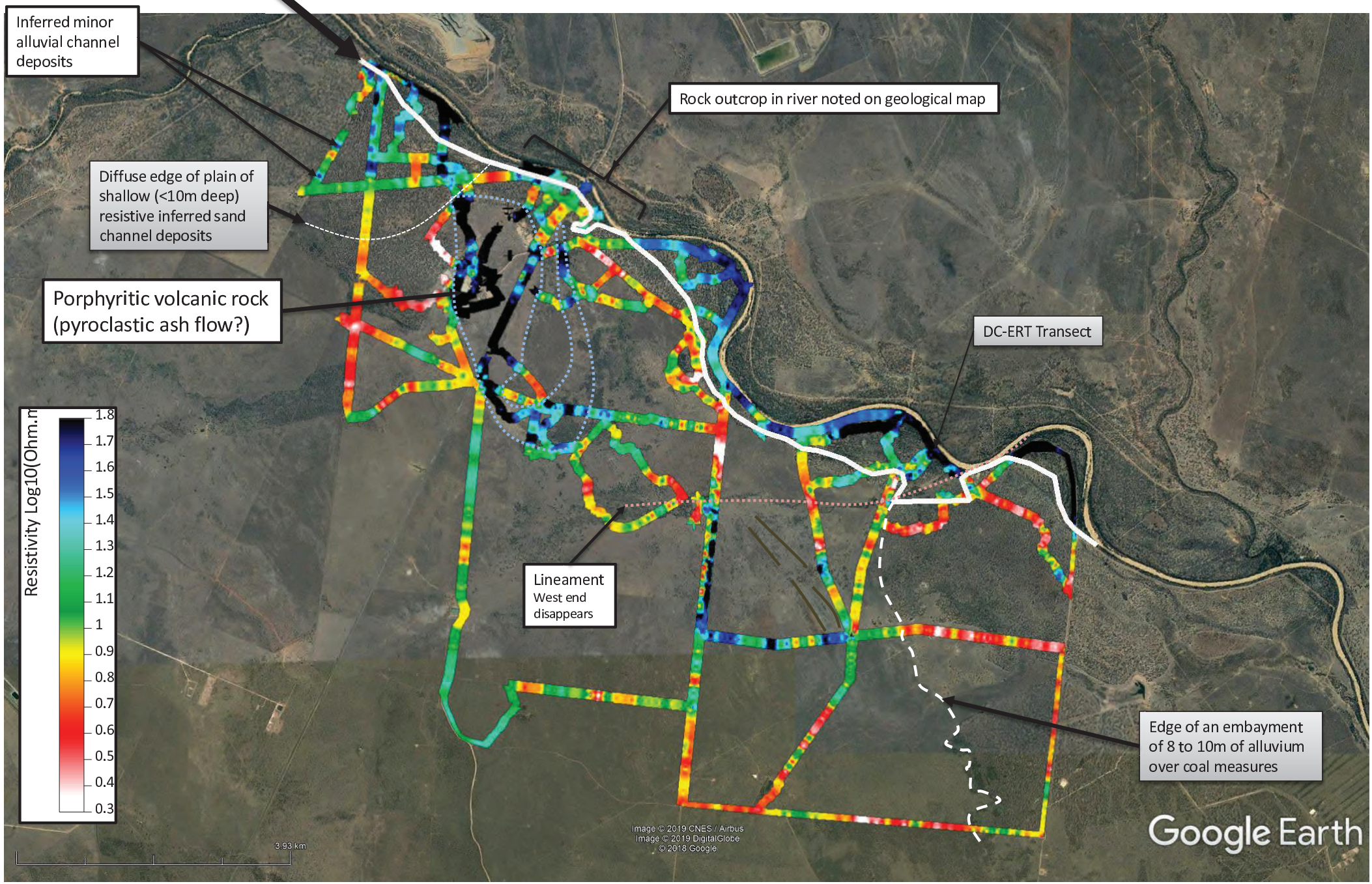
Appendix A1 - Geophysical Surveys

Executive Summary

- The Winchester South Project AgTEM survey covers river alluvium, dipping and faulted coal measures and igneous intrusions and/or extrusions. Of these, the igneous intrusions and/or extrusions are most electrically resistive, the river alluvium is consistently moderately resistive and the coal measures are of dipping layers of a range of resistivities.
- In cross section views, the river alluvium is very clearly defined contrasting against the dipping layers and heterogeneity of the coal seam hosting strata and the isolated igneous intrusions and/or extrusions. In plan view, depth slices interpretation is more complicated because depth slices may happen to be exactly at the depths of resistive layers in the coal measures making such layers difficult to distinguish from alluvium, without information from other depths. For this reason, interpretation should always be backed up by reference to the 3D projected vertical sections.
- AgTEM data has revealed many dipping layers and faults yet heir con in i y is complicated by intersection with the water table and rock weathering horizon such that dipping layers intersect, or are enhanced near the weathering horizon where groundwater salinity, therefore electrical conductivity, is higher. In the alluvial areas, there is no weathering horizon – it has been washed away and replaced with recent alluvium – this helps with identification of recent alluvium.
- Further definition of alluvium will require targeted drilling and comparison of drill hole logs with this geophysics. Drilling in the riverside area into diffuse AgTEM data transects without dipping laye ing is expected to identify some alluvium that is more clayey and more saline than the resistive Isaac River sand found at the surface.
- In he eas here is an embayment of 8 o 10m of flat layered alluvium covering the coal measures. In previous reports (Douglas Partners) it was mapped as a Cainozoic Sand Plain with somewhat different extent. In the AgTEM data it appears as a flat extensive resistive layer overlying conductive layer both of which overly the dipping coal measures.
- The Porphyritic igneous rock in the quarry in the west is very resistive and of complex extent. Origin is a matter of debate however its fine groundmass and irregular extent (not typical of viscous plutons) suggests that it is a welded pyroclastic ash flow. Microscopic analysis of this rock should identify welded glass shards if pyroclastic or fine crystals if it was lava flows/sills/dykes. Its relationship to the coal measures is complex with many dipping and abrupt boundaries as well as some horizontal lenses that lens into coal measure strata. A volcanic neck, sills, and flows may be present if the rock is not pyroclastic.
- There is little distinction in the AgTEM data between mapped Rewan Group and Blackwater Formation, perhaps largely because the previous mapping (government and Douglas Partners) is oversimplistic. Previously mapped and inferred faults line up with dipping and conductive features in the AgTEM data in most cases but the AgTEM data reveals more comprehensive and complicated faulting and lack of agreement with previous mapping near the river and the igneous rock.
- In summary, distinct resistive sandy alluvium along the Isaac River is clearly mapped by AgTEM. An embayment of uniform shallow cover over dipping coal measures is evident in the east. Elsewhere and beneath, dipping strata and faults in the coal measures are evident and igneous rock exists in the west which has complex interrelationship with the coal measures. The permeable riverside alluvium is very limited in extent and has not been intersected by any holes documented in previous reports all of which focused on the mining area away from the river.

Edge of Isaac River Alluvium (diffuse)

AgTEM Modelled resistivity @ 7m deep



Appendix A2

Groundwater Monitoring Network

Site ID	Easting	Northing	Elevation (mAHD)	Total depth (mbGL)	Target
C2105	634668	7541867	208.28	-	Leichhardt OB
C2136	631742	7547243	199.39	65.6	Leichhardt OB
G2304	633262	7543161	215.55	58	Vermont OB
G2307	630881	7547844	194.42	81	Vermont OB
R2008	630879	7542573	220.32	-	Leichhardt MB
R2009	631318	7542810	219.72	81	Interseam MB
R2010	631743	7543062	215.62	64.5	Leichhardt MB
R2032	630495	7545853	205.31	81.1	Leichhardt MB
R2034	629614	7545329	220.73	39	Interseam MB
R2035	629190	7545103	223.54	37.4	Vermont MB
R2054	629240	7548107	203.60	82.5	Interseam MB
R2055	628798	7547863	207.46	67.9	Vermont MB
Knob Hill 1	631005	7553874	191*	Not accessible	Isaac River Alluvium
Knob Hill 2	630431	7554061	193*	24.30	Isaac River Alluvium
Winnet Bore	634791	7550023	187*	18.12	Isaac River Alluvium

Notes: *Easting and northing coordinates are in GDA94, Zone 55*
mAHD – metres above Australian Height Datum
mbGL – metres below ground level
** - estimated from DEM*

