
03/05	11:10	90	19.390	52.170	-2.918	0.15	
03/05	11:21	101	21.240	54.020	-4.768	0.15	
03/05	11:25	105	21.760	54.540	-5.288	0.15	
03/05	11:30	110	22.290	55.070	-5.818	0.1	
03/05	11:32	112	22.520	55.300	-6.048	0.1	
03/05	11:34	114	22.600	55.380	-6.128	0.1	
03/05	11:36	116	22.690	55.470	-6.218	0.1	
03/05	11:38	118	22.720	55.500	-6.248	0.1	
03/05	11:40	120	22.755	55.535	-6.283	0.1	
03/05	11:42	122	22.920	55.700	-6.448	0.1	
03/05	11:45	125	23.090	55.870	-6.618	0.1	
03/05	11:50	130	23.080	55.860	-6.608	0.1	
03/05	11:55	135	23.340	56.120	-6.868	0.1	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
03/05	11:57	137	--	--	--	0	End of Test, Start Recovery. No reading taken.
03/05	11:58	138	17.510	50.290	-1.038	0	Recovery.
03/05	11:59	139	17.330	50.110	-0.858	0	
03/05	12:00	140	17.120	49.900	-0.648	0	
03/05	12:01	141	17.040	49.820	-0.568	0	
03/05	12:02	142	16.900	49.680	-0.428	0	
03/05	12:03	143	16.740	49.520	-0.268	0	
03/05	12:04	144	16.600	49.380	-0.128	0	
03/05	12:05	145	16.490	49.270	-0.018	0	
03/05	12:06	146	16.360	49.140	0.112	0	
03/05	12:07	147	16.240	49.020	0.232	0	
03/05	12:08	148	15.850	48.630	0.622	0	
03/05	12:10	150	15.580	48.360	0.892	0	Final Reading.

Pumping Test Data

Government of South Australia
Department of Water, Land and Biodiversity Conservation

Site	SMP1		
Permit Number	110007		
Comment	Production Well		
Completion	13.2m of 200mm Slotted Casing (1mm slots 42.5 - 55.7m, Sump 55.7 - 57.7m) & 8/16 G. Pack		
Address	South Murtho Highland - Rover Crescent		
Test type	2 Step - Step Test using Legra Grundfos hydraulic submersible pump		
Pumping commenced	04/05/06 at 09:30		
Pumping ceased	04/05/06 at 12:00		
Are measurements for pumped well ?	Yes		
Standing water level	32.950	metres below	measured point (conduit)
Standing water level	16.352	metres above	Australian Height Datum
Reference point (conduit)	0.950	metres above	top of flange
Total depth	57.000	metres below	top of flange
Pump setting	56.000	metres below	top of flange
Casing height (top of flange)	0.074	metres below	ground level (calculated from survey data)
Head above pump intake	24.000	metres	
Head above top of production zone	10.426	metres	
Rates	0.1 & 0.15	litres per second	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
04/05	9:30	0	0.000	32.950	16.352	0.1	Endeavour to pump 0.1 L / s from commencement.
04/05	9:31	1	1.730	34.680	14.622	0.1	
04/05	9:32	2	1.890	34.840	14.462	0.1	
04/05	9:33	3	2.320	35.270	14.032	0.1	
04/05	9:34	4	2.750	35.700	13.602	0.1	
04/05	9:35	5	3.130	36.080	13.222	0.1	
04/05	9:36	6	3.370	36.320	12.982	0.1	
04/05	9:37	7	3.720	36.670	12.632	0.1	
04/05	9:38	8	3.910	36.860	12.442	0.1	
04/05	9:39	9	4.060	37.010	12.292	0.1	
04/05	9:40	10	4.230	37.180	12.122	0.1	
04/05	9:42	12	4.620	37.570	11.732	0.1	
04/05	9:44	14	4.960	37.910	11.392	0.1	
04/05	9:46	16	5.350	38.300	11.002	0.1	
04/05	9:48	18	5.770	38.720	10.582	0.1	
04/05	9:50	20	6.040	38.990	10.312	0.1	
04/05	9:52	22	6.430	39.380	9.922	0.1	
04/05	9:54	24	6.770	39.720	9.582	0.1	
04/05	9:56	26	6.940	39.890	9.412	0.1	
04/05	9:58	28	7.140	40.090	9.212	0.1	
04/05	10:00	30	7.890	40.840	8.462	0.1	
04/05	10:05	35	8.650	41.600	7.702	0.1	
04/05	10:10	40	9.210	42.160	7.142	0.1	
04/05	10:16	46	9.860	42.810	6.492	0.1	
04/05	10:20	50	10.290	43.240	6.062	0.1	
04/05	10:25	55	10.640	43.590	5.712	0.1	
04/05	10:30	60	10.920	43.870	5.432	0.1	
04/05	10:40	70	12.200	45.150	4.152	0.1	
04/05	10:50	80	13.110	46.060	3.242	0.1	
04/05	11:00	90	13.900	46.850	2.452	0.1	
04/05	11:10	100	14.730	47.680	1.622	0.15	Increase discharge rate from 100 mins.
04/05	11:11	101	14.930	47.880	1.422	0.15	
04/05	11:12	102	14.950	47.900	1.402	0.15	
04/05	11:13	103	15.080	48.030	1.272	0.15	
04/05	11:14	104	15.230	48.180	1.122	0.15	
04/05	11:15	105	15.410	48.360	0.942	0.15	
04/05	11:16	106	15.590	48.540	0.762	0.15	
04/05	11:17	107	15.780	48.730	0.572	0.15	
04/05	11:18	108	15.890	48.840	0.462	0.15	
04/05	11:19	109	16.040	48.990	0.312	0.15	
04/05	11:20	110	16.180	49.130	0.172	0.15	
04/05	11:22	112	17.060	50.010	-0.708	0.15	

