



**NEW HOPE**  
GROUP

Appendix G  
Additional Landholder Bore Survey



# New Acland Coal Mine Revised Stage 3 Project

NEW HOPE COAL

Additional Landholder Bore Survey

QE06644.035 | Final

QE06644

05 May 2014



**JACOBS** SKM

## New Acland Coal Mine Revised Stage 3 Project

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 Author: Chris Dilley  
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Sinclair Knight Merz Pty Limited (Jacobs SKM)

ABN 37 001 024 095

32 Cordelia St

South Brisbane

Qld Australia 4101

T +61 (0)7 3026 7100

F +61 (0)7 3026 7300

www.jacobsskm.com

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### Document history and status

Revision	Date	Description	By	Review	Approved
Draft	13/04/2014	Draft for internal review	CD	DL	DL
Final	05/04/2014	Final	DL	PS	PS

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## Appendix A. Water Quality Laboratory Results

## Important note about your report

The sole purpose of this report and the associated services performed by Jacobs SKM is to undertake an additional landholder bore survey for the New Acland revised Stage 3 Project AEIS in accordance with the scope of services set out in the contract between Jacobs SKM and the Client. That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs SKM has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs SKM has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs SKM derived the data in this report from information sourced from the Client (if any) and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs SKM has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

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# 1. Introduction

## 1.1 Background

New Acland Coal Pty Ltd (NAC), part of the New Hope Group, currently operates the existing New Acland Coal Mine (the Mine) in southeast Queensland's Clarence-Moreton Basin. NAC is proposing to develop the New Acland Coal Mine Stage 3 Project (the revised Project), which involves the extension of the Mine's operating life to approximately 2029.

An Environmental Impact Statement (EIS) has been prepared for the revised Project that addresses the Terms of Reference (ToR) issued by the Queensland Coordinator-General. The ToR includes the requirement to include a survey of existing groundwater supply facilities (bores, wells or excavations) to the extent of any environmental harm. The information to be gathered for analysis is required to include:

- Locations.
- Pumping parameters.
- Drawdown and recharge at normal pumping rates.
- Seasonal variations (if records exist) of groundwater levels.
- The GPS location and depths of the potentially affected bores and the aquifers accessed by the bores.

The aim of the landholder bore survey (as outlined in the ToR) is to assist in the EIS assessment of the potential of the revised Project to impact on groundwater and how current users will be affected by any take of water associated with the revised Project. Furthermore, the survey was conducted in order to confirm and build on the information gathered from the DNRM database on groundwater occurrence and use in the vicinity of the revised Project.

To achieve this requirement of the ToR, Jacobs SKM was engaged to undertake a preliminary field survey of landholder bores in the vicinity of the revised Project. The results of this preliminary field survey were reported in Appendix G.4.2 of the revised Project's EIS.

Numerical groundwater modelling undertaken since the preliminary field survey, and reported in Chapter 6 of the revised Project's EIS, indicated that there are some DNRM registered groundwater bores that fall inside the predicted 5m drawdown contour (considered at the time of field survey planning to be the threshold at which Make Good actions will likely be required) that were not visited in the preliminary field survey. As such, an additional landholder bore survey was undertaken as part of the revised Project's AEIS to address this data gap.

## 1.2 Methodology

A total of 18 existing groundwater bores listed in the DNRM database have been identified to lie within the predicted 5m drawdown contour as presented in Chapter 6 the revised Project's EIS. It should be noted that the additional landholder bore survey planning was undertaken prior to the revised groundwater numerical modelling as presented in the revised Project's AEIS.

A total of 19 DNRM-registered bores across 13 individual Lot/Plan numbers were identified for the additional landholder bore survey. Following selection of sites, landholders were contacted to request participation in the survey. Where landholders were willing to participate, they were also asked to be present during the survey to provide additional anecdotal and historical bore information. A total of 14 bores were able to be visited as shown on **Figure 1**.

Information collected for each bore included (where available/possible):

- location GPS co-ordinates
- current physical bore depth

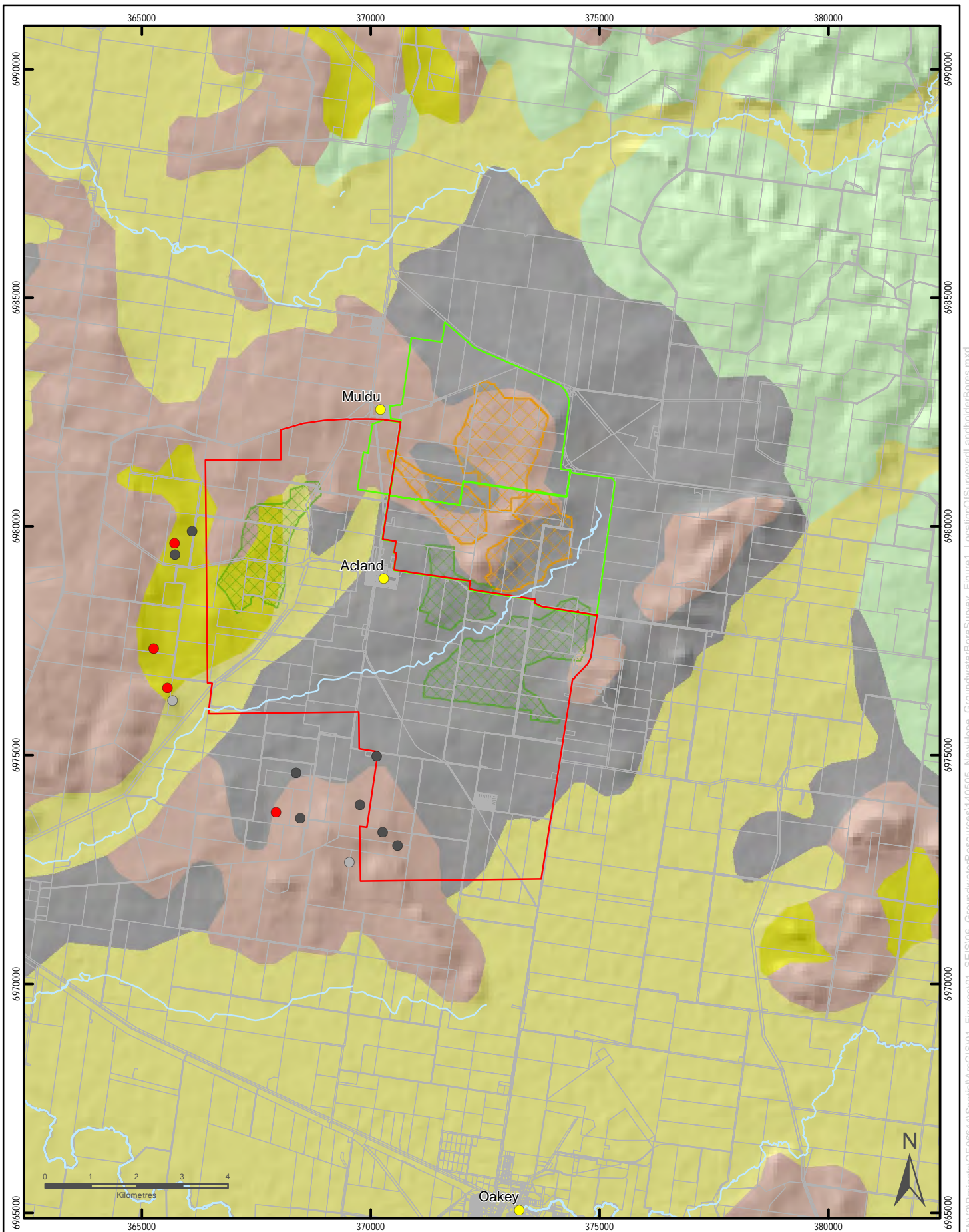
- construction details
- source aquifer
- current condition and status
- details of pumping infrastructure
- drilling & construction logs
- licence details
- current and historical usage
- historical water quality information
- field groundwater parameters (SWL, EC/TDS, pH, temperature, DO and Redox)
- water samples for laboratory analysis

The following document presents the results of the landholder bore survey as the field data forms compiled during the bore survey program. The naming convention used is the Lot/Plan number for the property followed by the number of the bore in relation to the other bores visited on that property; eg the first bore visited on Lot/Plan 105 A342484 is denoted "105\_A342484\_01" etc.

**Figure 1** presents a locality plan for the additional landholder bore survey.

**Figure 2** presents a locality plan for all bores visited as part of both the preliminary and additional landholder bore surveys.

Full water chemistry laboratory results for the additional landholder bore survey are available in **Appendix A**.



**LEGEND**

- |  |   |   |
|--|---|---|
| <ul style="list-style-type: none"> <li><span style="color: yellow;">●</span> Towns and Localities</li> <li><b>Additional Landholder Survey Bores</b></li> <li><span style="color: grey;">●</span> Not Defined</li> <li><span style="color: red;">●</span> Basalt</li> <li><span style="color: black;">●</span> Walloon Coal Measures</li> <li><span style="color: blue;">—</span> Watercourse</li> </ul> | <ul style="list-style-type: none"> <li><span style="border: 1px solid green; display: inline-block; width: 10px; height: 10px;"></span> New Acland Coal Mine</li> <li><span style="border: 1px solid red; display: inline-block; width: 10px; height: 10px;"></span> New Acland Coal Mine-Stage 3</li> <li><span style="border: 1px solid grey; display: inline-block; width: 10px; height: 10px;"></span> Cadastre</li> <li><span style="border: 1px dashed orange; display: inline-block; width: 10px; height: 10px;"></span> Existing Permission</li> <li><span style="border: 1px dashed green; display: inline-block; width: 10px; height: 10px;"></span> Stage 3 Pit Areas</li> </ul> | <p><b>Dominant Geology</b></p> <ul style="list-style-type: none"> <li><span style="background-color: #c08080; display: inline-block; width: 10px; height: 10px;"></span> Basalt (Tm)</li> <li><span style="background-color: #ffff00; display: inline-block; width: 10px; height: 10px;"></span> Alluvium (Qa)</li> <li><span style="background-color: #808080; display: inline-block; width: 10px; height: 10px;"></span> Colluvium (TQs)</li> <li><span style="background-color: #404040; display: inline-block; width: 10px; height: 10px;"></span> Walloon Subgroup (Jw)</li> <li><span style="background-color: #90ee90; display: inline-block; width: 10px; height: 10px;"></span> Marburg Sandstone (Jbm)</li> </ul> |
|--|---|---|