Field Hydraulic Data

Results of Falling Head Tests

Hole-ID	Easting (AGD84)	Northing (AGD84)	RLGS (mAHD)	Test Interval	Test Interval From / To (m)	K (m/day)
C2105	634556.4	7541688.0	208.28	Leichhardt Seam	55.2 to 60.2	9.0E-03
C2131	629953.8	7545413.5	212.33	Interseam Sediments	35.3 to 40.3	2.2E-03
C2136	631625.8	7547063.6	199.39	Leichhardt Seam	48.5 to 53.5	1.0E-02
G2300	629378.9	7544420.7	226.44	Interseam Sediments	35.2 to 40.2	4.9E-03
G2301	630855.2	7542144.3	217.07	Interseam Sediments	27.9 to 32.9	1.3E-02
G2304	633149.5	7542982.4	215.55	Vermont Seam	54.1 to 59.1	1.9E-02
G2307	630769.4	7547665.4	194.42	Vermont Seam	74.0 to 79.0	8.2E-03
R2007	630335.3	7542150.5	223.94	Vermont Seam	35.3 to 40.3	NT
R2008	630767.2	7542394.3	220.32	Vermont Seam	61.0 to 66.0	4.0E-04
R2009	631202.6	7542630.2	219.72	Interseam Sediments	75.8 to 80.8	6.7E-05
R2010	631625.0	7542880.9	215.62	Leichhardt Seam	60.3 to 65.3	2.0E-02
R2030	629942.7	7544909.7	212.60	Interseam Sediments	46.2 to 51.2	NT
R2032	630379.4	7545671.0	205.31	Leichhardt Seam	76.7 to 81.7	2.4E-02
R2034	629501.5	7545149.7	220.73	Interseam Sediments	35.2 to 40.2	8.5E-01
R2035	629078.4	7544924.0	223.54	Vermont Seam	33.4 to 38.4	1.8E-01
R2054	629123.8	7547926.9	203.60	Interseam Sediments	78.9 to 83.9	7.9E-01
R2055	628686.1	7547683.8	207.46	Vermont Seam	63.8 to 68.8	7.1E-01
R2056	628252.0	7547443.2	209.55	Vermont Seam	27.7 to 32.7	NT

Core hydraulic conductivity test results

Hole ID	Whitehaven sample ID	Trilab sample ID	Depth from (m)	Depth to (m)	Orientation	Test result (m/s)	Test result (m/d)
WS3004L	130220	19070086A-CHP	24.56	24.78	Vertical	8.3×10^{-11}	7.17×10^{-6}
WS3004L	130221	19070087A-CHP	26.49	26.71	Vertical	10.0×10^{-12}	8.64×10^{-7}
		19070087B-CHP			Horizontal	2.5×10^{-11}	2.16×10^{-6}
WS3016L	130260	19070088A-CHP	112.02	112.29	Vertical	6.3×10^{-12}	5.44×10^{-7}
		19070088B-CHP			Horizontal	5.3×10^{-12}	4.58×10^{-7}
WS3017L	130262	19070090A-CHP	32.98	33.13	Vertical	2.2×10^{-12}	1.90×10^{-7}
		19070090B-CHP			Horizontal	5.5×10^{-10}	4.75×10^{-5}
WS3017L	130263	19070091A-CHP	35.97	36.14	Vertical	1.7×10^{-10}	1.47×10^{-5}
		19070091B-CHP			Horizontal	1.5×10^{-10}	1.3×10^{-5}

Winchester South packer testing results

Bore ID	Interval tested (m)	Comments	Lugeon pattern	Lugeon value	Hydraulic conductivity (m/s)	Hydraulic conductivity (m/d)
WS3182	85 - 87	Failed (packer could not seat), sandstone and mudstone, unfractured, massive	-	-	-	
	87 – 89	Mudstone and carbonaceous mudstone clasts, brecciated within sandstone matrix	Dilation – lowest lugeon recorded	0.38	1.10×10^{-8}	9.48×10^{-4}
	89 – 91	Mudstone, fractured and broken, slickensides	Turbulent – highest water pressure	0.40	1.14×10^{-8}	9.84×10^{-4}
	93 – 95	Mudstone and minor siltstone, unfractured, massive	Dilation – lowest lugeon recorded	0.54	1.18×10^{-8}	1.02×10^{-3}
WS3189	35 – 37	Coal	Wash out – highest value	0.52	2.39×10^{-8}	2.07×10^{-3}
	41 – 43	Mudstone, minor fracturing, calcite infill	Void filling – final value	0.04	1.19×10^{-9}	1.02×10^{-4}
	48 – 50	Mudstone, minor fracturing, calcite infill	Turbulent – highest water pressure	0.02	8.02×10^{-10}	6.93×10^{-5}
	54 – 56	Coal, sandstone, siltstone and mudstone, slickensides, calcite infill	Dilation – lowest lugeon recorded	0.04	9.95×10^{-10}	8.60×10^{-5}
	57 – 59	Siltstone and sandstone, relatively unfractured	Void filling – final value	0.08	2.57×10^{-9}	2.22×10^{-4}
	59 - 61	Failed (packer could not seat), siltstone and sandstone, relatively unfractured	-	-	-	