Date / Time		Elapsed Time (mins)	Drawdown (metres)	Water Level or Pressure (metres)	RSWL (m AHD)	Discharge Rate (L / s)	Remarks
Date	Time						
04/05	11:24	114	17.460	50.410	-1.108	0.15	
04/05	11:26	116	17.920	50.870	-1.568	0.15	
04/05	11:28	118	18.230	51.180	-1.878	0.15	
04/05	11:30	120	18.580	51.530	-2.228	0.15	
04/05	11:32	122	18.870	51.820	-2.518	0.15	
04/05	11:34	124	19.230	52.180	-2.878	0.15	
04/05	11:36	126	19.670	52.620	-3.318	0.15	
04/05	11:38	128	20.010	52.960	-3.658	0.15	
04/05	11:40	130	20.310	53.260	-3.958	0.15	
04/05	11:45	135	20.920	53.870	-4.568	0.15	
04/05	11:50	140	21.810	54.760	-5.458	0.15	
04/05	11:55	145	22.500	55.450	-6.148	0.15	
04/05	12:00	150	23.330	56.280	-6.978	0	End of Test, Start Recovery.
04/05	12:01	151	17.600	50.550	-1.248	0	Recovery.
04/05	12:02	152	17.420	50.370	-1.068	0	
04/05	12:03	153	17.240	50.190	-0.888	0	
04/05	12:04	154	17.130	50.080	-0.778	0	
04/05	12:05	155	17.020	49.970	-0.668	0	
04/05	12:06	156	16.870	49.820	-0.518	0	
04/05	12:07	157	16.730	49.680	-0.378	0	
04/05	12:08	158	16.640	49.590	-0.288	0	
04/05	12:09	159	16.530	49.480	-0.178	0	
04/05	12:10	160	16.410	49.360	-0.058	0	
04/05	12:12	162	16.180	49.130	0.172	0	
04/05	12:14	164	15.950	48.900	0.402	0	
04/05	12:16	166	15.750	48.700	0.602	0	
04/05	12:18	168	15.500	48.450	0.852	0	
04/05	12:20	170	15.260	48.210	1.092	0	
04/05	12:22	172	15.060	48.010	1.292	0	
04/05	12:24	174	14.860	47.810	1.492	0	
04/05	12:26	176	14.640	47.590	1.712	0	
04/05	12:28	178	14.430	47.380	1.922	0	
04/05	12:30	180	14.220	47.170	2.132	0	
04/05	12:35	185	13.730	46.680	2.622	0	
04/05	12:40	190	13.180	46.130	3.172	0	
04/05	12:45	195	12.630	45.580	3.722	0	
04/05	12:50	200	12.150	45.100	4.202	0	
04/05	12:55	205	11.680	44.630	4.672	0	
04/05	13:00	210	11.300	44.250	5.052	0	
04/05	13:10	220	10.330	43.280	6.022	0	
04/05	13:20	230	9.440	42.390	6.912	0	
04/05	13:31	241	8.610	41.560	7.742	0	
04/05	13:41	251	7.810	40.760	8.542	0	
04/05	13:50	260	7.190	40.140	9.162	0	
04/05	14:00	270	6.580	39.530	9.772	0	
04/05	14:10	280	6.000	38.950	10.352	0	
04/05	14:20	290	5.480	38.430	10.872	0	
04/05	14:30	300	5.000	37.950	11.352	0	
04/05	14:40	310	4.560	37.510	11.792	0	
04/05	14:50	320	4.170	37.120	12.182	0	Final Reading.