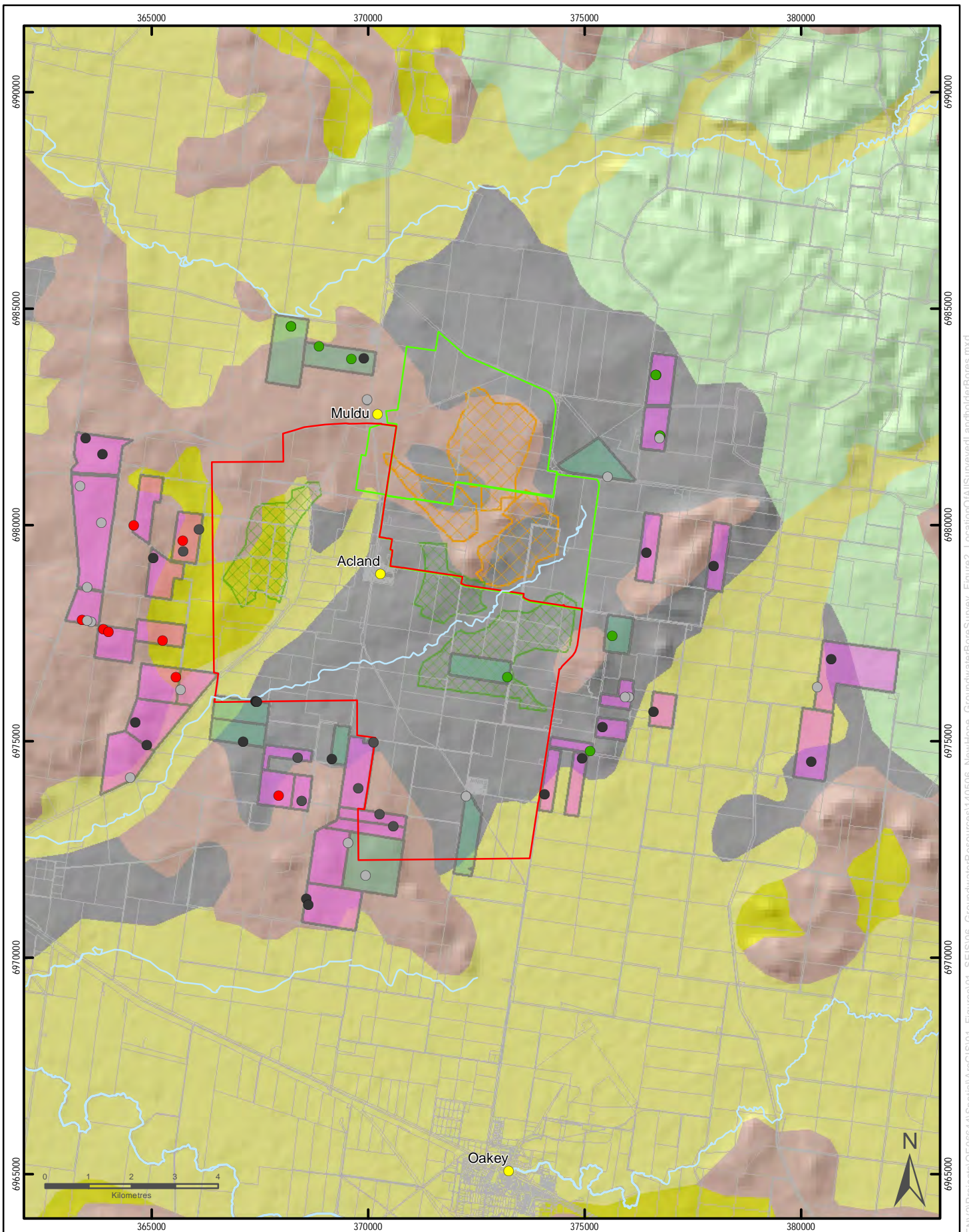


**NEW ACLAND COAL MINE  
STAGE 3 PROJECT**

**Figure 1 - Location of Surveyed  
Landholder Bores in the  
Additional Landholder Bore Survey**

Scale 1:110,000 on A4  
Projection: Australian Geodetic Datum – Zone 56 (AGD84)





**LEGEND**

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>● Towns and Localities</li> <li>Landholder Survey Bores defined by Aquifer</li> <li>○ Not Defined</li> <li>● Basalt</li> <li>● Walloon Coal Measures</li> <li>● Marburg Sandstone</li> <li>— Watercourse</li> </ul> | <ul style="list-style-type: none"> <li>□ New Acland Coal Mine</li> <li>□ New Acland Coal Mine-Stage 3</li> <li>□ Cadastre</li> <li>□ Existing Permission</li> <li>□ Stage 3 Pit Areas</li> <li>Cadastre - Survey Undertaken</li> <li>■ APC</li> <li>■ Public</li> </ul> | <p><b>Dominant Geology</b></p> <ul style="list-style-type: none"> <li>■ Basalt (Tm)</li> <li>■ Alluvium (Qa)</li> <li>■ Colluvium (TQs)</li> <li>■ Walloon Subgroup (Jw)</li> <li>■ Marburg Sandstone (Jbm)</li> </ul> |
|--|---|--|



**NEW ACLAND COAL MINE  
STAGE 3 PROJECT**

**Figure 2 - Location of all  
Surveyed Landholder Bores**

Scale 1:116,288 on A4

Projection: Australian Geodetic Datum – Zone 56 (AGD84)

## 2. Survey Results

<b>Assessment Details - 3322 A341637_01</b>	
<i>Property name:</i>	Homelee
<i>Local bore name:</i>	House Bore
<i>Registered Number:</i>	Unknown but believed to be RN 21894
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	03/02/2014 12:45
<i>Field staff name:</i>	C Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	3322 A341637
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	Owner
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Stock and domestic.
<i>GDA Latitude (decimal deg.):</i>	27°18'6.89"S
<i>GDA Longitude (decimal deg.):</i>	151°38'34.92"E
<i>Water licence number and details: (if available to view)</i>	Na
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	No log available. LH has book of information for all bores.
<i>Date Installed:</i>	1954 (anecdotal)
<i>Surface casing dia. (mm), and material:</i>	127mm, Steel
<i>Bore casing dia. (mm), and material:</i>	As above
<i>Bore casing stickup above ground (m):</i>	0.24m
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Unknown
<i>Top of screen (m bgl):</i>	Na
<i>Bottom of screen (m bgl):</i>	Na
<i>Top of open hole (m bgl):</i>	192ft (Anecdotal from Landholder)
<i>Total depth (m):</i>	Anecdotal from landholder: <ul style="list-style-type: none"> <li>- Drilled to 229ft (69.8m), this has previously filled up to 219ft (66.8m) and had to be cleaned out.</li> <li>- On the 24/8/1994 the bore was 209ft (63.7m) deep.</li> </ul> Measured: <ul style="list-style-type: none"> <li>- On day of assessment, 65.11 mbgl (obstruction or total depth)</li> </ul>
<i>Bore Condition Comments:</i>	Bore casing shows surface corrosion, but structure appears sound.
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	Y
<i>Pump type, make and model, power source:</i>	Windmill Pump, Southern cross windmill.
<i>Date installed:</i>	Anecdotal: 1993
<i>Date of most recent use</i>	Constant (break on when arrived but still pumping intermittently)
<i>Any repairs?</i>	Rods and pump in 2009
<i>Pump intake depth (m bgl):</i>	Anecdotal from LH that the pump intake is approx. 3.6m (12ft) from bottom, which calculates to be approx. 60.0m

<b>Assessment Details - 3322 A341637 01</b>	
<i>Interviewee's est. annual take (ML):</i>	3.32ML
<i>Basis for estimate:</i>	Bore is used constantly. When cattle in area the landholder estimates that he uses approx. 2,000 gallons (9,090 L) a day (average for year). Cattle are in the paddock all year (40 head average for year, sometimes more sometimes less)
<i>Is bore use metered? Give details:</i>	No
<i>Detail specific uses of the bore water:</i>	Cattle and domestic.
<i>Detail all other water sources for property:</i>	2 other bores (1 not equipped), 1 small dam.
<i>Typical pumping rate of bore (L/s):</i>	Na, dependant on the wind.
<i>Does this rate vary annually or can the pump rate be varied?:</i>	Na
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Used constantly throughout the year.
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na
<i>Describe riser, headwork and water distribution details:</i>	Outflow from the riser is approx. 0.45m above ground level. This then flows through a black poly pipe for approximately 20m to a 2,000 gallon (9090L) and 1,200 gallon (5454L) storage tank.
<i>Equipment condition:</i>	Windmill is in good condition. The landholder mentions that the bore needed little maintenance early on when installed. But now has seen corrosion on riser. The pipes need replacing every 2 years.
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Brake on the windmill was on when assessment began. Windmill was still pumping intermittently at this time but a standing water level was measured before the brake was taken off. 47.95mbgl (Time: 12:45)
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Water level when brake taken off = 47.87mbgl (Time: 13:30). Bore was still pumping intermittently when taking the pumping water level, which may account for an increase in water level.
<i>Water level measuring point</i>	Top of bore casing
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Anecdotal from LH: 24/8/1994 –163ft (49.68m) to water level. 1982 – 163ft (49.68m) to water level.
<i>Comments:</i>	
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	No, once had dairy compliance tests but do not have records.
<i>Any account of gas in the bore from interviewee?</i>	None
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	Storage sheds and cattle yards nearby contain potential sources of contamination. Bore is open at surface. The ground one side of the bore is waterlogged from overflow from water storage tanks.
<i>Water quality sample collected during this assessment?</i>	Yes
<i>Sample type: (primary, duplicate, field blank)</i>	Primary
<b>General Comments</b>	
Windmill brake was taken off at 12:55.	
Due to a lull in the wind the windmill was left to pump, while other bores on the property were assessed. From the other bores on the property the windmill could be seen intermittently pumping all afternoon. Later in the day the windmill bore	



**Assessment Details - 3322 A341637\_01**

was revisited and sampled. Samples were taken after an extended windy spell and parameters stabilised.

Landholder comments: "water at the house bore is harder than it used to be 20 years ago"

**Pictures**



**Assessment Details - 3322 A341637\_01**

Property name: Homelee		Bore name & RN: House Bore		Sampling date: 03/02/2014		Sample collection point: At disconnected joint just after the outflow from the rising main		Comments:	
Time	Flow Rate (L/s)	pH	Temp (°C)	EC (µS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Water Appearance /Colour	Odour?	TDS (mg/L)
13:01	Na	7.12	27.0	1170	1.65	190	Clear	None	849
13:25	"	8.09	27.1	1019	1.18	-6	"	"	693
13:31	"	8.31	25.3	993	1.36	-11	"	"	675
15:57	"	7.92	25.3	903	1.75	193	"	"	611
16:00	"	8.28	24.2	905	1.78	172	"	"	611
16:10	"	8.65	23.8	903	1.43	110	"	"	610
16:15	"	8.68	23.8	912	1.55	105	"	"	616
Total purge time:			Na						
Estimated total purge volume:			Na						
Time sample collected:			16:15						



<b>Assessment Details – 3322_A341637_02</b>	
<i>Property name:</i>	Homelee
<i>Local bore name:</i>	"Bore on flat"
<i>Registered Number:</i>	Unknown but believed to be RN 17490
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	03/02/2014 14:00
<i>Field staff name:</i>	C Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	3322 A341637
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	Owner
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Stock and sometimes domestic (backup for the house bore).
<i>GDA Latitude (decimal deg.):</i>	27°17'50.33"S
<i>GDA Longitude (decimal deg.):</i>	151°38'48.57"E
<i>Water licence number and details: (if available to view)</i>	Unknown
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	No log available. LH has a notebook of information for all bores.
<i>Date Installed:</i>	Anecdotal: 1965 (equipped and drilled)
<i>Surface casing dia. (mm), and material:</i>	Cannot see as bore is sealed in monument. Anecdotal from LH: same as bore casing.
<i>Bore casing dia. (mm), and material:</i>	127mm, Steel (anecdotal from landholder)
<i>Bore casing stickup above ground (m):</i>	NA, concreted into monument. Monument stickup = 0.22m (measured)
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Anecdotal: Walloon Coal Measures
<i>Top of screen (m bgl):</i>	Unknown but believed to be screened towards the base of bore, LH estimates 128 ft (39.01m)
<i>Bottom of screen (m bgl):</i>	138ft (42.06m)(anecdotal)
<i>Top of open hole (m bgl):</i>	Na
<i>Total depth (m):</i>	138ft (42.06m) TD (anecdotal from landholder who measured after cleaning bore)
<i>Bore Condition Comments:</i>	Bore in good condition. Landholder mentions that it rarely needs maintenance. Unable to see casing as bore is sealed. Monument is in good condition.
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	Y
<i>Pump type, make and model, power source:</i>	Mono pump, A model (1.5 inch)(anecdotal), Diesel engine (crank start).
<i>Date installed:</i>	17/09/1996 installed. The previous pump was a jet pump installed in 1965.
<i>Date of most recent use</i>	03/02/2014 (morning of assessment). Pump on 5:15am and off at 8:45am.
<i>Any repairs?</i>	Checked in 2013 but no repairs required. Rod replacements required in the past were only minor.
<i>Pump intake depth (m bgl):</i>	138ft approx (42.06m) (anecdotal). LH states the pump intake depth is believed to be very close to TD.
<i>Interviewee's est. annual take (ML):</i>	1.55ML
<i>Basis for estimate:</i>	During drier months pumps every day. When wetter every 2 days. Pumps for 3-5 hours. Flow rate used: 0.4L/s
<i>Is bore use metered? Give details:</i>	Bore not metered