Appendix A3 - Groundwater Quality

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1925919**	Page	: 1 of 7
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 4012 - Winchester South	Date Samples Received	: 02-Oct-2019 09:35
Order number	: ----	Date Analysis Commenced	: 02-Oct-2019
C-O-C number	: ----	Issue Date	: 11-Oct-2019 13:43
Sampler	: THOMAS MUEHE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 3		
No. of samples analysed	: 3		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EG020-F (Dissolved Metals by ICP-MS) were found to be higher than EG020-T (Total Metals by ICP-MS) for sample EB1925919-001 (Winnet). This was confirmed by re-digestion and re-analysis.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Winnet	Knob Hill 2	Sw9	----	----
			Client sampling date / time	26-Sep-2019 12:30	26-Sep-2019 15:00	26-Sep-2019 10:00	----	----
Compound	CAS Number	LOR	Unit	EB1925919-001	EB1925919-002	EB1925919-003	--------	--------
				Result	Result	Result	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.37	7.55	8.28	----	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	6.18	2.97	1.77	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2820	929	779	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	1830	604	506	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	----	----	144	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	672	245	195	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	461	242	315	----	----
Total Alkalinity as CaCO3	----	1	mg/L	461	242	315	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	98	20	<1	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	649	145	48	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	109	47	42	----	----
Magnesium	7439-95-4	1	mg/L	97	31	22	----	----
Sodium	7440-23-5	1	mg/L	368	107	57	----	----
Potassium	7440-09-7	1	mg/L	<1	5	85	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.02	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.003	0.006	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.003	----	----
Barium	7440-39-3	0.001	mg/L	0.190	0.582	0.594	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Winnet	Knob Hill 2	Sw9	----	----
			Client sampling date / time	26-Sep-2019 12:30	26-Sep-2019 15:00	26-Sep-2019 10:00	----	----
Compound	CAS Number	LOR	Unit	EB1925919-001	EB1925919-002	EB1925919-003	--------	--------
				Result	Result	Result	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Cobalt	7440-48-4	0.001	mg/L	<0.001	**0.003**	**0.002**	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	**0.004**	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	**0.002**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.168**	**1.02**	**0.093**	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.002**	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	<0.001	**0.007**	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	**3.10**	**1.04**	**1.17**	----	----
Uranium	7440-61-1	0.001	mg/L	**0.008**	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	**0.01**	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	----	----
Boron	7440-42-8	0.05	mg/L	**0.33**	**0.15**	**0.22**	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	**1.80**	<0.05	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.54**	**0.28**	**2.00**	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	**0.003**	**0.006**	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Barium	7440-39-3	0.001	mg/L	**0.156**	**0.618**	**0.713**	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
Chromium	7440-47-3	0.001	mg/L	**0.001**	**0.001**	**0.004**	----	----
Cobalt	7440-48-4	0.001	mg/L	**0.001**	**0.003**	**0.004**	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	<0.001	**0.005**	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	**0.002**	----	----
Manganese	7439-96-5	0.001	mg/L	**0.178**	**1.10**	**0.623**	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Nickel	7440-02-0	0.001	mg/L	**0.002**	**0.001**	**0.010**	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Strontium	7440-24-6	0.001	mg/L	**2.68**	**0.891**	**1.07**	----	----
Uranium	7440-61-1	0.001	mg/L	**0.009**	<0.001	<0.001	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	**0.02**	----	----
Zinc	7440-66-6	0.005	mg/L	**0.008**	<0.005	<0.005	----	----
Boron	7440-42-8	0.05	mg/L	**0.38**	**0.17**	**0.24**	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Winnet	Knob Hill 2	Sw9	----	----
			Client sampling date / time	26-Sep-2019 12:30	26-Sep-2019 15:00	26-Sep-2019 10:00	----	----
Compound	CAS Number	LOR	Unit	EB1925919-001	EB1925919-002	EB1925919-003	--------	--------
				Result	Result	Result	----	----
EG020T: Total Metals by ICP-MS - Continued								
Iron	7439-89-6	0.05	mg/L	0.75	2.46	4.00	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	----	----
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	79.7	26.1	30.8	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.9	0.3	0.4	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	----	----	0.71	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	----	----	0.12	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	----	----	0.28	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	----	----	0.40	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	----	----	4.2	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	----	----	4.6	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	----	----	0.25	----	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	----	----	8.68	----	----
ø Total Anions	----	0.01	meq/L	29.6	9.34	----	----	----
ø Total Cations	----	0.01	meq/L	29.4	9.68	8.56	----	----
ø Ionic Balance	----	0.01	%	----	----	0.70	----	----
ø Ionic Balance	----	0.01	%	0.22	1.77	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Winnet	Knob Hill 2	Sw9	----	----
			Client sampling date / time	26-Sep-2019 12:30	26-Sep-2019 15:00	26-Sep-2019 10:00	----	----
Compound	CAS Number	LOR	Unit	EB1925919-001	EB1925919-002	EB1925919-003	--------	--------
				Result	Result	Result	----	----
EP080/071: Total Petroleum Hydrocarbons - Continued								
C29 - C36 Fraction	----	50	µg/L	<50	<50	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	----	----	----
Toluene	108-88-3	2	µg/L	<2	<2	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	----	----	----
^ Total Xylenes	----	2	µg/L	<2	<2	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	<1	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	<5	----	----	----
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	1.64	0.380	0.145	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	108	105	----	----	----
Toluene-D8	2037-26-5	2	%	98.0	97.2	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	103	99.6	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1925926**	Page	: 1 of 15
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 4012 - Winchester South	Date Samples Received	: 02-Oct-2019 09:35
Order number	: ----	Date Analysis Commenced	: 03-Oct-2019
C-O-C number	: ----	Issue Date	: 11-Oct-2019 14:06
Sampler	: THOMAS MUEHE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 11		
No. of samples analysed	: 11		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD
Minh Wills	2IC Organic Chemist	Brisbane Organics, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EG020-T (Total Metals by ICP-MS): Limit of reporting raised for sample EB1925926-007(C2105) due to matrix interference.
- EG020-F (Dissolved Metals by ICP-MS): Limit of reporting raised for sample EB1925926-007(C2105) due to matrix interference.
- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EG020-F (Dissolved Metals by ICP-MS) were found to be higher than EG020-T (Total Metals by ICP-MS) for sample EB1925926-009 (Knob Hill 1). This was confirmed by re-digestion and re-analysis.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	R2035	C2136
			Client sampling date / time	27-Sep-2019 11:00	27-Sep-2019 13:00	27-Sep-2019 16:00	28-Sep-2019 10:20	28-Sep-2019 12:20
Compound	CAS Number	LOR	Unit	EB1925926-001	EB1925926-002	EB1925926-003	EB1925926-004	EB1925926-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.52	7.97	7.80	7.61	7.25
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	37.4	40.6	36.1	15.0	21.8
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	16100	4220	9690	4820	16000
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	10500	2740	6300	3130	10400
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	1570	109	524	704	3200
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	606	706	340	758	676
Total Alkalinity as CaCO3	----	1	mg/L	606	706	340	758	676
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	3	143
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	5530	988	3230	1190	5710
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	293	24	124	170	483
Magnesium	7439-95-4	1	mg/L	204	12	52	68	485
Sodium	7440-23-5	1	mg/L	3410	976	1900	913	2830
Potassium	7440-09-7	1	mg/L	11	4	7	7	18
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	0.002
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	23.0	1.16	7.51	3.96	0.445
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	R2035	C2136
			Client sampling date / time	27-Sep-2019 11:00	27-Sep-2019 13:00	27-Sep-2019 16:00	28-Sep-2019 10:20	28-Sep-2019 12:20
Compound	CAS Number	LOR	Unit	EB1925926-001	EB1925926-002	EB1925926-003	EB1925926-004	EB1925926-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.043	0.015	0.028	0.107	0.016
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	35.5	2.28	13.6	17.1	47.2
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.020	<0.005	0.008	0.005	0.007
Boron	7440-42-8	0.05	mg/L	0.87	0.76	0.98	0.58	0.52
Iron	7439-89-6	0.05	mg/L	1.00	0.14	0.17	<0.05	3.49
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	7.40	0.23	12.0	6.44	6.54
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.002	0.004	0.004
Beryllium	7440-41-7	0.001	mg/L	0.002	<0.001	0.001	<0.001	0.001
Barium	7440-39-3	0.001	mg/L	25.9	1.22	10.0	4.44	0.392
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.006	<0.001	0.017	0.018	0.004
Cobalt	7440-48-4	0.001	mg/L	0.002	<0.001	0.006	0.003	0.002
Copper	7440-50-8	0.001	mg/L	0.011	0.002	0.029	0.010	0.006
Lead	7439-92-1	0.001	mg/L	0.016	<0.001	0.014	0.008	0.010
Manganese	7439-96-5	0.001	mg/L	0.140	0.046	0.166	0.244	0.120
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.004	<0.001	0.009	0.004	0.003
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	31.1	2.13	16.6	15.4	49.4
Uranium	7440-61-1	0.001	mg/L	0.002	<0.001	0.001	0.001	0.002
Vanadium	7440-62-2	0.01	mg/L	0.01	<0.01	0.03	0.03	0.01
Zinc	7440-66-6	0.005	mg/L	0.099	0.008	0.061	0.028	0.020
Boron	7440-42-8	0.05	mg/L	1.01	0.84	0.84	0.58	0.54
Iron	7439-89-6	0.05	mg/L	5.05	0.77	13.2	10.8	7.18
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	R2035	C2136
			Client sampling date / time	27-Sep-2019 11:00	27-Sep-2019 13:00	27-Sep-2019 16:00	28-Sep-2019 10:20	28-Sep-2019 12:20
Compound	CAS Number	LOR	Unit	EB1925926-001	EB1925926-002	EB1925926-003	EB1925926-004	EB1925926-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	13.2	14.0	12.6	19.1	20.3
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.1	0.6	0.3	0.1	<0.1
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	168	42.0	97.9	48.8	178
ø Total Cations	----	0.01	meq/L	180	44.7	93.3	54.0	188
ø Ionic Balance	----	0.01	%	3.42	3.19	2.41	5.06	2.74
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	R2035	C2136
			Client sampling date / time	27-Sep-2019 11:00	27-Sep-2019 13:00	27-Sep-2019 16:00	28-Sep-2019 10:20	28-Sep-2019 12:20
Compound	CAS Number	LOR	Unit	EB1925926-001	EB1925926-002	EB1925926-003	EB1925926-004	EB1925926-005
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	10.4	2.52	6.90	2.50	11.5
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	106	91.0	105	106	106
Toluene-D8	2037-26-5	2	%	99.7	99.2	97.3	98.7	97.3
4-Bromofluorobenzene	460-00-4	2	%	103	107	104	104	103

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	G2307	C2105	R2032	Knob Hill 1	R2055
			Client sampling date / time	28-Sep-2019 15:00	28-Sep-2019 17:00	29-Sep-2019 11:20	29-Sep-2019 12:00	29-Sep-2019 14:00
Compound	CAS Number	LOR	Unit	EB1925926-006	EB1925926-007	EB1925926-008	EB1925926-009	EB1925926-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.60	7.05	7.54	7.36	7.57
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	28.9	27.0	25.8	10.2	20.0
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	15200	27000	11400	6410	8200
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	9880	17600	7410	4170	5330
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	1980	5660	1450	1520	1120
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	306	377	483	399	556
Total Alkalinity as CaCO3	----	1	mg/L	306	377	483	399	556
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	441	<1
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	5390	9860	3810	1730	2580
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	377	1140	382	254	250
Magnesium	7439-95-4	1	mg/L	252	684	120	216	120
Sodium	7440-23-5	1	mg/L	2960	4670	2260	919	1540
Potassium	7440-09-7	1	mg/L	14	28	12	8	9
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.05	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	13.3	92.6	23.1	0.089	12.2
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.005	<0.001	0.003	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	G2307	C2105	R2032	Knob Hill 1	R2055
			Client sampling date / time	28-Sep-2019 15:00	28-Sep-2019 17:00	29-Sep-2019 11:20	29-Sep-2019 12:00	29-Sep-2019 14:00
Compound	CAS Number	LOR	Unit	EB1925926-006	EB1925926-007	EB1925926-008	EB1925926-009	EB1925926-010
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	**0.042**	**0.200**	**0.002**	**0.535**	**0.011**
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.005	<0.001	**0.001**	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.05	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**30.8**	**98.7**	**41.9**	**7.09**	**29.1**
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.005	<0.001	**0.010**	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.05	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	**0.019**	**0.038**	**0.022**	<0.005	**0.014**
Boron	7440-42-8	0.05	mg/L	**0.90**	**0.41**	**0.65**	**0.44**	**0.76**
Iron	7439-89-6	0.05	mg/L	**1.74**	**8.24**	**0.99**	**0.05**	**0.43**
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**2.85**	**0.54**	**0.65**	**0.02**	**0.11**
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	**0.002**	<0.005	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	**14.5**	**87.3**	**24.0**	**0.059**	**13.3**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0005	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	**0.004**	<0.005	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.005	<0.001	**0.002**	<0.001
Copper	7440-50-8	0.001	mg/L	**0.003**	<0.005	**0.002**	**0.008**	<0.001
Lead	7439-92-1	0.001	mg/L	**0.004**	<0.005	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	**0.089**	**0.231**	**0.014**	**0.558**	**0.010**
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	**0.002**	<0.005	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.05	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.005	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**33.4**	**111**	**42.8**	**7.10**	**24.6**
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.005	<0.001	**0.010**	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.05	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	**0.028**	**0.052**	**0.024**	<0.005	**0.007**
Boron	7440-42-8	0.05	mg/L	**1.10**	**0.50**	**0.80**	**0.49**	**0.89**
Iron	7439-89-6	0.05	mg/L	**4.03**	**10.0**	**1.89**	**0.06**	**0.48**
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	G2307	C2105	R2032	Knob Hill 1	R2055
			Client sampling date / time	28-Sep-2019 15:00	28-Sep-2019 17:00	29-Sep-2019 11:20	29-Sep-2019 12:00	29-Sep-2019 14:00
Compound	CAS Number	LOR	Unit	EB1925926-006	EB1925926-007	EB1925926-008	EB1925926-009	EB1925926-010
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	16.4	17.3	14.1	48.9	14.2
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	0.1	0.2	0.4	0.2
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	158	286	117	66.0	83.9
ø Total Cations	----	0.01	meq/L	169	317	128	70.6	89.6
ø Ionic Balance	----	0.01	%	3.21	5.20	4.26	3.42	3.27
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	G2307	C2105	R2032	Knob Hill 1	R2055
			Client sampling date / time	28-Sep-2019 15:00	28-Sep-2019 17:00	29-Sep-2019 11:20	29-Sep-2019 12:00	29-Sep-2019 14:00
Compound	CAS Number	LOR	Unit	EB1925926-006	EB1925926-007	EB1925926-008	EB1925926-009	EB1925926-010
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	13.0	18.6	6.40	4.50	5.80
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	95.4	102	106	106	111
Toluene-D8	2037-26-5	2	%	99.4	101	97.6	99.0	101
4-Bromofluorobenzene	460-00-4	2	%	107	102	98.2	101	102