E. FULL CHEMISTRY DATA

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Australian Water Quality Centre

DWLBC
ATTN: Michael Stadter
Level 7 108 King William St
ADELAIDE
SA 5000 AUSTRALIA

10/07/2006

Dear Michael

Please find attached the Final Analytical Report for

Customer Service Request: 108874-2006-CSR-9
Account: 108874
Project: AWQC-5109 DWLBC - Groundwater Production Wells

Sample Date Range: 01-June-2006 to 14-June-2006

Yours sincerely,

Gordon Radcliffe
Client Manager
Gordon.Radcliffe@sawater.com.au
(08) 82590257

NATA
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Australian Water Quality Centre

FINAL REPORT: 8674

This report supercedes the following issued reports: 8122, 8216

Report Information

Project Name	AWQC-5109
Customer	DWLBC
CSR_ID	108874-2006-CSR-9

Analytical Results

Customer Sample Description	Groundwater Prod Well CMP2
Sampling Point	11438-DWLBC - GENERAL
Sampled Date	8/06/2006 12:00:00AM
Sample Received Date	8/06/2006 2:37:04PM
Sample ID	2006-003-3213
Status	Endorsed
Collection Type	Customer Collected

Inorganic Chemistry - Metals	LOR	Result
Calcium TIC-001 W09-023		
Calcium	0.1	937 mg/L
Dissolved Solids by Calculation W09-023		
Dissolved solids by calculation	0	44200 mg/L
Ion Balance W09-023		
Ion balance		-2.7 %
Iron - Total TIC-001 W09-023		
Iron - Total	0.030	1.35 mg/L
Langelier Index W09-023		
Langelier Index		0.26
Magnesium TIC-001 W09-023		
Magnesium	0.3	1690 mg/L
Potassium TIC-001 W09-023		
Potassium	1.0	116 mg/L
Sodium Adsorption Ratio W09-023		
Sodium Adsorption Ratio - Calculation		57.3
Sodium TIC-001 W09-023		
Sodium	0.5	12700 mg/L
Sulphur TIC-001 W09-023		
Sulphate	1.5	3870 mg/L
Total Hardness as CaCO3 W09-023		
Total Hardness as CaCO3	2.0	9300 mg/L

Inorganic Chemistry - Nutrients	LOR	Result
Chloride T0104-02 W09-023		
Chloride	4.0	24800 mg/L
Fluoride W09-023		
Fluoride	0.10	0.65 mg/L
Nitrate + Nitrite as N T0161-01 W09-023		
Nitrate + Nitrite as N	0.005	<0.005 mg/L
Nitrate + Nitrite as NO3 T0161-01 W09-023		

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Status	Endorsed
Collection Type	Customer Collected

Nitrate + Nitrite as NO3 T0161-01 W09-023

Nitrate + Nitrite as NO3	0.02	<0.02 mg/L

Silica - Reactive T0111-01 W09-023

Silica - Reactive	1	15 mg/L

Inorganic Chemistry - Physical	LOR	Result

Alkalinity, Carbonate, Bicarbonate and Hydroxide T0101-01 W09-023

Alkalinity as Calcium Carbonate		120 mg/L
Bicarbonate		147 mg/L
Carbonate		0 mg/L
Hydroxide		0 mg/L