<b>Assessment Details – 3322_A341637_02</b>	
<i>Detail specific uses of the bore water:</i>	Cattle (dairy cattle), domestic. 40 head approx all year (watering from both bores and dam)
<i>Detail all other water sources for property:</i>	2 other bores (1 not equipped), 1 small dam.
<i>Typical pumping rate of bore (L/s):</i>	As set
<i>Does this rate vary annually or can the pump rate be varied?:</i>	No.
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	During drier months pumps every day. When wetter every 2 days. Pumps for 3-5 hours
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	0.47 L/s
<i>Describe riser, headwork and water distribution details:</i>	A diesel motor drives the pump. The outflow from the head works is at approx. 0.41 m above ground level. The water flows through a black poly pipe. The poly pipe then passes through a set of valves to either the water storage tanks by the house (approx. 640m), the water storage tank on the hill (approx 300m) or to an open pipe, which used to feed into the disused water tank next to the bore. The house tanks have 2,000 gallon (7,570L) and 1,200 gallon (4,542L) capacity. The tank on the hill has a 3,000 gallon (11,356L) capacity.
<i>Equipment condition:</i>	When equipment checked by the landholder in 2013, didn't need replacing. Diesel motor is old and has signs of leakage but in good working order.
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Na
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Na
<i>Water level measuring point</i>	Na
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	None.
<i>Comments:</i>	The bore is completely sealed and there is no airline.
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	None available
<i>Any account of gas in the bore from interviewee?</i>	None
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	The diesel motor has leaked in the past. Old engine parts and vehicle is laid as scrap nearby. Plastic containers, with unknown contents are stored next to bore. The bore is well sealed and there is no diesel around monument.
<i>Water quality sample collected during this assessment?</i>	Yes
<i>Sample type: (primary, duplicate, field blank)</i>	Primary
<b>General Comments</b>	
Owner comments that "the water is very good quality".	
<b>Pictures</b>	

**Assessment Details – 3322\_A341637\_02**

**Assessment Details – 3322\_A341637\_02**

Property name: Homelee		Bore name & RN: "Bore on Flat"		Sampling date: 03/02/2014		Sample collection point: From outflow near the bore, which used to supply the disused tank next to the bore		Comments:	
Time	Flow Rate (L/s)	pH	Temp (°C)	EC (µS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Water Appearance /Colour	Odour?	TDS (mg/L)
14:00	Pump on								
14:05	0.42	6.62	24.2	1592	2.71	77	Clear, some minor sediment	"	1123
14:15	0.38	7.8	23.3	1613	1.23	-16	clear	"	1121
14:25	0.42	7.98	23.1	1607	1.03	-10	"	"	1117
14:30	0.43	8.04	23.3	1605	1.41	-13	"	"	1115
14:37	0.38	8.09	23.1	1612	7.41	-11	Water started to splutter out of outflow. Potentially pumping at/near water level	"	1119
14:45	0.32	8.15	23.2	1614	7.51	3	"	"	1123
14:54	0.47	8.16	23.2	1611	7.35	7	"	"	1117
15:05		8.17	23.2	1609	6.69	15	"	"	1117
Total purge time:			65 mins						
Estimated total purge volume:			1560L						
Time sample collected:			15:05						

<b>Assessment Details – 3322_A341637_03</b>	
<i>Property name:</i>	Homelee
<i>Local bore name:</i>	Unequipped bore
<i>Registered Number:</i>	Unknown but believed to be either RN 19498 or RN 21894
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	03/02/2014 15:20
<i>Field staff name:</i>	C Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	3322 A341637
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	Owner
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing but unequipped
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Stock, domestic.
<i>GDA Latitude (decimal deg.):</i>	27°17'56.88"S
<i>GDA Longitude (decimal deg.):</i>	151°38'34.80"E
<i>Water licence number and details: (if available to view)</i>	Na
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	No log available. LH has book of information for all bores.
<i>Date Installed:</i>	22 years ago (anecdotal). Was installed for domestic supply but never used.
<i>Surface casing dia. (mm), and material:</i>	140mm, steel (for 60 ft)
<i>Bore casing dia. (mm), and material:</i>	As above
<i>Bore casing stickup above ground (m):</i>	0.36m
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Unknown
<i>Top of screen (m bgl):</i>	Na
<i>Bottom of screen (m bgl):</i>	Na
<i>Top of open hole (m bgl):</i>	Na
<i>Total depth (m):</i>	Measured: 17.46mbgl Anecdotal: Drilled to 200ft initially but no other water found, so was not cased below 60ft.
<i>Bore Condition Comments:</i>	Steel has surface corrosion but structure is good.
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	No pump installed
<i>Pump type, make and model, power source:</i>	Na
<i>Date installed:</i>	Na
<i>Date of most recent use</i>	Na
<i>Any repairs?</i>	Na
<i>Pump intake depth (m bgl):</i>	Na
<i>Interviewee's est. annual take (ML):</i>	Na
<i>Basis for estimate:</i>	Na
<i>Is bore use metered? Give details:</i>	Na
<i>Detail specific uses of the bore water:</i>	Na
<i>Detail all other water sources for property:</i>	2 bores and one small dam
<i>Typical pumping rate of bore (L/s):</i>	Na
<i>Does this rate vary annually or can the</i>	Na



<b>Assessment Details – 3322_A341637_03</b>	
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Na
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na
<i>Describe riser, headwork and water distribution details:</i>	Open casing
<i>Equipment condition:</i>	Na
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	4.8mbgl
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Na
<i>Water level measuring point</i>	Top of casing
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Na. The owner once put a fireman's pump in the bore and it stopped and started when the intake was set at 27ft (8.2m) (potentially indicating that the water level was drawn below this point)
<i>Comments:</i>	
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	No
<i>Any account of gas in the bore from interviewee?</i>	None
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	Bore is open and is to the edge of a field and could potentially be contaminated by ploughing activities. There is potential for contamination from a number of organic sources (e.g. cattle).
<i>Water quality sample collected during this assessment?</i>	No
<i>Sample type: (primary, duplicate, field blank)</i>	Na
<b>General Comments</b>	
<b>Pictures</b>	

**Assessment Details – 3322\_A341637\_03**



<b>Assessment Details - 67 AG3198_01</b>	
Property name:	Unknown
Local bore name:	Unknown
Registered Number:	Unknown but believed to be RN 21941
Registered number source: (anecdotal, DNRM records, bore log etc)	DNRM database search.
Assessment date and time:	04/02/2014 13:30
Field staff name:	C Dilley
<b>Property Details</b>	
Lot and Plan number:	67 AG3198
<b>Interviewee Details</b>	
Interviewee relationship to property: (owner, tenant, manager etc)	Not available on day of assessment (see <i>general comments</i> below)
<b>Bore Details</b>	
Status of bore: (existing, abandoned, destroyed)	Existing
Uses of bore: (Stock, feedlot, domestic, irrigation etc)	Stock
GDA Latitude (decimal deg.):	27°21'46.47"S
GDA Longitude (decimal deg.):	151°40'51.06"E
Water licence number and details: (if available to view)	Unknown
<b>Bore Construction Details</b>	
Construction details / log available?	Unknown
Date Installed:	Unknown
Surface casing dia. (mm), and material:	165mm, Believed to be Tin (Thought to be protecting the bore when the concrete step was set)
Bore casing dia. (mm), and material:	Approx. 130mm, Steel
Bore casing stickup above ground (m):	0.34m
Aquifer: (& source of information: log, anecdotal)	Unknown
Top of screen (m bgl):	Unknown
Bottom of screen (m bgl):	Unknown
Top of open hole (m bgl):	Unknown
Total depth (m):	Unknown
Bore Condition Comments:	Bore casing shows surface corrosion but structure appears sound. The concrete step around the bore reduces potential damage and contamination. The bore has a cap on top, which creates a fairly tight seal.
<b>Bore Equipment Details</b>	
Pump Installed?	Yes
Pump type, make and model, power source:	Submersible, Unknown make and model, electrical supply.
Date installed:	Unknown
Date of most recent use	Used 03/02/2014 (anecdotal from landholder)
Any repairs?	Unknown
Pump intake depth (m bgl):	Unknown
Interviewee's est. annual take (ML):	Unknown
Basis for estimate:	Unknown
Is bore use metered? Give details:	No
Detail specific uses of the bore water:	Stock
Detail all other water sources for property:	Aware of 9 other bores on the property that were visited as part of this assessment. On the day of assessment only 4 bores were known to be equipped.
Typical pumping rate of bore (L/s):	Unknown

<b>Assessment Details - 67 AG3198_01</b>	
<i>Does this rate vary annually or can the pump rate be varied?:</i>	Unknown
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Unknown
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na
<i>Describe riser, headwork and water distribution details:</i>	The bore cap has a rope and a power cable leading into it. On top of the bore cap is the outflow. This flows past a pump pressure tank, control box and gauge (approx 20cm from outflow). There is a valve after this point, which could shut off all water leaving the bore. This leads to a T joint. Both outflows from this joint have valves. The first leads to a storage tank on top of the hill (approx 300m away). The second leads to a large water tank 5 m from bore
<i>Equipment condition:</i>	The head works are sheltered in a tin structure, which reduces exposure to the elements and cattle. Equipment is in good condition
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Unknown
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Unknown
<i>Water level measuring point</i>	Na
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Unknown
<i>Comments:</i>	Unable to measure water level and no airline
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	Unknown
<i>Any account of gas in the bore from interviewee?</i>	Unknown
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	Old abandoned house nearby, which could contain potential contaminants. Old battery and weed killer containers stored in the shed. The bore is sealed but there is a small annulus between the surface casing and bore casing.
<i>Water quality sample collected during this assessment?</i>	Yes
<i>Sample type: (primary, duplicate, field blank)</i>	Primary
<b>General Comments</b>	
Landholder does not want water running on to land for duration of test. Have to start and stop pump to purge and sample, disconnecting the outflow to the storage tank. This is then repeated until water chemistry parameters stabilise and a sample was taken for laboratory analysis.	
The landholder was unavailable to assist or to be interviewed during the survey.	
<b>Pictures</b>	





<b>Assessment Details - 67 AG3198_01</b>									
Property name: Unknown		Bore name & RN: Unknown		Sampling date: 04/02/2014		Sample collection point: At disconnected pipe before the water storage tank		Comments:	
Time	Flow Rate (L/s)	pH	Temp (°C)	EC (µS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Water Appearance /Colour	Odour?	TDS (mg/L)
13:40	Pump started								
13:50	0.74	9.40	24	1115	6.29	187	Clear	None	713
14:00	"	7.97	22.7	1050	5.65	96	"	"	670
14:15	0.71	7.88	22.3	1039	6.06	70	"	"	663
14:25	0.74	7.88	22.5	1034	5.65	62	"	"	663
14:35	"	7.87	22.3	1033	6.31	47	"	"	661
14:40	"	7.84	22.4	1030	5.87	55	"	"	657
Total purge time:			60mins						
Estimated total purge volume:			2646L						
Time sample collected:			14:40						