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2054	----	----	----	----
			Client sampling date / time	29-Sep-2019 15:40	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1925926-011	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.77	----	----	----	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	29.8	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	8000	----	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	5200	----	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	595	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	469	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	469	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	2520	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	179	----	----	----	----
Magnesium	7439-95-4	1	mg/L	36	----	----	----	----
Sodium	7440-23-5	1	mg/L	1670	----	----	----	----
Potassium	7440-09-7	1	mg/L	8	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	10.9	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2054	----	----	----	----
			Client sampling date / time	29-Sep-2019 15:40	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1925926-011	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	**0.003**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**19.2**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.012**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.81**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.50**	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**1.84**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**11.6**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.005**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.005**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.002**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.062**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.003**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**16.0**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.016**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.96**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**3.18**	----	----	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2054	----	----	----	----
			Client sampling date / time	29-Sep-2019 15:40	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1925926-011	--------	--------	--------	--------
				Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	**14.1**	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.1**	----	----	----	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	**80.4**	----	----	----	----
ø Total Cations	----	0.01	meq/L	**84.7**	----	----	----	----
ø Ionic Balance	----	0.01	%	**2.59**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2054	----	----	----	----
			Client sampling date / time	29-Sep-2019 15:40	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1925926-011	--------	--------	--------	--------
				Result	----	----	----	----
EP080: BTEXN - Continued								
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	5.65	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	110	----	----	----	----
Toluene-D8	2037-26-5	2	%	97.0	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	104	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1919655**	Page	: 1 of 11
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 4012 - Winchester South	Date Samples Received	: 31-Jul-2019 09:15
Order number	:	Date Analysis Commenced	: 31-Jul-2019
C-O-C number	: ----	Issue Date	: 07-Aug-2019 17:12
Sampler	: THOMAS MUEHE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 6		
No. of samples analysed	: 6		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD
Minh Wills	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Tom Maloney	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW2	SW4	SW9	Winnet	Knob Hill 1
			Client sampling date / time	28-Jul-2019 10:30	28-Jul-2019 13:00	28-Jul-2019 09:20	28-Jul-2019 12:00	28-Jul-2019 13:30
Compound	CAS Number	LOR	Unit	EB1919655-001	EB1919655-002	EB1919655-003	EB1919655-004	EB1919655-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.05	8.08	8.28	7.43	7.53
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	0.51	1.34	1.68	7.70	10.4
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	299	436	692	3260	7310
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	194	283	450	2120	4750
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	121	138	168	685	1640
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	145	135	294	500	467
Total Alkalinity as CaCO3	----	1	mg/L	145	135	294	500	467
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2	8	<1	93	487
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	10	48	39	790	1980
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	32	32	36	111	271
Magnesium	7439-95-4	1	mg/L	10	14	19	99	234
Sodium	7440-23-5	1	mg/L	13	36	50	463	973
Potassium	7440-09-7	1	mg/L	12	6	74	<1	8
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.003	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.168	0.188	0.497	0.180	0.082
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.001	<0.001	0.002
Copper	7440-50-8	0.001	mg/L	0.002	0.001	0.003	<0.001	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW2	SW4	SW9	Winnet	Knob Hill 1
			Client sampling date / time	28-Jul-2019 10:30	28-Jul-2019 13:00	28-Jul-2019 09:20	28-Jul-2019 12:00	28-Jul-2019 13:30
Compound	CAS Number	LOR	Unit	EB1919655-001	EB1919655-002	EB1919655-003	EB1919655-004	EB1919655-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.174	0.129	0.028	0.183	0.611
Molybdenum	7439-98-7	0.001	mg/L	0.001	<0.001	0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.003	0.002	0.006	0.002	0.002
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.608	0.378	1.02	3.21	7.91
Uranium	7440-61-1	0.001	mg/L	0.001	0.001	<0.001	0.009	0.012
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	0.018	0.005
Boron	7440-42-8	0.05	mg/L	0.07	0.06	0.16	0.38	0.43
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	2.10	2.27	1.97	0.26	0.02
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.004	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.203	0.221	0.674	0.179	0.090
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.003	0.004	0.005	0.003	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.003	0.002	0.006	0.001	0.003
Copper	7440-50-8	0.001	mg/L	0.005	0.006	0.007	0.009	0.003
Lead	7439-92-1	0.001	mg/L	0.001	0.002	0.003	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.317	0.233	0.760	0.189	0.671
Molybdenum	7439-98-7	0.001	mg/L	0.001	<0.001	0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	0.005	0.007	0.010	0.002	0.002
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.591	0.369	1.02	2.94	7.96
Uranium	7440-61-1	0.001	mg/L	0.001	0.001	<0.001	0.009	0.012
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.02	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.006	0.032	0.008	0.039	0.008
Boron	7440-42-8	0.05	mg/L	0.10	0.10	0.23	0.43	0.49
Iron	7439-89-6	0.05	mg/L	2.04	2.83	4.48	0.49	<0.05
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW2	SW4	SW9	Winnet	Knob Hill 1
			Client sampling date / time	28-Jul-2019 10:30	28-Jul-2019 13:00	28-Jul-2019 09:20	28-Jul-2019 12:00	28-Jul-2019 13:30
Compound	CAS Number	LOR	Unit	EB1919655-001	EB1919655-002	EB1919655-003	EB1919655-004	EB1919655-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	0.4	0.4	30.6	82.9	48.4
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.9	0.4	0.4
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.03	0.38	0.46	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.07	0.01	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.06	0.49	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.13	0.50	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	1.6	4.2	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	2.0	1.7	4.7	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.22	0.09	0.38	----	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	3.22	4.22	6.97	34.2	75.3
ø Total Cations	----	0.01	meq/L	3.29	4.47	7.43	33.8	75.3
ø Ionic Balance	----	0.01	%	1.10	2.88	3.15	0.56	<0.01
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	----	----	----	<20	<20
C10 - C14 Fraction	----	50	µg/L	----	----	----	<50	<50
C15 - C28 Fraction	----	100	µg/L	----	----	----	<100	<100
C29 - C36 Fraction	----	50	µg/L	----	----	----	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	----	----	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	----	----	----	<20	<20