Conductivity & Total Dissolved Solids T0016-01 W09-023

Conductivity	1	60200 µScm
Total Dissolved Solids (by EC)	1.0	40500 mg/L

pH T0010-01 W09-023

pH		6.8 pH units

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Analytical Results

Customer Sample Description	Groundwater Prod Well CMP4
Sampling Point	11438-DWLBC - GENERAL
Sampled Date	8/06/2006 12:00:00AM
Sample Received Date	8/06/2006 2:37:14PM
Sample ID	2006-003-3214
Status	Endorsed
Collection Type	Customer Collected

Inorganic Chemistry - Metals	LOR	Result
Calcium TIC-001 W09-023		
Calcium	0.1	1220 mg/L
Dissolved Solids by Calculation W09-023		
Dissolved solids by calculation	0	49100 mg/L
Ion Balance W09-023		
Ion balance		-3.2 %
Iron - Total TIC-001 W09-023		
Iron - Total	0.030	7.22 mg/L
Langelier Index W09-023		
Langelier Index		0.72
Magnesium TIC-001 W09-023		
Magnesium	0.3	1880 mg/L
Potassium TIC-001 W09-023		
Potassium	1.0	66.6 mg/L
Sodium Adsorption Ratio W09-023		
Sodium Adsorption Ratio - Calculation		57.8
Sodium TIC-001 W09-023		
Sodium	0.5	13800 mg/L
Sulphur TIC-001 W09-023		
Sulphate	1.5	4560 mg/L
Total Hardness as CaCO3 W09-023		
Total Hardness as CaCO3	2.0	10800 mg/L

Inorganic Chemistry - Nutrients	LOR	Result
Chloride T0104-02 W09-023		
Chloride	4.0	27400 mg/L
Fluoride W09-023		
Fluoride	0.10	0.24 mg/L
Nitrate + Nitrite as N T0161-01 W09-023		
Nitrate + Nitrite as N	0.005	<0.005 mg/L
Nitrate + Nitrite as NO3 T0161-01 W09-023		
Nitrate + Nitrite as NO3	0.02	<0.02 mg/L
Silica - Reactive T0111-01 W09-023		
Silica - Reactive	1	15 mg/L

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Sample ID	2006-003-3214
Status	Endorsed
Collection Type	Customer Collected

Inorganic Chemistry - Physical	LOR	Result
Alkalinity, Carbonate, Bicarbonate and Hydroxide T0101-01 W09-023		
Alkalinity as Calcium Carbonate		210 mg/L
Bicarbonate		256 mg/L
Carbonate		0 mg/L
Hydroxide		0 mg/L
Conductivity & Total Dissolved Solids T0016-01 W09-023		
Conductivity	1	65500 µScm
Total Dissolved Solids (by EC)	1.0	44800 mg/L
pH T0010-01 W09-023		
pH		6.9 pH units

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FINAL REPORT: 8674

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NATA Signatories

Roger Kennedy - Inorganic Chemistry Process Coordinator

Greg O'Neil - Inorganic Chemistry Team Leader

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Analytical Method

Analytical Method Code	Description
T0010-01	Determination of pH
T0016-01	Determination of Conductivity
T0101-01	Alkalinity - Automated Acidimetric Titration
T0104-02	Chloride - Automated Flow Colorimetry
T0111-01	Reactive Silica - Automated Flow Coloimetry
T0161-01	Nitrate + Nitrate (NOx) - Automated Flow Colorimetry
TIC-001	Determination of Metals-ICP Spectrometry
W-052	Preparation of Samples for Metal Analysis

Sampling Method

Sampling Method Code	Description
W09-023	Sampling Method for Chemical Analyses

Laboratory Information

Laboratory	NATA accreditation ID
Inorganic Chemistry - Metals	1115
Inorganic Chemistry - Nutrients	1115
Inorganic Chemistry - Physical	1115

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UNITS OF MEASUREMENT

Units of measurement commonly used (SI and non-SI Australian legal)

Name of unit	Symbol	Definition in terms of other metric units	Quantity
day	d	24 h	time interval
gigalitre	GL	10^6 m^3	volume
gram	g	10^{-3} kg	mass
hectare	ha	10^4 m^2	area
hour	h	60 min	time interval
kilogram	kg	base unit	mass
kilolitre	kL	1 m^3	volume
kilometre	km	10^3 m	length
litre	L	10^{-3} m^3	volume
megalitre	ML	10^3 m^3	volume
metre	m	base unit	length
microgram	µg	10^{-6} g	mass
microlitre	µL	10^{-9} m^3	volume
milligram	mg	10^{-3} g	mass
millilitre	mL	10^{-6} m^3	volume
millimetre	mm	10^{-3} m	length
minute	min	60 s	time interval
second	s	base unit	time interval
tonne	t	1000 kg	mass
year	y	365 or 366 days	time interval