<b>Assessment Details – 10_RP36467_01</b>	
Property name:	Unknown
Local bore name:	Unknown
Registered Number:	Unknown but believed to be RN 21906
Registered number source: (anecdotal, DNRM records, bore log etc)	DNRM database search
Assessment date and time:	04/02/2014 15:45
Field staff name:	C. Dilley
<b>Property Details</b>	
Lot and Plan number:	10 RP36467
<b>Interviewee Details</b>	
Interviewee relationship to property: (owner, tenant, manager etc)	Not available on day of assessment (see <i>general comments</i> below)
<b>Bore Details</b>	
Status of bore: (existing, abandoned, destroyed)	Existing
Uses of bore: (Stock, feedlot, domestic, irrigation etc)	Believed to be stock only
GDA Latitude (decimal deg.):	27°21'10.42"S
GDA Longitude (decimal deg.):	151°39'53.06"E
Water licence number and details: (if available to view)	Unknown
<b>Bore Construction Details</b>	
Construction details / log available?	Unknown
Date Installed:	Unknown
Surface casing dia. (mm), and material:	Approx. 127mm, steel
Bore casing dia. (mm), and material:	As above
Bore casing stickup above ground (m):	0.38m
Aquifer: (& source of information: log, anecdotal)	Unknown
Top of screen (m bgl):	Unknown
Bottom of screen (m bgl):	Unknown
Top of open hole (m bgl):	Unknown
Total depth (m):	Measured at 41.91mbgl (total depth or obstruction)
Bore Condition Comments:	Bore is in good condition. Bore casing shows surface corrosion but structure appears sound. A basic tin cap on top of bore limits contamination.
<b>Bore Equipment Details</b>	
Pump Installed?	Y
Pump type, make and model, power source:	Windmill pump, southern cross windmill (30ft estimated)
Date installed:	Unknown
Date of most recent use	Constant
Any repairs?	Unknown
Pump intake depth (m bgl):	Unknown
Interviewee's est. annual take (ML):	Unknown
Basis for estimate:	Unknown
Is bore use metered? Give details:	No
Detail specific uses of the bore water:	Believed to be solely stock use.
Detail all other water sources for property:	Aware of 9 other bores on the property that were visited as part of this assessment. On the day of assessment only 4 bores were known to be equipped.
Typical pumping rate of bore (L/s):	Varied (with wind conditions)
Does this rate vary annually or can the pump rate be varied?:	Na

<b>Assessment Details – 10_RP36467_01</b>	
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Unknown
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na – Unable to measure flow rate on day of assessment, due to difficult location of sample point.
<i>Describe riser, headwork and water distribution details:</i>	The rising main is held in place with 2 wooden stakes and a cross beam. The outflow from the riser is approx. 0.55m above ground level. This connects to a black poly pipe (diameter approx. 40mm), which becomes buried. This outflows to a white poly tank (24,500 L estimated capacity) approximately 10m away.
<i>Equipment condition:</i>	Equipment appears to be in good working condition. Windmill action is smooth.
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Na – Bore has been pumping continually on day of assessment
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Windmill has been running constantly, with intermittent wind. 30.73Mbtc (30.35mbgl)
<i>Water level measuring point</i>	Top of casing
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Unknown
<i>Comments:</i>	
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	Unknown
<i>Any account of gas in the bore from interviewee?</i>	Unknown
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	There is a cattle yard 5 m from the bore. Bore has a makeshift cap, which keeps it well sealed but will still allow some contamination. Some empty plastic drums are stored nearby (unknown contents).
<i>Water quality sample collected during this assessment?</i>	Yes
<i>Sample type: (primary, duplicate, field blank)</i>	Primary
<b>General Comments</b>	
Wind is intermittent but has been blowing on and off since first visited the site earlier this afternoon. Wind became stronger and more consistent towards the end of test as the afternoon continued.	
The landholder was unavailable to assist or to be interviewed during the survey.	
<b>Pictures</b>	

**Assessment Details – 10\_RP36467\_01**



**Assessment Details – 10\_RP36467\_01**

Property name: Unknown		Bore name & RN: Unknown		Sampling date: 04/02/2014		Sample collection point: At the outflow to the water storage tank		Comments:	
Time	Flow Rate (L/s)	pH	Temp (°C)	EC (µS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Water Appearance /Colour	Odour?	TDS (mg/L)
15:50	Na	8.20	24.8	926	0.88	190	Clear	None	596
16:12	"	8.78	24.3	930	0.69	64	"	"	592
16:17	"	8.82	24.1	941	0.6	-74	"	"	597
16:23	"	8.81	24	940	0.64	-81	"	"	600
16:29	"	8.84	23.7	942	0.45	-79	"	"	600
16:35	"	8.83	23.7	932	0.36	-87	Some minor sediment	"	594
16:40	"	8.82	23.7	938	0.43	-92	"	Slight organic smell	600
16:50	"	8.80	23.7	939	0.40	-91	"	"	598
Total purge time:			Windmill bore on constantly						
Estimated total purge volume:			Na						
Time sample collected:			16:50						



<b>Assessment Details – 2_RP40478_01</b>	
<i>Property name:</i>	Unknown
<i>Local bore name:</i>	Unknown but would describe as the old windmill bore with a submersible pump set up in front of the house.
<i>Registered Number:</i>	Unknown but believed to be RN 21854
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	04/02/2013 12:00
<i>Field staff name:</i>	C. Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	2 RP40478
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	Not available on day of assessment (see <i>general comments</i> below)
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Believed to be for domestic and stock
<i>GDA Latitude (decimal deg.):</i>	27°20'31.48"S
<i>GDA Longitude (decimal deg.):</i>	151°41'13.38"E
<i>Water licence number and details: (if available to view)</i>	Unknown
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	Unknown
<i>Date Installed:</i>	Unknown
<i>Surface casing dia. (mm), and material:</i>	127mm, steel
<i>Bore casing dia. (mm), and material:</i>	As above
<i>Bore casing stickup above ground (m):</i>	0.33m
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Unknown
<i>Top of screen (m bgl):</i>	Unknown
<i>Bottom of screen (m bgl):</i>	Unknown
<i>Top of open hole (m bgl):</i>	Unknown
<i>Total depth (m):</i>	Unknown
<i>Bore Condition Comments:</i>	The bore appears to be in good condition. Clamp and casing is corroded but has good structure. The bore has a steel bore cap, which fully seals the bore. The old windmill bore has been adapted to a submersible pump setup. The windmill structure remains
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	Unknown
<i>Pump type, make and model, power source:</i>	The pump control box appears to be connected to an electric cable, which becomes buried. It is unknown if the bore is equipped with a pump or if in working condition.
<i>Date installed:</i>	Unknown
<i>Date of most recent use</i>	Unknown
<i>Any repairs?</i>	Unknown
<i>Pump intake depth (m bgl):</i>	Unknown
<i>Interviewee's est. annual take (ML):</i>	Unknown
<i>Basis for estimate:</i>	Unknown
<i>Is bore use metered? Give details:</i>	Unknown
<i>Detail specific uses of the bore water:</i>	Unknown
<i>Detail all other water sources for property:</i>	Aware of 9 other bores on the property, that were visited as part of the assessments. On the day of assessment only 4 of these bores were known to

<b>Assessment Details – 2_RP40478_01</b>	
	be equipped.
<i>Typical pumping rate of bore (L/s):</i>	Unknown
<i>Does this rate vary annually or can the pump rate be varied?:</i>	Unknown
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Unknown
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na
<i>Describe riser, headwork and water distribution details:</i>	The bore has a cap that has an outflow for water and a hole for the power source. From the top of the bore cap the water passes a valve and then a sample tap. This then connects to black poly pipe (approx. 35mm diameter) and at a t piece connection becomes buried or flows to an open outlet that has a valve. The water is believed to flow to water storage tanks behind the house (approx. 100m away).
<i>Equipment condition:</i>	Equipment setup above ground appears to be in good condition. The control panels are protected from the elements by a steel drum. There is an old submersible pump sitting next to the bore.
<i>Comments:</i>	Unsure about the bore set up and whether it is in working condition. LH not present, so unable to turn bore on.
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Unknown
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Unknown
<i>Water level measuring point</i>	Na
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Unknown
<i>Comments:</i>	Bore is sealed and does not have an airline.
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	Unknown
<i>Any account of gas in the bore from interviewee?</i>	Unknown
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	Bore is very well sealed. There are storage sheds and barns nearby, which appear to contain vehicles and farm equipment.
<i>Water quality sample collected during this assessment?</i>	N
<i>Sample type: (primary, duplicate, field blank)</i>	Na
<b>General Comments</b>	
The landholder was unavailable to assist or to be interviewed during the survey.	
<b>Pictures</b>	

**Assessment Details – 2\_RP40478\_01**



<b>Assessment Details – 2_RP36455_01</b>	
<i>Property name:</i>	Unknown
<i>Local bore name:</i>	Unknown but would describe as the unused windmill bore that can be seen when entering the gates to the paddock from Hueys Road.
<i>Registered Number:</i>	Unknown but believed to be RN 55224
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	05/02/2013 07:45
<i>Field staff name:</i>	C. Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	2 RP36455
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	Not available on day of assessment (see <i>general comments</i> below)
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing but currently unused
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Unknown
<i>GDA Latitude (decimal deg.):</i>	27°21'34.76"S
<i>GDA Longitude (decimal deg.):</i>	151°41'29.27"E
<i>Water licence number and details: (if available to view)</i>	Unknown
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	Unknown
<i>Date Installed:</i>	Unknown
<i>Surface casing dia. (mm), and material:</i>	160mm, Steel
<i>Bore casing dia. (mm), and material:</i>	At 0.05m above ground level the casing reduces in diameter to approx. 140mm
<i>Bore casing stickup above ground (m):</i>	0.405m
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Unknown
<i>Top of screen (m bgl):</i>	Unknown
<i>Bottom of screen (m bgl):</i>	Unknown
<i>Top of open hole (m bgl):</i>	Unknown
<i>Total depth (m):</i>	Measured at 79.955 mbgl (total depth or obstruction). Some difficulty was experienced retrieving equipment after tagging what is believed to be total depth.
<i>Bore Condition Comments:</i>	The bore casing above ground is heavily corroded and has some minor holes, which allows the potential of contamination.
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	Unknown. Rising main is still secured in the bore but disconnected from windmill above ground.
<i>Pump type, make and model, power source:</i>	Na
<i>Date installed:</i>	Unknown
<i>Date of most recent use</i>	Unknown
<i>Any repairs?</i>	Unknown
<i>Pump intake depth (m bgl):</i>	Unknown
<i>Interviewee's est. annual take (ML):</i>	Unknown
<i>Basis for estimate:</i>	Unknown
<i>Is bore use metered? Give details:</i>	No
<i>Detail specific uses of the bore water:</i>	Believed it would have historically been used for stock.
<i>Detail all other water sources for</i>	Aware of 9 other bores on the property, that were visited as part of the