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW2	SW4	SW9	Winnet	Knob Hill 1
			Client sampling date / time	28-Jul-2019 10:30	28-Jul-2019 13:00	28-Jul-2019 09:20	28-Jul-2019 12:00	28-Jul-2019 13:30
Compound	CAS Number	LOR	Unit	EB1919655-001	EB1919655-002	EB1919655-003	EB1919655-004	EB1919655-005
				Result	Result	Result	Result	Result
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued								
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	----	----	----	<20	<20
>C10 - C16 Fraction	----	100	µg/L	----	----	----	<100	<100
>C16 - C34 Fraction	----	100	µg/L	----	----	----	<100	<100
>C34 - C40 Fraction	----	100	µg/L	----	----	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	----	----	----	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	----	----	----	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	----	----	----	<1	<1
Toluene	108-88-3	2	µg/L	----	----	----	<2	<2
Ethylbenzene	100-41-4	2	µg/L	----	----	----	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	----	----	----	<2	<2
ortho-Xylene	95-47-6	2	µg/L	----	----	----	<2	<2
^ Total Xylenes	----	2	µg/L	----	----	----	<2	<2
^ Sum of BTEX	----	1	µg/L	----	----	----	<1	<1
Naphthalene	91-20-3	5	µg/L	----	----	----	<5	<5
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	**0.081**	**0.116**	**0.110**	**1.77**	**4.70**
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	----	----	----	**103**	**105**
Toluene-D8	2037-26-5	2	%	----	----	----	**98.5**	**100**
4-Bromofluorobenzene	460-00-4	2	%	----	----	----	**105**	**102**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Knob Hill 2	----	----	----	----
			Client sampling date / time	28-Jul-2019 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1919655-006	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.58	----	----	----	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	2.95	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	913	----	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	593	----	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	240	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	255	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	255	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	18	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	141	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	45	----	----	----	----
Magnesium	7439-95-4	1	mg/L	31	----	----	----	----
Sodium	7440-23-5	1	mg/L	105	----	----	----	----
Potassium	7440-09-7	1	mg/L	5	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.002	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.586	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	0.003	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Knob Hill 2	----	----	----	----
			Client sampling date / time	28-Jul-2019 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1919655-006	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	**1.08**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**1.12**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.009**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.15**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**1.00**	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**2.30**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.006**	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.730**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.010**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	**0.009**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.013**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.009**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**1.48**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.006**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.994**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	**0.01**	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.019**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.18**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**7.09**	----	----	----	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Knob Hill 2	----	----	----	----
			Client sampling date / time	28-Jul-2019 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1919655-006	--------	--------	--------	--------
				Result	----	----	----	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	**30.0**	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.3**	----	----	----	----
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	**9.45**	----	----	----	----
ø Total Cations	----	0.01	meq/L	**9.49**	----	----	----	----
ø Ionic Balance	----	0.01	%	**0.24**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Knob Hill 2	----	----	----	----
			Client sampling date / time	28-Jul-2019 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1919655-006	--------	--------	--------	--------
				Result	----	----	----	----
EP080: BTEXN - Continued								
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	0.325	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	104	----	----	----	----
Toluene-D8	2037-26-5	2	%	100	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	108	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1920474**	Page	: 1 of 11
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 4012 - Winchester South	Date Samples Received	: 07-Aug-2019 09:45
Order number	: ----	Date Analysis Commenced	: 07-Aug-2019
C-O-C number	: ----	Issue Date	: 15-Aug-2019 14:02
Sampler	: THOMAS MUEHE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 10		
No. of samples analysed	: 10		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020T (Total Metals) is less than EG020F (Dissolved Metals) for some samples. However, the difference is within experimental variation of the methods.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	C2105	R2035
			Client sampling date / time	29-Jul-2019 10:30	29-Jul-2019 12:30	29-Jul-2019 14:30	29-Jul-2019 17:20	30-Jul-2019 11:00
Compound	CAS Number	LOR	Unit	EB1920474-001	EB1920474-002	EB1920474-003	EB1920474-004	EB1920474-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.67	8.20	7.74	7.36	7.75
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	38.0	42.7	37.7	24.3	15.6
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	16800	4480	20100	22800	5100
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	10900	2910	13100	14800	3320
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	1340	93	1900	4170	611
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	690	795	432	457	839
Total Alkalinity as CaCO3	----	1	mg/L	690	795	432	457	839
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	2	3
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	5720	1050	7130	8240	1270
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	223	19	332	831	136
Magnesium	7439-95-4	1	mg/L	190	11	261	508	66
Sodium	7440-23-5	1	mg/L	3200	946	3780	3600	885
Potassium	7440-09-7	1	mg/L	11	3	14	25	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	0.002	0.010	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	26.2	1.22	26.9	62.7	4.14
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	C2105	R2035
			Client sampling date / time	29-Jul-2019 10:30	29-Jul-2019 12:30	29-Jul-2019 14:30	29-Jul-2019 17:20	30-Jul-2019 11:00
Compound	CAS Number	LOR	Unit	EB1920474-001	EB1920474-002	EB1920474-003	EB1920474-004	EB1920474-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.042	0.020	0.040	0.286	0.128
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	0.003	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	31.2	2.07	39.3	73.0	15.4
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.013	<0.005	0.017	0.035	0.005
Boron	7440-42-8	0.05	mg/L	0.89	0.78	1.06	0.34	0.54
Iron	7439-89-6	0.05	mg/L	1.13	0.11	1.65	10.4	0.30
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	6.72	0.13	4.89	38.3	0.72
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.003	0.042	<0.001
Beryllium	7440-41-7	0.001	mg/L	0.002	<0.001	0.001	0.013	<0.001
Barium	7440-39-3	0.001	mg/L	24.8	1.20	24.6	62.7	3.96
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0008	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.006	<0.001	0.007	0.056	0.001
Cobalt	7440-48-4	0.001	mg/L	0.002	<0.001	0.002	0.066	<0.001
Copper	7440-50-8	0.001	mg/L	0.010	0.002	0.013	0.318	<0.001
Lead	7439-92-1	0.001	mg/L	0.014	<0.001	0.006	0.178	<0.001
Manganese	7439-96-5	0.001	mg/L	0.136	0.023	0.084	3.23	0.151
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	0.003	<0.001
Nickel	7440-02-0	0.001	mg/L	0.004	<0.001	0.003	0.113	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	35.7	2.26	45.6	90.3	17.2
Uranium	7440-61-1	0.001	mg/L	0.002	<0.001	<0.001	0.011	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	<0.01	0.01	0.18	<0.01
Zinc	7440-66-6	0.005	mg/L	0.038	0.008	0.037	0.432	0.007
Boron	7440-42-8	0.05	mg/L	1.09	0.96	1.28	0.50	0.61
Iron	7439-89-6	0.05	mg/L	4.96	0.41	6.09	95.6	1.13
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	C2105	R2035
			Client sampling date / time	29-Jul-2019 10:30	29-Jul-2019 12:30	29-Jul-2019 14:30	29-Jul-2019 17:20	30-Jul-2019 11:00
Compound	CAS Number	LOR	Unit	EB1920474-001	EB1920474-002	EB1920474-003	EB1920474-004	EB1920474-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	**13.4**	**13.7**	**15.3**	**14.6**	**19.4**
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.1**	**0.6**	**0.2**	**0.2**	**0.1**
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	**175**	**45.5**	**210**	**242**	**52.6**
ø Total Cations	----	0.01	meq/L	**166**	**43.1**	**203**	**240**	**50.9**
ø Ionic Balance	----	0.01	%	**2.61**	**2.74**	**1.68**	**0.23**	**1.70**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	**80**	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	**1100**	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	**1050**	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	**2230**	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	**140**	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	**1860**	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	**680**	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	**2680**	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	**140**	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	C2105	R2035
			Client sampling date / time	29-Jul-2019 10:30	29-Jul-2019 12:30	29-Jul-2019 14:30	29-Jul-2019 17:20	30-Jul-2019 11:00
Compound	CAS Number	LOR	Unit	EB1920474-001	EB1920474-002	EB1920474-003	EB1920474-004	EB1920474-005
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	9.80	2.45	13.8	14.2	2.37
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	91.4	90.9	91.9	91.1	91.1
Toluene-D8	2037-26-5	2	%	101	100	101	101	102
4-Bromofluorobenzene	460-00-4	2	%	114	115	115	113	116

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	C2136	G2307	R2032	R2055	R2054
			Client sampling date / time	30-Jul-2019 13:40	30-Jul-2019 16:20	31-Jul-2019 11:00	31-Jul-2019 13:00	31-Jul-2019 16:00
Compound	CAS Number	LOR	Unit	EB1920474-006	EB1920474-007	EB1920474-008	EB1920474-009	EB1920474-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.46	7.76	7.74	7.80	7.97
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	21.5	29.0	27.0	20.7	31.8
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	16300	16200	11900	8430	8410
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	10600	10500	7740	5480	5470
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	2670	1760	1160	918	484
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	764	353	548	639	536
Total Alkalinity as CaCO3	----	1	mg/L	764	353	548	639	536
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	120	<1	<1	<1	<1
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	5620	5690	4000	2610	2650
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	364	311	280	188	136
Magnesium	7439-95-4	1	mg/L	428	240	111	109	35
Sodium	7440-23-5	1	mg/L	2560	2800	2110	1440	1610
Potassium	7440-09-7	1	mg/L	16	14	11	9	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.343	15.5	25.4	13.8	12.3
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	C2136	G2307	R2032	R2055	R2054
			Client sampling date / time	30-Jul-2019 13:40	30-Jul-2019 16:20	31-Jul-2019 11:00	31-Jul-2019 13:00	31-Jul-2019 16:00
Compound	CAS Number	LOR	Unit	EB1920474-006	EB1920474-007	EB1920474-008	EB1920474-009	EB1920474-010
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	**0.019**	**0.033**	**0.003**	**0.010**	**0.002**
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**37.7**	**26.8**	**35.2**	**23.7**	**16.7**
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	**0.007**	**0.012**	**0.034**	**0.037**	**0.007**
Boron	7440-42-8	0.05	mg/L	**0.46**	**0.97**	**0.70**	**0.80**	**0.84**
Iron	7439-89-6	0.05	mg/L	**2.68**	**1.41**	**0.95**	**0.44**	**0.44**
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.69**	**0.05**	**0.63**	**0.04**	**3.28**
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	**0.003**	<0.001	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	**0.351**	**14.4**	**23.6**	**12.8**	**11.8**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	**0.004**
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	**0.001**
Copper	7440-50-8	0.001	mg/L	**0.001**	<0.001	**0.001**	<0.001	**0.006**
Lead	7439-92-1	0.001	mg/L	**0.003**	<0.001	<0.001	<0.001	**0.008**
Manganese	7439-96-5	0.001	mg/L	**0.042**	**0.036**	**0.014**	**0.010**	**0.190**
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	**0.002**
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**43.9**	**32.4**	**41.7**	**27.8**	**18.8**
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	**0.008**	**0.012**	**0.020**	**0.009**	**0.016**
Boron	7440-42-8	0.05	mg/L	**0.58**	**1.20**	**0.86**	**0.99**	**1.14**
Iron	7439-89-6	0.05	mg/L	**3.22**	**1.63**	**1.72**	**0.54**	**4.42**
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	C2136	G2307	R2032	R2055	R2054
			Client sampling date / time	30-Jul-2019 13:40	30-Jul-2019 16:20	31-Jul-2019 11:00	31-Jul-2019 13:00	31-Jul-2019 16:00
Compound	CAS Number	LOR	Unit	EB1920474-006	EB1920474-007	EB1920474-008	EB1920474-009	EB1920474-010
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	**20.3**	**16.8**	**14.4**	**14.1**	**14.4**
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	**0.2**	**0.1**	**0.1**
EN055: Ionic Balance								
ø Total Anions	----	0.01	meq/L	**176**	**168**	**124**	**86.4**	**85.5**
ø Total Cations	----	0.01	meq/L	**165**	**157**	**115**	**81.2**	**79.9**
ø Ionic Balance	----	0.01	%	**3.26**	**3.12**	**3.60**	**3.09**	**3.38**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	C2136	G2307	R2032	R2055	R2054
			Client sampling date / time	30-Jul-2019 13:40	30-Jul-2019 16:20	31-Jul-2019 11:00	31-Jul-2019 13:00	31-Jul-2019 16:00
Compound	CAS Number	LOR	Unit	EB1920474-006	EB1920474-007	EB1920474-008	EB1920474-009	EB1920474-010
				Result	Result	Result	Result	Result
EP080: BTEXN - Continued								
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	10.2	12.4	6.15	5.50	5.48
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	91.5	92.7	89.9	93.4	93.2
Toluene-D8	2037-26-5	2	%	102	102	101	101	102
4-Bromofluorobenzene	460-00-4	2	%	115	116	116	114	115