Shortened forms

~	approximately equal to
EC	electrical conductivity (µS/cm)
pH	acidity
ppm	parts per million
TDS	total dissolved solids (mg/L)

GLOSSARY

Act (the) — In this document, refers to the *Natural Resources Management (SA) Act 2004,* which supercedes the *Water Resources (SA) Act 1997*

Anabranch — A branch of a river that leaves the main channel

Aquifer — An underground layer of rock or sediment that holds water and allows water to percolate through

Aquifer, confined — Aquifer in which the upper surface is impervious (see 'confining layer') and the water is held at greater than atmospheric pressure; water in a penetrating well will rise above the surface of the aquifer

Aquifer test — A hydrological test performed on a well, aimed to increase the understanding of the aquifer properties, including any interference between wells, and to more accurately estimate the sustainable use of the water resources available for development from the well

Aquifer, unconfined — Aquifer in which the upper surface has free connection to the ground surface and the water surface is at atmospheric pressure

Aquitard — A layer in the geological profile that separates two aquifers and restricts the flow between them

Artesian — An aquifer in which the water surface is bounded by an impervious rock formation; the water surface is at greater than atmospheric pressure, and hence rises in any well which penetrates the overlying confining aquifer

Basin — The area drained by a major river and its tributaries

Benchmark condition — Points of reference from which change can be measured

Bore — See 'well'

BSMS — Basin Salinity Management Strategy 2001–15.

CSIRO — Commonwealth Scientific and Industrial Research Organisation

EC — Electrical conductivity; 1 EC unit = 1 micro-Siemen per centimetre (µS/cm) measured at 25°C; commonly used as a measure of water salinity as it is quicker and easier than measurement by TDS

Erosion — Natural breakdown and movement of soil and rock by water, wind or ice; the process may be accelerated by human activities

Evapotranspiration — The total loss of water as a result of transpiration from plants and evaporation from land, and surface water bodies

Floodplain — Of a watercourse means: (1) floodplain (if any) of the watercourse identified in a catchment water management plan or a local water management plan; adopted under the Act; or (2) where (1) does not apply — the floodplain (if any) of the watercourse identified in a development plan under the *Development (SA) Act 1993*; or (3) where neither (1) nor (2) applies — the land adjoining the watercourse that is periodically subject to flooding from the watercourse

Future irrigation Development — Future irrigation development area and recharge (assuming recharge of 100 mm/y) resulting from activation of already allocated water that is assumed to occur after the current year

GIS — Geographic Information System; computer software linking geographic data (for example land parcels) to textual data (soil type, land value, ownership). It allows for a range of features, from simple map production to complex data analysis

Groundwater — Water occurring naturally below ground level or water pumped, diverted and released into a well for storage underground; see also 'underground water'

GSA — Government of South Australia

HEM — Heli-borne Electro-Magnetic geophysical data

Hydrogeology — The study of groundwater, which includes its occurrence, recharge and discharge processes, and the properties of aquifers; see also 'hydrology'

Hydrology — The study of the characteristics, occurrence, movement and utilisation of water on and below the Earth's surface and within its atmosphere; see also 'hydrogeology'

IBD — Infrastructure and Business Division

ID — Internal diameter

Infrastructure — Artificial lakes; dams or reservoirs; embankments, walls, channels or other works; buildings or structures; or pipes, machinery or other equipment

Irrigation — Watering land by any means for the purpose of growing plants

Irrigation season — The period in which major irrigation diversions occur, usually starting in August–September and ending in April–May

Improved Irrigation Practices (IIP) — Commencing in the mid 1990s when flood irrigation via earth channels was replaced by sprinkler and drip irrigation systems, thus increasing irrigation efficiency (70–85%) and reducing recharge to the watertable

k — hydraulic conductivity (metres per day)

KID — Knowledge and Information Division (KID)

Lag time — Time (years) taken for recharge to reach the watertable. Lag time is affected by depth to watertable and the presence and properties of aquitards

Lake — A natural lake, pond, lagoon, wetland or spring (whether modified or not) that includes part of a lake and a body of water declared by regulation to be a lake. A reference to a lake is a reference to either the bed, banks and shores of the lake or the water for the time being held by the bed, banks and shores of the lake, or both, depending on the context.