<b>Assessment Details – 2_RP36455_01</b>	
<i>property:</i>	assessments. On the day of assessment only 4 of these bores were known to be equipped.
<i>Typical pumping rate of bore (L/s):</i>	Na
<i>Does this rate vary annually or can the pump rate be varied?:</i>	Na
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Na
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na
<i>Describe riser, headwork and water distribution details:</i>	The riser is held in place by two wooden stakes and a cross beam. The outflow pipe is 0.52m above ground. The outflow pipe becomes buried and resurfaces approximately 5 m away at the foundations of what was once believed to be a water tank. No tank exists or is present. It is believed the tank would have fed troughs for cattle in the paddock.
<i>Equipment condition:</i>	Unknown. Windmill itself is in good working condition but is disconnected.
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	42.825 mbgl
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Na
<i>Water level measuring point</i>	Top of casing
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Unknown
<i>Comments:</i>	
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	Unknown
<i>Any account of gas in the bore from interviewee?</i>	Unknown
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	Bore is in the middle of paddock and is only protected by the windmill structure. The bore is open and has some corrosion holes in the casing, which could introduce organic matter. Nearby is some old farming equipment, which is laid up- as scrap.
<i>Water quality sample collected during this assessment?</i>	No
<i>Sample type: (primary, duplicate, field blank)</i>	Na
<b>General Comments</b>	
The landholder was unavailable to assist or to be interviewed during the survey.	
<b>Pictures</b>	



**Assessment Details – 2\_RP36455\_01**



<b>Assessment Details – 2_RP36455_02</b>	
<i>Property name:</i>	Unknown
<i>Local bore name:</i>	Unknown but would describe as disconnected windmill bore near stock yard accessed by gate on Huey's Road.
<i>Registered Number:</i>	Unknown but believed to be RN 21908
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	05/02/2014 8:15
<i>Field staff name:</i>	C. Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	2 RP36455
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	Not available on day of assessment (see <i>general comments</i> below)
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Believed it would have been used for stock in the past, as located next to stock yard.
<i>GDA Latitude (decimal deg.):</i>	27°21'25.69"S
<i>GDA Longitude (decimal deg.):</i>	151°41'17.75"E
<i>Water licence number and details: (if available to view)</i>	Unknown
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	Unknown
<i>Date Installed:</i>	Unknown
<i>Surface casing dia. (mm), and material:</i>	127mm, steel
<i>Bore casing dia. (mm), and material:</i>	At 0.1m above ground level the casing diameter reduces to approx. 107mm.
<i>Bore casing stickup above ground (m):</i>	0.34m
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Unknown
<i>Top of screen (m bgl):</i>	Unknown
<i>Bottom of screen (m bgl):</i>	Unknown
<i>Top of open hole (m bgl):</i>	Unknown
<i>Total depth (m):</i>	Unknown. Did not dip total depth, due to potential obstruction when measuring water level, which may have snagged equipment.
<i>Bore Condition Comments:</i>	Bore is in good condition. Bore casing shows surface corrosion but structure appears sound. On the outside of the casing there is heavy corrosion for the first 0.1m above ground.
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	Unknown. Rising main is still in the bore but disconnected from the windmill above ground.
<i>Pump type, make and model, power source:</i>	Unknown
<i>Date installed:</i>	Unknown
<i>Date of most recent use</i>	Unknown
<i>Any repairs?</i>	Unknown
<i>Pump intake depth (m bgl):</i>	Unknown
<i>Interviewee's est. annual take (ML):</i>	Unknown
<i>Basis for estimate:</i>	Unknown
<i>Is bore use metered? Give details:</i>	No
<i>Detail specific uses of the bore water:</i>	Believed it would have once been used for stock water.
<i>Detail all other water sources for</i>	Aware of 9 other bores on the property, that were visited as part of the

<b>Assessment Details – 2_RP36455_02</b>	
<i>property:</i>	assessment. On the day of assessment only 4 of these bores were equipped.
<i>Typical pumping rate of bore (L/s):</i>	Na
<i>Does this rate vary annually or can the pump rate be varied?:</i>	Na
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Na
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na
<i>Describe riser, headwork and water distribution details:</i>	Riser is held in place by two wooden stakes and a cross beam. The outflow from the riser is at approx. 0.74m above ground level. This flow's in a galvanised steel outflow pipe then becomes buried. It is believed to outflow to storage tanks in cattle yard 20m away.
<i>Equipment condition:</i>	Windmill is in good condition. Unknown pump condition (if exists).
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	63.33mbgl
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Na
<i>Water level measuring point</i>	Top of casing
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Unknown
<i>Comments:</i>	
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	Unknown
<i>Any account of gas in the bore from interviewee?</i>	Unknown
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	Cattle yard and storage sheds 20m away could be sources of contamination. Bore is open with vegetation growing around the top of the bore. An abandoned car is located nearby.
<i>Water quality sample collected during this assessment?</i>	No
<i>Sample type: (primary, duplicate, field blank)</i>	Na
<b>General Comments</b>	
The landholder was unavailable to assist or to be interviewed during the survey.	
<b>Pictures</b>	

**Assessment Details – 2\_RP36455\_02**



<b>Assessment Details - 2_RP40478_02</b>	
<i>Property name:</i>	Unknown
<i>Local bore name:</i>	Unknown Description: the chained off windmill that can be seen from the property on Acland Sabine Road. It is in the paddock next to the broken white water storage tank.
<i>Registered Number:</i>	Unknown but believed to be RN 87948
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	05/02/2014 10:30
<i>Field staff name:</i>	C Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	2 RP40478
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	Not available on day of assessment (see <i>general comments</i> below)
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Believed it would have been used for stock. Windmill appears to be chained to the frame to stop movement. Water storage tank near bore is damaged and not in use.
<i>GDA Latitude (decimal deg.):</i>	27°21'5.73"S
<i>GDA Longitude (decimal deg.):</i>	151°40'59.93"E
<i>Water licence number and details: (if available to view)</i>	Unknown
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	Unknown
<i>Date Installed:</i>	Unknown
<i>Surface casing dia. (mm), and material:</i>	140mm, Steel
<i>Bore casing dia. (mm), and material:</i>	As above
<i>Bore casing stickup above ground (m):</i>	0.55m
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Unknown
<i>Top of screen (m bgl):</i>	Unknown
<i>Bottom of screen (m bgl):</i>	Unknown
<i>Top of open hole (m bgl):</i>	Unknown
<i>Total depth (m):</i>	90.28mbgl (total depth or obstruction)
<i>Bore Condition Comments:</i>	Bore casing shows small areas of surface corrosion but structure appears sound.
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	Unknown. Believed to be a fully functional windmill set up that has been chained off, which may be because of damaged water tank. There appears to be no infrastructure in place for the bore to pump to.
<i>Pump type, make and model, power source:</i>	Unknown
<i>Date installed:</i>	Unknown
<i>Date of most recent use</i>	Unknown
<i>Any repairs?</i>	Unknown
<i>Pump intake depth (m bgl):</i>	Unknown
<i>Interviewee's est. annual take (ML):</i>	Unknown
<i>Basis for estimate:</i>	Unknown
<i>Is bore use metered? Give details:</i>	Unknown
<i>Detail specific uses of the bore water:</i>	Unknown



<b>Assessment Details - 2_RP40478_02</b>	
<i>Detail all other water sources for property:</i>	Aware of 9 other bores on the property, that were visited as part of the assessment. On the day of assessment only 4 of these bores were equipped.
<i>Typical pumping rate of bore (L/s):</i>	Na
<i>Does this rate vary annually or can the pump rate be varied?:</i>	Na
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Unknown
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na
<i>Describe riser, headwork and water distribution details:</i>	Two stakes and cross beam support the rising main. The outflow from this pipe is at 0.8m above ground level. This then connects to a black poly pipe (approx. 35mm diameter) and becomes buried. It is believed the outflow from this bore is a broken water tank approx. 30m away, which is not connected. What is believed to be the outflow from the bore stands separately (see photos). It is believed this used to feed the top of the water tank, which has now moved. The water tank is damaged beyond use.
<i>Equipment condition:</i>	Appears to be in good condition above ground. Unknown condition of pump.
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	49.99mbgl
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Na
<i>Water level measuring point</i>	Top of casing
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Unknown
<i>Comments:</i>	
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	Unknown
<i>Any account of gas in the bore from interviewee?</i>	Unknown
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	The bore is not sealed and has some vegetation growing around the opening. The bore is protected from cattle by the windmill structure.
<i>Water quality sample collected during this assessment?</i>	N
<i>Sample type: (primary, duplicate, field blank)</i>	Na
<b>General Comments</b>	
The landholder was unavailable to assist or to be interviewed during the survey.	
<b>Pictures</b>	

**Assessment Details - 2\_RP40478\_02**



<b>Assessment Details - 2517 _ A341144 _ 01</b>	
Property name:	Unknown
Local bore name:	Unknown
Registered Number:	Unknown but believed to be RN 21849
Registered number source: (anecdotal, DNRM records, bore log etc)	DNRM database search
Assessment date and time:	05/02/2014 11:40
Field staff name:	C Dilley
<b>Property Details</b>	
Lot and Plan number:	2517 A341144
<b>Interviewee Details</b>	
Interviewee relationship to property: (owner, tenant, manager etc)	Not available on day of assessment (see <i>general comments</i> below)
<b>Bore Details</b>	
Status of bore: (existing, abandoned, destroyed)	Existing
Uses of bore: (Stock, feedlot, domestic, irrigation etc)	Believed to be used for Stock
GDA Latitude (decimal deg.):	27°21'14.8"S
GDA Longitude (decimal deg.):	151°40'12.29"E
Water licence number and details: (if available to view)	Unknown
<b>Bore Construction Details</b>	
Construction details / log available?	Unknown
Date Installed:	Unknown
Surface casing dia. (mm), and material:	127mm, Steel
Bore casing dia. (mm), and material:	As above
Bore casing stickup above ground (m):	0.23m
Aquifer: (& source of information: log, anecdotal)	Unknown
Top of screen (m bgl):	Unknown
Bottom of screen (m bgl):	Unknown
Top of open hole (m bgl):	Unknown
Total depth (m):	Unknown. Did not measure on day of assessment because when nearing the water level the dipper encountered some resistance and nearly got caught.
Bore Condition Comments:	Bore casing shows surface corrosion but structure appears sound. Concern about internal structure due to potential internal obstruction encountered
<b>Bore Equipment Details</b>	
Pump Installed?	Yes
Pump type, make and model, power source:	Windmill, Unknown.
Date installed:	Unknown
Date of most recent use	Constant use
Any repairs?	Unknown
Pump intake depth (m bgl):	Unknown
Interviewee's est. annual take (ML):	Unknown
Basis for estimate:	Unknown
Is bore use metered? Give details:	No
Detail specific uses of the bore water:	Believed to be for stock use only.
Detail all other water sources for property:	Aware of 9 other bores on the property, that were visited as part of the assessment. On the day of assessment only 4 of these bores were equipped.
Typical pumping rate of bore (L/s):	Na
Does this rate vary annually or can the pump rate be varied?:	Na

<b>Assessment Details - 2517 _ A341144_01</b>	
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Unknown
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Unable to take a flow rate measurement due to the position of the bore outflow.
<i>Describe riser, headwork and water distribution details:</i>	The rising main is held in place by a steel clamp resting on the bore casing. The outflow from the bore is at approx. 2.5m above ground level. From here it flows in a black poly pipe horizontally for 2m before entering the top of a black water storage tank. From the poly tank it is believed the water is distributed to nearby troughs. There is an old metal water tank nearby that is not used. When the tank overflows it seeps away down a channel around the bore.
<i>Equipment condition:</i>	Equipment appears to be in good condition. Windmill is old but in working condition.
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Na - Bore pumping when arrived
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	73.12mbgl – water level measured when arrived as bore had been pumping continuously.
<i>Water level measuring point</i>	Top of casing
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Unknown
<i>Comments:</i>	
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	Unknown
<i>Any account of gas in the bore from interviewee?</i>	Unknown
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	Bore is open and only protected by windmill structure. The water storage tank next to the bore is overflowing and then draining away in a small natural channel by the bore. There are some empty plastic storage containers under the old tank (unknown contents).
<i>Water quality sample collected during this assessment?</i>	Y
<i>Sample type: (primary, duplicate, field blank)</i>	Primary
<b>General Comments</b>	
The landholder was unavailable to assist or to be interviewed during the survey.	
Wind has been fairly strong all day. Flow rate is approx. 1 L per min at time of sampling.	
<b>Pictures</b>	