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1911508**	Page	: 1 of 12
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 4012 - Winchester South	Date Samples Received	: 09-May-2019 12:20
Order number	:	Date Analysis Commenced	: 09-May-2019
C-O-C number	: ----	Issue Date	: 17-May-2019 08:32
Sampler	: Thomas Muehe		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 11		
No. of samples analysed	: 11		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD
Santusha Pandra	Organic Chemist	Brisbane Organics, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EG020-T (Total Metals by ICP-MS): Limit of reporting raised for sample EB1911508-004(C2105) due to matrix interference.
- EG035T (Total Mercury for FIMS): Limit of reporting sample EB1911508-004 was raised due to matrix interference.
- ED041G (Sulfate as SO4): Sample EB1911508_004 was diluted due to matrix interference. LOR adjusted accordingly.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	C2105	R2035
			Client sampling date / time	30-Apr-2019 10:45	30-Apr-2019 12:30	30-Apr-2019 13:20	30-Apr-2019 16:30	01-May-2019 10:00
Compound	CAS Number	LOR	Unit	EB1911508-001	EB1911508-002	EB1911508-003	EB1911508-004	EB1911508-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.64	8.00	7.23	6.97	7.33
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	35.5	41.2	42.7	25.3	15.5
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	11400	4230	7590	26900	4720
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	7410	2750	4930	17500	3070
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	768	94	246	5590	575
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	534	737	378	434	744
Total Alkalinity as CaCO3	----	1	mg/L	534	737	378	434	744
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2	<1	<1	<10	16
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	3770	978	2410	9800	1160
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	159	18	59	1200	133
Magnesium	7439-95-4	1	mg/L	90	12	24	629	59
Sodium	7440-23-5	1	mg/L	2260	919	1540	4350	857
Potassium	7440-09-7	1	mg/L	8	4	6	30	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.001	0.010	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	9.71	1.01	4.58	85.7	3.45
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.005	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	C2105	R2035
			Client sampling date / time	30-Apr-2019 10:45	30-Apr-2019 12:30	30-Apr-2019 13:20	30-Apr-2019 16:30	01-May-2019 10:00
Compound	CAS Number	LOR	Unit	EB1911508-001	EB1911508-002	EB1911508-003	EB1911508-004	EB1911508-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.031	0.018	0.054	0.776	0.140
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	23.5	2.10	6.90	106	13.6
Uranium	7440-61-1	0.001	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.027	0.044	0.019
Boron	7440-42-8	0.05	mg/L	1.04	0.81	0.92	0.38	0.54
Iron	7439-89-6	0.05	mg/L	0.18	0.06	0.42	29.1	0.48
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	6.34	0.48	4.80	172	6.25
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.005	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	0.002	0.002	0.068	0.004
Beryllium	7440-41-7	0.001	mg/L	0.001	<0.001	<0.001	0.036	<0.001
Barium	7440-39-3	0.001	mg/L	9.30	1.02	4.61	97.5	3.77
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0001	0.0029	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.005	<0.001	0.009	0.210	0.017
Cobalt	7440-48-4	0.001	mg/L	0.001	<0.001	0.003	0.146	0.004
Copper	7440-50-8	0.001	mg/L	0.010	0.004	0.156	0.945	0.017
Lead	7439-92-1	0.001	mg/L	0.012	0.001	0.010	0.488	0.010
Manganese	7439-96-5	0.001	mg/L	0.076	0.026	0.217	9.22	0.256
Molybdenum	7439-98-7	0.001	mg/L	0.002	<0.001	0.007	0.007	0.001
Nickel	7440-02-0	0.001	mg/L	0.004	<0.001	0.008	0.246	0.006
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.05	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.005	<0.001
Strontium	7440-24-6	0.001	mg/L	23.6	2.24	7.22	114	14.8
Uranium	7440-61-1	0.001	mg/L	0.002	<0.001	<0.001	0.051	0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	<0.01	0.01	0.54	0.03
Zinc	7440-66-6	0.005	mg/L	0.028	0.006	0.111	1.04	0.069
Boron	7440-42-8	0.05	mg/L	1.05	0.86	0.96	0.56	0.57
Iron	7439-89-6	0.05	mg/L	3.92	0.82	15.5	286	13.9
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	C2105	R2035
			Client sampling date / time	30-Apr-2019 10:45	30-Apr-2019 12:30	30-Apr-2019 13:20	30-Apr-2019 16:30	01-May-2019 10:00
Compound	CAS Number	LOR	Unit	EB1911508-001	EB1911508-002	EB1911508-003	EB1911508-004	EB1911508-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0005	<0.0001
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	14.0	15.2	13.9	14.7	21.0
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.2	0.5	0.2	0.1	0.1
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	117	42.3	75.5	285	47.9
Total Cations	----	0.01	meq/L	114	42.0	72.0	302	48.9
Ionic Balance	----	0.01	%	1.39	0.42	2.36	2.81	1.06
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	6.70	2.16	4.45	15.2	2.12
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	91.9	90.2	96.4	91.4	94.4
Toluene-D8	2037-26-5	2	%	100	99.8	97.5	88.5	101
4-Bromofluorobenzene	460-00-4	2	%	99.9	99.8	106	108	106

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2032	C2136	R2055	R2054	G2307
			Client sampling date / time	01-May-2019 13:00	01-May-2019 15:00	02-May-2019 10:00	02-May-2019 10:30	02-May-2019 13:30
Compound	CAS Number	LOR	Unit	EB1911508-006	EB1911508-007	EB1911508-008	EB1911508-009	EB1911508-010
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.44	7.14	7.61	7.61	7.41
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	25.8	20.7	19.9	30.2	27.1
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	11400	15100	7990	7950	14600
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	7410	9820	5190	5170	9490
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	1210	2610	939	504	1690
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	518	723	607	516	343
Total Alkalinity as CaCO3	----	1	mg/L	518	723	607	516	343
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	110	<1	<1	<1
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	3790	5090	2450	2510	5200
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	303	382	198	146	311
Magnesium	7439-95-4	1	mg/L	111	402	108	34	221
Sodium	7440-23-5	1	mg/L	2070	2430	1400	1560	2560
Potassium	7440-09-7	1	mg/L	11	16	9	8	13
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.004	<0.001	<0.001	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	25.7	0.385	13.5	12.3	14.3
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2032	C2136	R2055	R2054	G2307
			Client sampling date / time	01-May-2019 13:00	01-May-2019 15:00	02-May-2019 10:00	02-May-2019 10:30	02-May-2019 13:30
Compound	CAS Number	LOR	Unit	EB1911508-006	EB1911508-007	EB1911508-008	EB1911508-009	EB1911508-010
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	**0.002**	**0.020**	**0.007**	**0.015**	**0.050**
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**36.2**	**37.2**	**23.6**	**16.4**	**24.8**
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	**0.013**	<0.005	**0.008**	**0.035**	**0.009**
Boron	7440-42-8	0.05	mg/L	**0.75**	**0.48**	**0.81**	**0.87**	**0.98**
Iron	7439-89-6	0.05	mg/L	**1.06**	**2.82**	**0.20**	**0.26**	**2.20**
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.15**	**8.04**	**0.41**	**1.11**	**2.39**
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	**0.007**	<0.001	<0.001	**0.001**
Beryllium	7440-41-7	0.001	mg/L	<0.001	**0.001**	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	**24.1**	**0.522**	**12.7**	**11.8**	**13.4**
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.008**	<0.001	<0.001	**0.002**
Cobalt	7440-48-4	0.001	mg/L	<0.001	**0.003**	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	**0.012**	<0.001	**0.002**	**0.004**
Lead	7439-92-1	0.001	mg/L	<0.001	**0.015**	<0.001	**0.001**	**0.004**
Manganese	7439-96-5	0.001	mg/L	**0.004**	**0.107**	**0.012**	**0.039**	**0.104**
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	**0.002**
Nickel	7440-02-0	0.001	mg/L	<0.001	**0.005**	<0.001	**0.001**	**0.002**
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	**38.5**	**38.8**	**25.4**	**17.6**	**27.1**
Uranium	7440-61-1	0.001	mg/L	<0.001	**0.002**	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	**0.02**	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	**0.012**	**0.020**	**0.008**	**0.057**	**0.025**
Boron	7440-42-8	0.05	mg/L	**0.74**	**0.50**	**0.84**	**0.95**	**1.03**
Iron	7439-89-6	0.05	mg/L	**1.36**	**8.45**	**0.73**	**1.75**	**4.77**
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2032	C2136	R2055	R2054	G2307
			Client sampling date / time	01-May-2019 13:00	01-May-2019 15:00	02-May-2019 10:00	02-May-2019 10:30	02-May-2019 13:30
Compound	CAS Number	LOR	Unit	EB1911508-006	EB1911508-007	EB1911508-008	EB1911508-009	EB1911508-010
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	15.7	21.0	16.0	15.7	17.0
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.2	<0.1	0.1	0.1	<0.1
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	117	160	81.2	81.1	154
Total Cations	----	0.01	meq/L	114	158	79.9	78.1	145
Ionic Balance	----	0.01	%	1.16	0.65	0.83	1.86	2.72
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	5.50	8.50	4.95	4.85	9.55
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	97.7	97.0	96.7	95.6	90.4
Toluene-D8	2037-26-5	2	%	95.1	100	96.9	96.8	101
4-Bromofluorobenzene	460-00-4	2	%	104	107	105	104	102