Land — Whether under water or not, and includes an interest in land and any building or structure fixed to the land

Licence — A licence to take water in accordance with the Act; see also 'water licence'

Mallee clearance — Clearance of natural vegetation

MDBC — Murray–Darling Basin Commission

Model — A conceptual or mathematical means of understanding elements of the real world that allows for predictions of outcomes given certain conditions. Examples include estimating storm run-off, assessing the impacts of dams or predicting ecological response to environmental change

Modelled result — Output from the calibrated model (e.g. a potentiometric head distribution) that can be compared to observed data

Natural recharge — The infiltration of water into an aquifer from the surface (rainfall, streamflow, irrigation etc). See also recharge area, artificial recharge

Occupier of land — A person who has, or is entitled to, possession or control of the land

Percentile — A way of describing sets of data by ranking the dataset and establishing the value for each percentage of the total number of data records. The 90th percentile of the distribution is the value such that 90% of the observations fall at or below it.

Permeability — A measure of the ease with which water flows through an aquifer or aquitard, measured in m^2/d

PIRSA — Primary Industries and Resources South Australia (Government of South Australia)

Post-1988 irrigation — Irrigation development area and recharge that occurred between 01/01/1988 and the current year

Pre-Committed Water — Water allocation that has been approved but is not yet being used

Pre-1988 irrigation — Irrigation development area and recharge that occurred prior to 01/01/1988

Predicted result — Output from the prediction model has been used to determine the future result of a particular scenario

Prescribed water resource — A water resource declared by the Governor to be prescribed under the Act, and includes underground water to which access is obtained by prescribed wells. Prescription of a water resource requires that future management of the resource be regulated via a licensing system.

Pumping Test — See Aquifer Test

Recharge — Irrigation drainage and/or rainfall infiltration reaching the watertable

Recharge area — The area of land from which water from the surface (rainfall, streamflow, irrigation, etc.) infiltrates into an aquifer. See also artificial recharge, natural recharge *(See artificial recharge, natural recharge.)*

Rehabilitation (RH) — Replacement of leaky concrete water distribution channels with pipelines resulting in reduced transportation losses, which are reflected by reduced recharge to the watertable

REM — Resource and Environmental Management

S&DS — Ministerial Councils' Salinity and Drainage Strategy 1988

SIS — Salt Interception Scheme designed to intercept the (maximum) groundwater flux and salt load resulting from the pre-1988, post-1988 and future irrigation development

(S) — Storativity. Storage coefficient. The volume of groundwater released or taken into storage per unit plan area of aquifer per unit change of head. It is dimensionless.

Sy — Specific yield

Surface water — (a) water flowing over land (except in a watercourse), (i) after having fallen as rain or hail or having precipitated in any another manner, (ii) or after rising to the surface naturally from underground; (b) water of the kind referred to in paragraph (a) that has been collected in a dam or reservoir

TDS — Total dissolved solids, measured in milligrams per litre (mg/L); a measure of water salinity

Underground water (groundwater) — Water occurring naturally below ground level or water pumped, diverted or released into a well for storage underground

Water body — Includes watercourses, riparian zones, floodplains, wetlands, estuaries, lakes and groundwater aquifers

Watercourse — A river, creek or other natural watercourse (whether modified or not) and includes: a dam or reservoir that collects water flowing in a watercourse; a lake through which water flows; a channel (but not a channel declared by regulation to be excluded from the this definition) into which the water of a watercourse has been diverted; and part of a watercourse

Water licence — A licence granted under the Act entitling the holder to take water from a prescribed watercourse, lake or well or to take surface water from a surface water prescribed area; this grants the licensee a right to take an allocation of water specified on the licence, which may also include conditions on the taking and use of that water; a water licence confers a property right on the holder of the licence and this right is separate from land title

Well — (1) An opening in the ground excavated for the purpose of obtaining access to underground water. (2) An opening in the ground excavated for some other purpose but that gives access to underground water. (3) A natural opening in the ground that gives access to underground water

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