**Assessment Details - 2517 \_ A341144\_ 01**

**Assessment Details - 2517 \_ A341144\_ 01**

Property name: Unknown		Bore name & RN: Unknown		Sampling date: 05/02/2014		Sample collection point: At outflow before water storage tank		Comments:	
Time	Flow Rate (L/s)	pH	Temp (°C)	EC (µS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Water Appearance /Colour	Odour?	TDS (mg/L)
11:40	Na	6.86	27.7	840	2.32	128	Clear, some minor organic matter (potentially caused by disturbance to bore outflow)	None	516
11:49	"	8.12	26.3	856	1.78	9	clear	"	524
12:05	"	8.55	26.2	854	2.23	-51	"	"	524
12:14	"	8.60	26.3	854	1.81	-41	Some organic matter which may have been caused by disturbance to outflow pipe.	"	523
12:20	"	8.59	26.2	853	1.92	-38	"	"	523
12:28	"	8.60	26.1	849	1.41	-24	"	"	520
12:35	"	8.62	26.2	851	1.33	-24	clear	"	521
Total purge time:			Bore constantly pumping						
Estimated total purge volume:			Na						
Time sample collected:			12:35						



<b>Assessment Details - 3315_A341636_01</b>	
Property name:	Unknown
Local bore name:	Unknown
Registered Number:	Unknown but believed to be RN 21848
Registered number source: (anecdotal, DNRM records, bore log etc)	DNRM database search
Assessment date and time:	05/02/2014 13:25
Field staff name:	C. Dilley
<b>Property Details</b>	
Lot and Plan number:	3315 A341636
<b>Interviewee Details</b>	
Interviewee relationship to property: (owner, tenant, manager etc)	Owner not available on day of assessment (see <i>general comments</i> below)
<b>Bore Details</b>	
Status of bore: (existing, abandoned, destroyed)	Existing
Uses of bore: (Stock, feedlot, domestic, irrigation etc)	Stock. Supplies cattle trough next to bore.
GDA Latitude (decimal deg.):	-27°20'42.55"S
GDA Longitude (decimal deg.):	151°40'9.31"E
Water licence number and details: (if available to view)	Unknown
<b>Bore Construction Details</b>	
Construction details / log available?	Unknown
Date Installed:	Unknown
Surface casing dia. (mm), and material:	Approx. 140mm, steel
Bore casing dia. (mm), and material:	As above
Bore casing stickup above ground (m):	0.38m
Aquifer: (& source of information: log, anecdotal)	Unknown
Top of screen (m bgl):	Unknown
Bottom of screen (m bgl):	Unknown
Top of open hole (m bgl):	Unknown
Total depth (m):	Unknown
Bore Condition Comments:	Bore is in good condition. Bore casing shows surface corrosion but structure appears sound. Unable to see inside the bore due to the bore cap.
<b>Bore Equipment Details</b>	
Pump Installed?	Yes
Pump type, make and model, power source:	Submersible, unknown make and model (control panels on the surface are Grundfos), Solar
Date installed:	Unknown
Date of most recent use	Unknown
Any repairs?	Unknown
Pump intake depth (m bgl):	Unknown
Interviewee's est. annual take (ML):	Unknown
Basis for estimate:	Unknown
Is bore use metered? Give details:	Unknown
Detail specific uses of the bore water:	Believed to just support stock. There is a trough next to the bore, which is fed from the storage tank the bore feeds in to.
Detail all other water sources for property:	Aware of 9 other bores on the property, that were visited as part of the assessment. On the day of assessment only 4 of these bores were equipped.
Typical pumping rate of bore (L/s):	Unknown
Does this rate vary annually or can the pump rate be varied?:	Unknown

<b>Assessment Details - 3315_A341636_01</b>	
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	Unknown
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na
<i>Describe riser, headwork and water distribution details:</i>	The outflow from the bore cap connects to a black poly pipe (approx 35mm). This then flows to a large black water tank 2m from the bore and enters at the top. This tank feeds a trough in the same field as the bore approx. 5 m away. The power cable leads from the solar panel into the bore through a hole in the bore cap.
<i>Equipment condition:</i>	The equipment appears to be in good condition and looks to be fairly new.
<i>Comments:</i>	When arrived at the bore the control panel had an error message "f3" on it that the landholder was not aware of. Therefore a sample could not be taken from this bore.
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Unknown – Unable to dip because of the bore cap. No airline is present.
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Unknown
<i>Water level measuring point</i>	Na
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Unknown
<i>Comments:</i>	
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	Unknown
<i>Any account of gas in the bore from interviewee?</i>	Unknown
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	The bore is in the middle of a paddock and livestock use the water trough next to the bore. There are some remains of the old windmill that used to previously be on the site and an old water tank that is no longer used. As the bore is fairly well sealed the potential for contamination is low.
<i>Water quality sample collected during this assessment?</i>	No, Unable to sample on day of assessment due to mechanical problem with the pump.
<i>Sample type: (primary, duplicate, field blank)</i>	Na
<b>General Comments</b>	
The landholder was unavailable to assist or to be interviewed during the survey.	
<b>Pictures</b>	

**Assessment Details - 3315\_A341636\_01**



<b>Assessment Details - 19_RP36468_01</b>	
<i>Property name:</i>	Homeward Vale
<i>Local bore name:</i>	Point of hill bore
<i>Registered Number:</i>	Unknown but believed to be RN 83479
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	05/02/2014 14:30
<i>Field staff name:</i>	C. Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Stock
<i>GDA Latitude (decimal deg.):</i>	27°19'50.40"S
<i>GDA Longitude (decimal deg.):</i>	151°38'31.61"E
<i>Water licence number and details: (if available to view)</i>	Not available
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	No
<i>Date Installed:</i>	Unknown
<i>Surface casing dia. (mm), and material:</i>	140mm (estimated as unable to measure because of steel clamp), Steel
<i>Bore casing dia. (mm), and material:</i>	Believed to be as above
<i>Bore casing stickup above ground (m):</i>	0.63 m
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Unknown
<i>Top of screen (m bgl):</i>	Unknown
<i>Bottom of screen (m bgl):</i>	Unknown
<i>Top of open hole (m bgl):</i>	Unknown
<i>Total depth (m):</i>	Unknown - Unable to measure on day of assessment because the bore is fully sealed.
<i>Bore Condition Comments:</i>	Unable to see top of bore as covered by a 6 inch steel clamp to hold the rising main in place.
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	Yes
<i>Pump type, make and model, power source:</i>	Windmill pump (Southern cross windmill), unknown make and model.
<i>Date installed:</i>	Unknown
<i>Date of most recent use</i>	On constantly. Break regularly applied but still pumps with brake on.
<i>Any repairs?</i>	2012 - leathers in windmill pump replaced
<i>Pump intake depth (m bgl):</i>	Anecdotal from Landholder: 6-7 length of pipe estimated 120-140 feet (36.6-42.7m)
<i>Interviewee's est. annual take (ML):</i>	Minimum of 0.44ML
<i>Basis for estimate:</i>	For 6 months of the year the landholder has approximately 80 head of cattle. The landholder estimates the cattle requires 30 L of water each per day. This is believed to be an underestimate of the true usage because even when the brake is on the windmill can still pump and the water is allowed to overflow.
<i>Is bore use metered? Give details:</i>	No
<i>Detail specific uses of the bore water:</i>	Water for stock, 60-80 head for 6 months of the year.
<i>Detail all other water sources for</i>	9-10 working bores, 3-4 dams and use creek for some stock.



<b>Assessment Details - 19_RP36468_01</b>	
<i>property:</i>	
<i>Typical pumping rate of bore (L/s):</i>	Na
<i>Does this rate vary annually or can the pump rate be varied?:</i>	When no cattle in the paddock the landholder will apply the brake to the windmill but the windmill can still pump.
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	No
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	0.4 L/s
<i>Describe riser, headwork and water distribution details:</i>	At approximately 0.74 m above ground level above the bore outflows from the rising main. This connects to a short piece of poly pipe (diameter approx. 40mm). This connects to a galvanised steel pipe laid on the ground (approx 40mm diameter). This runs across the ground to a green water tank approx 40m away.
<i>Equipment condition:</i>	The windmill appears in good working condition and is well sealed because of the steel clamp. The pipes above ground are in a good condition.
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Unknown
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Unknown
<i>Water level measuring point</i>	Na
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Unknown
<i>Comments:</i>	Unable to measure the water level because the bore is fully sealed.
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	No
<i>Any account of gas in the bore from interviewee?</i>	No
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	When the water storage tank overflows it runs in a channel right past the windmill bore. The bore is well sealed, so reduces the potential for contamination. The paddock is grazed but the windmill structure will help protect the bore from cattle damage.
<i>Water quality sample collected during this assessment?</i>	Yes
<i>Sample type: (primary, duplicate, field blank)</i>	Primary
<b>General Comments</b>	
Sample taken at outflow before water storage tank. The bore set up meant it was more difficult to take sample at the bore.	
Windmill has brake on when arrived but is still pumping, so has been purging all day. When the windmill brake was taken off the flow increased slightly.	
<b>Pictures</b>	

**Assessment Details - 19\_RP36468\_01**



**Assessment Details - 19\_RP36468\_01**

Property name: Homeward Vale		Bore name & RN: Point of hill bore		Sampling date: 05/02/2014		Sample collection point: At outflow before water storage tank		Comments:	
Time	Flow Rate (L/s)	pH	Temp (°C)	EC (µS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Water Appearance /Colour	Odour?	TDS (mg/L)
3:07	0.23	8.11	26.1	1249	2.01	109	Clear	None	777
3:13	0.208	8.36	25.9	1264	2.67	55	"	"	780
3:20	0.2	8.5	25.6	1254	1.05	30	"	"	782
3:36		8.53	25.5	1247	1.14	-22	"	"	778
3:43	-	8.62	25.6	1246	1.27	-27	Some small orange flakes in bore (corroded casing?)	"	777
3:53	0.147	8.64	25.5	1249	1.35	-27	"	"	780
4:03	0.4	8.70	25.3	1243	1.16	-27	Small pieces of organic matter (disturbance to the outflow pipe?)	"	776
4:07	-	8.71	25.3	1249	1.12	-24	"	"	778
4:23	0.3125	8.67	24.8	1245	0.67	-20	"	"	777
4:26	-	8.68	24.7	1250	1.49	-18	"	"	778
4:30	-	8.73	24.7	1249	1.45	-17	"	"	778
Total purge time:			Na - Windmill had been purging prior to site visit						
Estimated total purge volume:			Na						
Time sample collected:			4:30						