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW9	----	----	----	----
			Client sampling date / time	02-May-2019 12:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1911508-011	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.72	----	----	----	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	1.60	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	574	----	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	373	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	91	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	93.6	----	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	143	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	37	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	218	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	256	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	33	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	31	----	----	----	----
Magnesium	7439-95-4	1	mg/L	16	----	----	----	----
Sodium	7440-23-5	1	mg/L	44	----	----	----	----
Potassium	7440-09-7	1	mg/L	68	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	0.004	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.442	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW9	----	----	----	----
			Client sampling date / time	02-May-2019 12:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1911508-011	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	**0.001**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.003**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.007**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.001**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.004**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.812**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	**0.02**	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.17**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**1.36**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.005**	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.495**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.002**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	**0.003**	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.004**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.001**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.314**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.002**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.007**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**0.919**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	**0.02**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW9	----	----	----	----
			Client sampling date / time	02-May-2019 12:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1911508-011	--------	--------	--------	--------
				Result	----	----	----	----
EG020T: Total Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	**0.007**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.22**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**2.68**	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	**36.2**	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.3**	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**6.04**	----	----	----	----
Total Cations	----	0.01	meq/L	**6.52**	----	----	----	----
Ionic Balance	----	0.01	%	**3.75**	----	----	----	----
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	**0.082**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1911251**	Page	: 1 of 8
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 4012 - Winchester South	Date Samples Received	: 03-May-2019 09:15
Order number	:	Date Analysis Commenced	: 03-May-2019
C-O-C number	: ----	Issue Date	: 10-May-2019 16:26
Sampler	: THOMAS MUEHE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS). However, the difference is within experimental variation of the methods.
- TSS by EA-025 may bias low due to fine particulate matter passing through the prescribed filter.
- Ionic Balance out of acceptable limits due to analytes not quantified in this report.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW8	SW2	SW5	SW3	SW4
			Client sampling date / time	29-Apr-2019 10:00	29-Apr-2019 11:30	29-Apr-2019 12:00	29-Apr-2019 14:00	29-Apr-2019 14:30
Compound	CAS Number	LOR	Unit	EB1911251-001	EB1911251-002	EB1911251-003	EB1911251-004	EB1911251-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.43	8.02	8.40	8.42	8.16
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	0.86	0.29	0.88	0.66	1.40
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	402	189	474	374	349
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	261	123	308	243	227
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	59	26	32	64	39
EA045: Turbidity								
Turbidity	----	0.1	NTU	43.1	170	22.9	71.8	106
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	159	80	191	158	99
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	13	<1	12	13	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	183	91	192	181	101
Total Alkalinity as CaCO3	----	1	mg/L	195	91	204	194	101
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	1	<1	11
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	15	26	33	9	43
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	44	22	47	45	23
Magnesium	7439-95-4	1	mg/L	12	6	18	11	10
Sodium	7440-23-5	1	mg/L	25	6	28	19	32
Potassium	7440-09-7	1	mg/L	13	9	6	13	6
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.002	0.002	<0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.184	0.091	0.176	0.218	0.080

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW8	SW2	SW5	SW3	SW4
			Client sampling date / time	29-Apr-2019 10:00	29-Apr-2019 11:30	29-Apr-2019 12:00	29-Apr-2019 14:00	29-Apr-2019 14:30
Compound	CAS Number	LOR	Unit	EB1911251-001	EB1911251-002	EB1911251-003	EB1911251-004	EB1911251-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.003	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	0.005	0.002	<0.001	0.002	0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Manganese	7439-96-5	0.001	mg/L	0.024	0.093	1.26	0.070	0.065
Molybdenum	7439-98-7	0.001	mg/L	0.002	<0.001	0.001	0.002	<0.001
Nickel	7440-02-0	0.001	mg/L	0.003	0.003	0.002	0.004	0.002
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.700	0.342	0.543	0.817	0.237
Uranium	7440-61-1	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	<0.005	<0.005
Boron	7440-42-8	0.05	mg/L	0.09	0.06	0.06	0.07	0.06
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	1.28	8.60	0.14	2.51	0.79
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.002	0.004	0.003	0.003	0.001
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	0.201	0.153	0.185	0.261	0.111
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	0.001	0.010	<0.001	0.003	<0.001
Cobalt	7440-48-4	0.001	mg/L	0.001	0.004	0.003	0.002	0.002
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	0.003	<0.001	0.002	0.001
Manganese	7439-96-5	0.001	mg/L	0.066	0.267	1.38	0.185	0.247
Molybdenum	7439-98-7	0.001	mg/L	0.002	<0.001	<0.001	0.002	<0.001
Nickel	7440-02-0	0.001	mg/L	0.004	0.010	0.003	0.007	0.004
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	0.740	0.392	0.578	0.881	0.287
Uranium	7440-61-1	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	0.01	0.02	<0.01	0.01	<0.01

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW8	SW2	SW5	SW3	SW4
			Client sampling date / time	29-Apr-2019 10:00	29-Apr-2019 11:30	29-Apr-2019 12:00	29-Apr-2019 14:00	29-Apr-2019 14:30
Compound	CAS Number	LOR	Unit	EB1911251-001	EB1911251-002	EB1911251-003	EB1911251-004	EB1911251-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	0.007	0.056	0.013	0.023	0.021
Boron	7440-42-8	0.05	mg/L	0.09	0.05	0.06	0.07	0.06
Iron	7439-89-6	0.05	mg/L	1.13	8.39	2.41	2.35	1.29
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	9.7	13.8	12.2	11.8	11.8
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.2	0.2	0.4	0.2
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.07	0.26	0.03	0.05	0.03
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.01	<0.01	<0.01	<0.01
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	0.05	<0.01	0.01	0.09
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.06	<0.01	0.01	0.09
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	2.0	1.3	1.1	1.6	0.8
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	2.0	1.4	1.1	1.6	0.9
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.24	0.20	0.08	0.16	0.08
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	4.32	2.55	5.03	4.13	3.46
Total Cations	----	0.01	meq/L	4.60	2.08	5.20	4.31	3.52
Ionic Balance	----	0.01	%	3.18	10.1	1.67	2.13	0.80
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	0.064	0.018	0.102	0.040	0.082

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW1	----	----	----	----
			Client sampling date / time	29-Apr-2019 15:30	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1911251-006	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.56	----	----	----	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	1.44	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	392	----	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	255	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	8	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	12.4	----	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	145	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	21	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	185	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	206	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	9	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	35	----	----	----	----
Magnesium	7439-95-4	1	mg/L	14	----	----	----	----
Sodium	7440-23-5	1	mg/L	40	----	----	----	----
Potassium	7440-09-7	1	mg/L	5	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	0.176	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW1	----	----	----	----
			Client sampling date / time	29-Apr-2019 15:30	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1911251-006	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.003**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.004**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.002**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.003**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**1.58**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	**0.01**	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.16**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.66**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.176**	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	**0.001**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.023**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.003**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.004**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**1.73**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	**0.01**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW1	----	----	----	----
			Client sampling date / time	29-Apr-2019 15:30	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1911251-006	--------	--------	--------	--------
				Result	----	----	----	----
EG020T: Total Metals by ICP-MS - Continued								
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.16**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.56**	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	**21.4**	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.8**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**0.04**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**0.7**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**0.7**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**0.04**	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**4.37**	----	----	----	----
Total Cations	----	0.01	meq/L	**4.77**	----	----	----	----
Ionic Balance	----	0.01	%	**4.34**	----	----	----	----
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	**0.098**	----	----	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1905369**	Page	: 1 of 8
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Winchester South 1415	Date Samples Received	: 05-Mar-2019 08:50
Order number	:	Date Analysis Commenced	: 05-Mar-2019
C-O-C number	: ----	Issue Date	: 11-Mar-2019 16:35
Sampler	: THOMAS MUEHE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 6		
No. of samples analysed	: 6		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2032	R2035	R2054	R2055	R2008 tab
			Client sampling date / time	28-Feb-2019 11:00	28-Feb-2019 14:00	28-Feb-2019 15:30	28-Feb-2019 16:20	28-Feb-2019 17:40
Compound	CAS Number	LOR	Unit	EB1905369-001	EB1905369-002	EB1905369-003	EB1905369-004	EB1905369-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.96	8.42	8.19	8.11	8.49
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	11700	4810	8180	8600	9780
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	7600	3130	5320	5590	6360
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	1090	311	384	929	436
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	28	<1	<1	32
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	486	617	474	627	696
Total Alkalinity as CaCO3	----	1	mg/L	486	644	474	627	728
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	20	<1	<1	<1
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	3900	1190	2590	2640	3180
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	263	67	101	194	84
Magnesium	7439-95-4	1	mg/L	105	35	32	108	55
Sodium	7440-23-5	1	mg/L	2020	873	1510	1390	1830
Potassium	7440-09-7	1	mg/L	10	16	8	8	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.07	0.02	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	0.002	<0.001	<0.001	0.003
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.005	<0.001	<0.001	0.002
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	0.006	<0.001	<0.001	0.002
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L	0.015	0.032	0.010	0.024	0.005
Manganese	7439-96-5	0.001	mg/L	0.005	0.057	0.005	0.013	0.002
Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.003	<0.001	<0.001	0.008