<b>Assessment Details - 20_RP36468_01</b>	
<i>Property name:</i>	Homeward Vale
<i>Local bore name:</i>	Mono bore
<i>Registered Number:</i>	Unknown but believed to be RN 19822 or RN 83478
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	05/02/2014 14:55
<i>Field staff name:</i>	C Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	20 RP36468
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	Son of owner
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Stock and domestic
<i>GDA Latitude (decimal deg.):</i>	27°19'41.18"S
<i>GDA Longitude (decimal deg.):</i>	151°38'27.61"E
<i>Water licence number and details: (if available to view)</i>	Na
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	No
<i>Date Installed:</i>	Pre 1970 (anecdotal from interviewee)
<i>Surface casing dia. (mm), and material:</i>	White PVC casing appears to be the surface and bore casing. The mono pump head works, which are steel and heavily corroded, cover the bore casing making measurement difficult. Estimated 125mm.
<i>Bore casing dia. (mm), and material:</i>	As above
<i>Bore casing stickup above ground (m):</i>	0.52m
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Anecdotal from interviewee : Basalt
<i>Top of screen (m bgl):</i>	Unknown
<i>Bottom of screen (m bgl):</i>	Unknown
<i>Top of open hole (m bgl):</i>	Unknown
<i>Total depth (m):</i>	Anecdotal from brother of owner - 200ft (60m).
<i>Bore Condition Comments:</i>	The bore has been set in a monument, which appears to be an old oil drum filled with cement supported by wooden stakes. There is a gap below the monument where the pvc casing can be seen. It appears the monument is used to support the mono pump steel head works (see photo)
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	Yes
<i>Pump type, make and model, power source:</i>	Mono pump, Unknown model, petrol motor (Honda GX140).
<i>Date installed:</i>	Unknown
<i>Date of most recent use</i>	2/02/2014
<i>Any repairs?</i>	No
<i>Pump intake depth (m bgl):</i>	Unknown
<i>Interviewee's est. annual take (ML):</i>	1.87ML
<i>Basis for estimate:</i>	The landholder estimates that he uses this bore 10 hours per week. The average flow rate measured during the bore assessment was 1L/s.
<i>Is bore use metered? Give details:</i>	No
<i>Detail specific uses of the bore water:</i>	Mainly for domestic at present but the bore is a backup for the windmill bores. The bore is set up for the feedlot that used to be located near the owners

<b>Assessment Details - 20_RP36468_01</b>	
	property. When initially used the feedlot would almost require the bore to run for 24 hours (feedlot unused for 15 years).
<i>Detail all other water sources for property:</i>	9-10 working bores, 3-4 dams and use creek for some stock.
<i>Typical pumping rate of bore (L/s):</i>	Anecdotal from interviewee: 2,000 l/hour (0.55 L/s)
<i>Does this rate vary annually or can the pump rate be varied?:</i>	Pump rate is never varied but can be adjusted on the petrol motor.
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	No seasonal variation
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	1.1 L/s
<i>Describe riser, headwork and water distribution details:</i>	The petrol motor sits approx 1.5 m from the bore. It is sitting on an old oil drum. The belts that drive the pump runs to the top of the mono pump (see photos). The mono pump is clamped to the top of the pvc casing. The bottom half of the mono pump is heavily corroded. The outflow from the bore is at approximately 0.6m above ground level. The water flows through a steel outflow pipe and then connects to a black poly pipe. This poly pipe becomes buried before leaving the bore shed. On the hill approx 200m away there is a valve in the ground which can enable the LH to direct the water towards tanks near the house or to a nearby water tank for cattle use. Windmill bore on property also feeds into this tank.
<i>Equipment condition:</i>	The equipment is old and corroded but appears to be in good working condition. The storage shed which completely covers the bore and the generator has reduced the impacts of the elements on the equipment and also protected it from cattle damage. The generator appears to have leaked oil and fuel over time. The bottom half of the mono pump is heavily corroded but the equipment appears to be in good working condition.
<i>Comments:</i>	
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Na
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Na
<i>Water level measuring point</i>	Na
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	Na
<i>Comments:</i>	No airline and unable to dip because the bore is fully sealed.
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	No
<i>Any account of gas in the bore from interviewee?</i>	No
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	The generator is sitting on an old rusty fuel drum. The petrol generator has leaked fuel/oil over its lifetime. There are fuel storage drums and oil bottles in the shed, which are used to the running and maintenance of the bore but could be sources of contamination. The bore is well sealed, limiting potential contamination.
<i>Water quality sample collected during this assessment?</i>	Y
<i>Sample type: (primary, duplicate, field blank)</i>	Primary
<b>General Comments</b>	



**Assessment Details - 20\_RP36468\_01**

The sample was taken on the 05/02/2014 when the landholder was present to operate the pump. The bore inspection was conducted on the 06/02/2014 at 9am. The sample point was the outflow to the storage tank 200m away. All water was directed to this point. No water was going towards the storage tanks at the house. There were no other points before the outflow at the tank, which were suitable to sample from.

**Pictures**

**Assessment Details - 20\_RP36468\_01**

Property name: Homeward Vale		Bore name & RN: Mono bore		Sampling date: 05/02/2014		Sample collection point: At bore outflow before the water storage tank on the hill.		Comments:	
Time	Flow Rate (L/s)	pH	Temp (°C)	EC (µS/cm)	Dissolved Oxygen (mg/L)	Redox (mV)	Water Appearance /Colour	Odour?	TDS (mg/L)
14:55	Pump on								
3:05	1	7.70	26.9	1028	2.84	155	clear	None	645
3:10	1	8.27	24.9	1095	1.0	88	"	"	676
3:17	1	8.48	24.6	1130	0.42	44	"	"	703
3:25	Na	8.58	24.6	1143	0.43	18	"	"	712
3:33	0.9	8.58	24.7	1152	0.45	-23	"	"	717
3:40	1	8.63	24.6	1160	0.34	-24	"	"	725
3:46	Na	8.71	24.5	1173	0.47	-26	Some minor black sediment	"	731
3:50	1.1	8.68	24.5	1169	0.45	-30	clear	"	727
3:57	1	8.71	24.5	1179	1	-24	Some minor black sediment	"	734
4:01	Na	8.69	24.2	1193	0.61	-27	"	"	742
4:10	1	8.73	24.4	1191	0.37	-23	"	"	742
4:13	Na	8.71	24.2	1191	0.98	-23	"	"	740
4:16	Na	8.70	24.1	1196	1.18	-19	"	"	743
Total purge time:			81 mins						
Estimated total purge volume:			4860L						
Time sample collected:			16:16						

<b>Assessment Details - 22_RP36468_01</b>	
<i>Property name:</i>	Homeward Vale
<i>Local bore name:</i>	New paddock mill bore
<i>Registered Number:</i>	Unknown, but believed to be RN 19561.
<i>Registered number source: (anecdotal, DNRM records, bore log etc)</i>	DNRM database search
<i>Assessment date and time:</i>	06/02/2014 10:30
<i>Field staff name:</i>	C Dilley
<b>Property Details</b>	
<i>Lot and Plan number:</i>	22 RP36468
<b>Interviewee Details</b>	
<i>Interviewee relationship to property: (owner, tenant, manager etc)</i>	Son of owner
<b>Bore Details</b>	
<i>Status of bore: (existing, abandoned, destroyed)</i>	Existing and equipped but currently not working. Interviewee believes a rod has broken and this has not been fixed.
<i>Uses of bore: (Stock, feedlot, domestic, irrigation etc)</i>	Stock
<i>GDA Latitude (decimal deg.):</i>	27°19'13.05"S
<i>GDA Longitude (decimal deg.):</i>	151°38'17.02"E
<i>Water licence number and details: (if available to view)</i>	Na
<b>Bore Construction Details</b>	
<i>Construction details / log available?</i>	No
<i>Date Installed:</i>	Anecdotal from interviewee: Pre 1970
<i>Surface casing dia. (mm), and material:</i>	152mm, steel (measured)
<i>Bore casing dia. (mm), and material:</i>	As above
<i>Bore casing stickup above ground (m):</i>	0.235m
<i>Aquifer: (&amp; source of information: log, anecdotal)</i>	Anecdotal Basalt.  Anecdotal from brother of owner: "the drillers stopped when entered coal when extending the bore to 217ft"
<i>Top of screen (m bgl):</i>	Estimated to be 54mbgl (177ft 4inches based on anecdotal info from brother of owner that there was 39ft 6 inches (12m) of screen)
<i>Bottom of screen (m bgl):</i>	Estimated to be 66.1mbgl (217ft anecdotal from brother of owner)
<i>Top of open hole (m bgl):</i>	Na
<i>Total depth (m):</i>	Measured: 63.26mbgl TD or Obstruction.  The brother of the owner had a small book of information, which contained the following information for this bore: - 51.8m (170ft) deep in 1933. - Cleaned out on 1/4/1968 and drilled to 66.1m (217 feet).
<i>Bore Condition Comments:</i>	Bore is old but in good condition. The landholder has said that one of the bore rods has broken and needs replacing but he hasn't yet done this When dipping the bore debris could be heard falling into the water, which could be corroded casing.
<b>Bore Equipment Details</b>	
<i>Pump Installed?</i>	Yes
<i>Pump type, make and model, power source:</i>	Windmill, Alderdyce.
<i>Date installed:</i>	Pump installed in 1988. Latest pump (installed in 2009) was a replacement for older pump. New southern cross mill installed 24/03/1933.
<i>Date of most recent use</i>	Bore stopped being used 6 months ago. Approximately in August 2013.
<i>Any repairs?</i>	Replacement of pipes is required every couple of years but this is only for the

<b>Assessment Details - 22_RP36468_01</b>	
	odd replacement. The wooden post the windmill is set on was replaced on 4/4/61.
<i>Pump intake depth (m bgl):</i>	120-140ft anecdotal from D cooke based on number of rods in the bore.
<i>Interviewee's est. annual take (ML):</i>	0.216ML (currently not used)
<i>Basis for estimate:</i>	80 head of cattle use this bore for 3 months of the year. Landholder estimates that his cattle require approx. 30L of water per day. When there are no cattle in the field the brake is applied to the bore.
<i>Is bore use metered? Give details:</i>	No
<i>Detail specific uses of the bore water:</i>	Stock water for 80 head of cattle, 3 months of the year.
<i>Detail all other water sources for property:</i>	9-10 working bores, 3-4 dams and use creek for some stock.
<i>Typical pumping rate of bore (L/s):</i>	Na
<i>Does this rate vary annually or can the pump rate be varied?:</i>	Na
<i>Typical duration and frequency of pumping: (any seasonal variations?)</i>	All year round, no seasonal variation.
<i>Measured Maximum Flow Rate of Bore and Headworks at Site Visit (L/s)</i>	Na
<i>Describe riser, headwork and water distribution details:</i>	The riser is held in place by two wooden stakes and a cross beam. The riser is secured by a clamp resting on this cross beam and a brace is used to also secure this. The outflow from the bore is approx. 3m agl. This would have flowed through a steel pipe and into the top of a black water storage tank approx. 5 m away. The 5,000 gallon tank has a hole in the bottom (anecdotal from brother of owner).
<i>Equipment condition:</i>	Apart from the broken rod the landholder indicates that the windmill is in good working condition.
<i>Comments:</i>	Windmill is currently chained off.
<b>Water Details</b>	
<i>Standing water level (m bgl): (measured or anecdotal)</i>	Measured: 21.42 mbgl
<i>Stable pumping water level (m bgl): (measured, including mins after pump on)</i>	Na
<i>Water level measuring point</i>	TC
<i>Interviewee / owner understanding of typical SWL / PWL (m bgl):</i>	The brother of the owner estimated the water level at this bore to be 36.6mbgl (120ft)  From the small bore book thebrother of the owner has the water level over time has been measured as follows: - march 1933 = 19.8m (65ft) to water - 1968 = 19.8m (65 foot from top of bore when cleaned out and drilled)
<i>Comments:</i>	
<b>Water Sampling Details</b>	
<i>Any historic water quality data available from owner?</i>	No
<i>Any account of gas in the bore from interviewee?</i>	No
<i>Any potential for contamination at bore? (fuel storage, open bore casing, no stickup, aquifer intermixing from casing degradation)</i>	The bore is in an open area. There is very few potential sources of contamination. The bore has a small tin cap on, which provides some protection from organic matter falling into the bore but due to the little bore casing stickup there is potential for contamination to enter the bore. The windmill structure protects the bore from damage from cattle.

**Assessment Details - 22\_RP36468\_01**

Water quality sample collected during this assessment?	No
Sample type: (primary, duplicate, field blank)	Na

**General Comments**

Brother of owner comments that the "Bore used to give water for original sheep station. Trough was towards the bottom of the hill."

**Pictures**





## Appendix A. **Water Quality Laboratory Results**

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EB1402896</b> <b>Client</b> : <b>SINCLAIR KNIGHT MERZ</b> <b>Contact</b> : <b>MR DERWIN LYONS</b> <b>Address</b> : <b>P O BOX 3848</b> <b>SOUTH BRISBANE QLD, AUSTRALIA 4101</b> <b>E-mail</b> : <b>dlyons@globalskm.com</b> <b>Telephone</b> : <b>+61 07 3026 7100</b> <b>Facsimile</b> : <b>+61 07 3026 7300</b> <b>Project</b> : <b>QE06644 35 New Acland Baseline</b> <b>Order number</b> : <b>QE06644.035</b> <b>C-O-C number</b> : <b>----</b> <b>Sampler</b> : <b>Christoper Dilley</b> <b>Site</b> : <b>----</b>  <b>Quote number</b> : <b>EN/003/13</b>	<b>Page</b> : <b>1 of 3</b> <b>Laboratory</b> : <b>Environmental Division Brisbane</b> <b>Contact</b> : <b>Dave Gitsham</b> <b>Address</b> : <b>2 Byth Street Stafford QLD Australia 4053</b>  <b>E-mail</b> : <b>dave.gitsham@alsglobal.com</b> <b>Telephone</b> : <b>+61 7 3552 8658</b> <b>Facsimile</b> : <b>+61 7 3352 3662</b> <b>QC Level</b> : <b>NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>  <b>Date Samples Received</b> : <b>07-FEB-2014</b> <b>Issue Date</b> : <b>14-FEB-2014</b>  <b>No. of samples received</b> : <b>2</b> <b>No. of samples analysed</b> : <b>2</b>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### *Signatories*

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Shobhna Chandra	Metals Coordinator	Sydney Inorganics

Page : 2 of 3  
Work Order : EB1402896  
Client : SINCLAIR KNIGHT MERZ  
Project : QE06644 35 New Acland Baseline

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### **General Comments**

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Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

Client sampling date / time

				B_Heilig_01	B_Heilig_02	----	----	----
				03-FEB-2014 16:15	03-FEB-2014 15:00	----	----	----
Compound	CAS Number	LOR	Unit	EB1402896-001	EB1402896-002	----	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	43	38	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	177	310	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	220	349	----	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	4	18	----	----	----
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	178	382	----	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	2	12	----	----	----
Magnesium	7439-95-4	1	mg/L	<1	2	----	----	----
Sodium	7440-23-5	1	mg/L	220	364	----	----	----
Potassium	7440-09-7	1	mg/L	1	3	----	----	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Copper	7440-50-8	0.001	mg/L	0.001	<0.001	----	----	----
Manganese	7439-96-5	0.001	mg/L	0.013	0.005	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Iron	7439-89-6	0.05	mg/L	0.06	0.13	----	----	----
<b>EK040P: Fluoride by PC Titrator</b>								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.4	----	----	----
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.23	----	----	----
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.1	0.2	----	----	----
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
^ Total Nitrogen as N	----	0.1	mg/L	0.1	0.4	----	----	----
<b>EN055: Ionic Balance</b>								
Total Anions	----	0.01	meq/L	9.50	18.1	----	----	----
Total Cations	----	0.01	meq/L	9.69	16.7	----	----	----
Ionic Balance	----	0.01	%	0.97	4.20	----	----	----



## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EB1402894</b> <b>Client</b> : <b>SINCLAIR KNIGHT MERZ</b> <b>Contact</b> : <b>MR DERWIN LYONS</b> <b>Address</b> : <b>P O BOX 3848</b> <b>SOUTH BRISBANE QLD, AUSTRALIA 4101</b> <b>E-mail</b> : <b>dlyons@globalskm.com</b> <b>Telephone</b> : <b>+61 07 3026 7100</b> <b>Facsimile</b> : <b>+61 07 3026 7300</b> <b>Project</b> : <b>QE06644 35 New Acland Baseline</b> <b>Order number</b> : <b>QE06644.035</b> <b>C-O-C number</b> : <b>----</b> <b>Sampler</b> : <b>Christoper Dilley</b> <b>Site</b> : <b>----</b>  <b>Quote number</b> : <b>EN/003/13</b>	<b>Page</b> : <b>1 of 3</b> <b>Laboratory</b> : <b>Environmental Division Brisbane</b> <b>Contact</b> : <b>Dave Gitsham</b> <b>Address</b> : <b>2 Byth Street Stafford QLD Australia 4053</b>  <b>E-mail</b> : <b>dave.gitsham@alsglobal.com</b> <b>Telephone</b> : <b>+61 7 3552 8658</b> <b>Facsimile</b> : <b>+61 7 3352 3662</b> <b>QC Level</b> : <b>NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>  <b>Date Samples Received</b> : <b>07-FEB-2014</b> <b>Issue Date</b> : <b>17-FEB-2014</b>  <b>No. of samples received</b> : <b>2</b> <b>No. of samples analysed</b> : <b>2</b>
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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Shobhna Chandra	Metals Coordinator	Sydney Inorganics

Page : 2 of 3  
Work Order : EB1402894  
Client : SINCLAIR KNIGHT MERZ  
Project : QE06644 35 New Acland Baseline

---



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LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				G_Cooke_05	G_Cooke_04	---	---	---
				05-FEB-2014 16:16	05-FEB-2014 16:30	---	---	---
Compound	CAS Number	LOR	Unit	EB1402894-001	EB1402894-002	---	---	---
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	---	---	---
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	57	62	---	---	---
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	280	306	---	---	---
Total Alkalinity as CaCO3	----	1	mg/L	337	368	---	---	---
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	---	---	---
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	196	191	---	---	---
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	3	4	---	---	---
Magnesium	7439-95-4	1	mg/L	<1	<1	---	---	---
Sodium	7440-23-5	1	mg/L	282	300	---	---	---
Potassium	7440-09-7	1	mg/L	1	1	---	---	---
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	---	---	---
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	---	---	---
Copper	7440-50-8	0.001	mg/L	0.001	<0.001	---	---	---
Manganese	7439-96-5	0.001	mg/L	0.004	0.005	---	---	---
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	---	---	---
Iron	7439-89-6	0.05	mg/L	<0.05	0.10	---	---	---
<b>EK040P: Fluoride by PC Titrator</b>								
Fluoride	16984-48-8	0.1	mg/L	0.5	0.6	---	---	---
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	---	---	---
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	---	---	---
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
^ Total Nitrogen as N	----	0.1	mg/L	0.2	0.2	---	---	---
<b>EN055: Ionic Balance</b>								
Total Anions	----	0.01	meq/L	12.3	12.7	---	---	---
Total Cations	----	0.01	meq/L	12.4	13.3	---	---	---
Ionic Balance	----	0.01	%	0.68	2.00	---	---	---

## CERTIFICATE OF ANALYSIS

<b>Work Order</b> : <b>EB1402897</b> <b>Client</b> : <b>SINCLAIR KNIGHT MERZ</b> <b>Contact</b> : <b>MR DERWIN LYONS</b> <b>Address</b> : <b>P O BOX 3848</b> <b>SOUTH BRISBANE QLD, AUSTRALIA 4101</b> <b>E-mail</b> : <b>dlyons@globalskm.com</b> <b>Telephone</b> : <b>+61 07 3026 7100</b> <b>Facsimile</b> : <b>+61 07 3026 7300</b> <b>Project</b> : <b>QE06644 35 New Acland Baseline</b> <b>Order number</b> : <b>QE06644.035</b> <b>C-O-C number</b> : <b>----</b> <b>Sampler</b> : <b>Christoper Dilley</b> <b>Site</b> : <b>----</b>  <b>Quote number</b> : <b>EN/003/13</b>	<b>Page</b> : <b>1 of 4</b> <b>Laboratory</b> : <b>Environmental Division Brisbane</b> <b>Contact</b> : <b>Dave Gitsham</b> <b>Address</b> : <b>2 Byth Street Stafford QLD Australia 4053</b>  <b>E-mail</b> : <b>dave.gitsham@alsglobal.com</b> <b>Telephone</b> : <b>+61 7 3552 8658</b> <b>Facsimile</b> : <b>+61 7 3352 3662</b> <b>QC Level</b> : <b>NEPM 2013 Schedule B(3) and ALS QCS3 requirement</b>  <b>Date Samples Received</b> : <b>07-FEB-2014</b> <b>Issue Date</b> : <b>17-FEB-2014</b>  <b>No. of samples received</b> : <b>3</b> <b>No. of samples analysed</b> : <b>3</b>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



NATA Accredited Laboratory 825

Accredited for compliance with  
ISO/IEC 17025.

### Signatories

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics
Shobhna Chandra	Metals Coordinator	Sydney Inorganics





### **General Comments**

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.  
LOR = Limit of reporting  
^ = This result is computed from individual analyte detections at or above the level of reporting



## Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				J_Storey_01	J_Storey_02	J_Storey_07	----	----
				04-FEB-2014 14:40	04-FEB-2014 16:50	05-FEB-2014 12:35	----	----
Compound	CAS Number	LOR	Unit	EB1402897-001	EB1402897-002	EB1402897-003	----	----
<b>ED037P: Alkalinity by PC Titrator</b>								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	30	45	35	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	283	276	233	----	----
Total Alkalinity as CaCO3	----	1	mg/L	313	321	267	----	----
<b>ED041G: Sulfate (Turbidimetric) as SO4 2- by DA</b>								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	9	6	5	----	----
<b>ED045G: Chloride Discrete analyser</b>								
Chloride	16887-00-6	1	mg/L	117	125	117	----	----
<b>ED093F: Dissolved Major Cations</b>								
Calcium	7440-70-2	1	mg/L	68	2	2	----	----
Magnesium	7439-95-4	1	mg/L	74	<1	<1	----	----
Sodium	7440-23-5	1	mg/L	44	232	200	----	----
Potassium	7440-09-7	1	mg/L	4	1	1	----	----
<b>EG020F: Dissolved Metals by ICP-MS</b>								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Copper	7440-50-8	0.001	mg/L	0.001	0.001	0.005	----	----
Manganese	7439-96-5	0.001	mg/L	<0.001	0.010	0.006	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	0.08	0.05	----	----
<b>EK040P: Fluoride by PC Titrator</b>								
Fluoride	16984-48-8	0.1	mg/L	0.1	0.2	0.1	----	----
<b>EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser</b>								
Nitrite + Nitrate as N	----	0.01	mg/L	15.9	<0.01	0.04	----	----
<b>EK061G: Total Kjeldahl Nitrogen By Discrete Analyser</b>								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.7	0.2	0.1	----	----
<b>EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser</b>								
^ Total Nitrogen as N	----	0.1	mg/L	18.6	0.2	0.1	----	----
<b>EN055: Ionic Balance</b>								
Total Anions	----	0.01	meq/L	----	10.1	8.74	----	----
Total Anions	----	0.01	meq/L	10.9	----	----	----	----
Total Cations	----	0.01	meq/L	11.5	10.2	8.82	----	----
Ionic Balance	----	0.01	%	----	0.70	0.44	----	----



### Analytical Results

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

				J_Storey_01	J_Storey_02	J_Storey_07	----	----
				04-FEB-2014 14:40	04-FEB-2014 16:50	05-FEB-2014 12:35	----	----
				EB1402897-001	EB1402897-002	EB1402897-003	----	----
Compound	CAS Number	LOR	Unit					
<b>EN055: Ionic Balance - Continued</b>								
Ionic Balance	----	0.01	%	2.78	----	----	----	----