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2032	R2035	R2054	R2055	R2008 tab
			Client sampling date / time	28-Feb-2019 11:00	28-Feb-2019 14:00	28-Feb-2019 15:30	28-Feb-2019 16:20	28-Feb-2019 17:40
Compound	CAS Number	LOR	Unit	EB1905369-001	EB1905369-002	EB1905369-003	EB1905369-004	EB1905369-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	0.002	<0.001	<0.001	0.013
Vanadium	7440-62-2	0.01	mg/L	<0.01	0.02	<0.01	<0.01	<0.01
Boron	7440-42-8	0.05	mg/L	0.65	0.64	0.84	0.76	0.67
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	0.06	<0.05
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	6.29	18.7	7.31	0.31	122
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.001	0.012	<0.001	<0.001	0.061
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.0002	<0.0001	<0.0001	0.0023
Chromium	7440-47-3	0.001	mg/L	0.010	0.045	0.009	<0.001	0.114
Copper	7440-50-8	0.001	mg/L	0.007	0.052	0.005	<0.001	0.237
Cobalt	7440-48-4	0.001	mg/L	0.002	0.009	<0.001	<0.001	0.055
Nickel	7440-02-0	0.001	mg/L	0.003	0.022	0.002	<0.001	0.151
Lead	7439-92-1	0.001	mg/L	0.008	0.028	0.004	<0.001	0.482
Zinc	7440-66-6	0.005	mg/L	0.034	0.315	0.017	0.015	0.857
Manganese	7439-96-5	0.001	mg/L	0.065	0.326	0.031	0.014	4.43
Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.003	<0.001	<0.001	0.002
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	0.01
Silver	7440-22-4	0.001	mg/L	<0.001	0.002	<0.001	<0.001	0.001
Uranium	7440-61-1	0.001	mg/L	<0.001	0.005	<0.001	<0.001	0.075
Vanadium	7440-62-2	0.01	mg/L	0.02	0.08	0.01	<0.01	0.28
Boron	7440-42-8	0.05	mg/L	0.72	0.68	0.87	0.82	0.78
Iron	7439-89-6	0.05	mg/L	5.59	30.2	4.43	0.53	111
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.2	0.3	<0.1	0.1	0.4
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	120	46.8	82.5	87.0	104
Total Cations	----	0.01	meq/L	110	44.6	73.6	79.2	88.5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2032	R2035	R2054	R2055	R2008 tab
			Client sampling date / time	28-Feb-2019 11:00	28-Feb-2019 14:00	28-Feb-2019 15:30	28-Feb-2019 16:20	28-Feb-2019 17:40
Compound	CAS Number	LOR	Unit	EB1905369-001	EB1905369-002	EB1905369-003	EB1905369-004	EB1905369-005
				Result	Result	Result	Result	Result
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	**4.28**	**2.46**	**5.75**	**4.67**	**8.17**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	----	----	----	----
			Client sampling date / time	25-Feb-2019 17:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1905369-006	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.70**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**5500**	----	----	----	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	**3580**	----	----	----	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	**110**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**90**	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**548**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**638**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**1**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**1420**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**31**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**8**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**1110**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**4**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.02**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.001**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.013**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.012**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	----	----	----	----
			Client sampling date / time	25-Feb-2019 17:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1905369-006	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.75**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.26**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.005**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	<0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.041**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.015**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.80**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.29**	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.9**	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**52.8**	----	----	----	----
Total Cations	----	0.01	meq/L	**50.6**	----	----	----	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**R2008**	**----**	**----**	**----**	**----**
				Client sampling date / time	25-Feb-2019 17:00	----	----	----	----
Compound	CAS Number	LOR	Unit		**EB1905369-006**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EN055: Ionic Balance - Continued									
Ionic Balance	----	0.01	%		**2.16**	**----**	**----**	**----**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1905468**	Page	: 1 of 5
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Winchester South	Date Samples Received	: 06-Mar-2019 09:20
Order number	:	Date Analysis Commenced	: 06-Mar-2019
C-O-C number	: ----	Issue Date	: 13-Mar-2019 11:18
Sampler	: Thomas Muehe		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020T (Total Metals) is less than EG020F (Dissolved Metals) for some samples. However, the difference is within experimental variation of the methods.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW4	SW3	SW5A	SW7	----
			Client sampling date / time	02-Mar-2019 11:30	02-Mar-2019 12:10	02-Mar-2019 15:30	03-Mar-2019 11:00	----
Compound	CAS Number	LOR	Unit	EB1905468-001	EB1905468-002	EB1905468-003	EB1905468-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.85	7.83	7.46	7.25	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	818	669	317	234	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	532	435	206	152	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	301	194	165	1460	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	403	180	251	2700	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	214	211	102	65	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	208	295	140	91	----
Total Alkalinity as CaCO3	----	1	mg/L	208	295	140	91	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	39	<1	2	5	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	123	52	22	20	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	46	55	26	16	----
Magnesium	7439-95-4	1	mg/L	24	18	9	6	----
Sodium	7440-23-5	1	mg/L	87	70	24	24	----
Potassium	7440-09-7	1	mg/L	17	20	6	4	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.06	<0.01	<0.01	0.11	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	0.003	0.005	0.002	0.001	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	0.002	0.002	0.002	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.002	0.002	<0.001	0.004	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW4	SW3	SW5A	SW7	----
			Client sampling date / time	02-Mar-2019 11:30	02-Mar-2019 12:10	02-Mar-2019 15:30	03-Mar-2019 11:00	----
Compound	CAS Number	LOR	Unit	EB1905468-001	EB1905468-002	EB1905468-003	EB1905468-004	--------
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L	**0.750**	**0.546**	**1.29**	**0.001**	----
Molybdenum	7439-98-7	0.001	mg/L	**0.003**	**0.003**	**0.001**	**0.001**	----
Nickel	7440-02-0	0.001	mg/L	**0.006**	**0.008**	**0.003**	**0.002**	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	**0.001**	<0.001	----
Uranium	7440-61-1	0.001	mg/L	**0.002**	**0.002**	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	<0.005	**0.006**	<0.005	<0.005	----
Boron	7440-42-8	0.05	mg/L	**0.14**	**0.14**	**0.07**	**0.13**	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	**0.05**	**0.10**	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**14.1**	**5.93**	**4.35**	**18.0**	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.009**	**0.008**	**0.005**	**0.006**	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	**0.023**	**0.009**	**0.008**	**0.012**	----
Cobalt	7440-48-4	0.001	mg/L	**0.012**	**0.006**	**0.006**	**0.010**	----
Copper	7440-50-8	0.001	mg/L	**0.015**	**0.007**	**0.006**	**0.025**	----
Lead	7439-92-1	0.001	mg/L	**0.016**	**0.004**	**0.006**	**0.017**	----
Manganese	7439-96-5	0.001	mg/L	**1.15**	**0.814**	**1.51**	**0.402**	----
Molybdenum	7439-98-7	0.001	mg/L	**0.004**	**0.003**	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	**0.027**	**0.016**	**0.009**	**0.018**	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L	**0.003**	**0.002**	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	**0.03**	**0.02**	**0.02**	**0.05**	----
Zinc	7440-66-6	0.005	mg/L	**0.039**	**0.011**	**0.010**	**0.041**	----
Boron	7440-42-8	0.05	mg/L	**0.15**	**0.15**	**0.07**	**0.16**	----
Iron	7439-89-6	0.05	mg/L	**21.5**	**5.80**	**11.7**	**17.0**	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW4	SW3	SW5A	SW7	----
			Client sampling date / time	02-Mar-2019 11:30	02-Mar-2019 12:10	02-Mar-2019 15:30	03-Mar-2019 11:00	----
Compound	CAS Number	LOR	Unit	EB1905468-001	EB1905468-002	EB1905468-003	EB1905468-004	--------
				Result	Result	Result	Result	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.4	0.7	0.3	0.4	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	2.55	0.04	1.34	0.06	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	<0.01	<0.01	0.08	0.13	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	<0.01	0.08	0.13	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	6.6	3.3	2.5	2.8	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	6.6	3.3	2.6	2.9	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	8.44	7.36	3.46	2.49	----
Total Cations	----	0.01	meq/L	8.49	7.78	3.24	2.44	----
Ionic Balance	----	0.01	%	0.31	2.78	3.34	----	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1905469**	Page	: 1 of 5
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: Winchester South	Date Samples Received	: 06-Mar-2019 09:20
Order number	:	Date Analysis Commenced	: 06-Mar-2019
C-O-C number	: ----	Issue Date	: 12-Mar-2019 16:03
Sampler	: THOMAS MUEHE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS) for sample EB1905469-001(G2307). However, the difference is within experimental variation of the methods.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	G2307	C2136	R2009	R2010	----
			Client sampling date / time	01-Mar-2019 12:20	01-Mar-2019 13:30	01-Mar-2019 15:00	01-Mar-2019 16:10	----
Compound	CAS Number	LOR	Unit	EB1905469-001	EB1905469-002	EB1905469-003	EB1905469-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.03	7.69	8.76	8.18	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	15300	17300	4290	13200	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	9940	11200	2790	8580	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	1720	2860	81	640	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	97	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	320	582	676	353	----
Total Alkalinity as CaCO3	----	1	mg/L	320	582	773	353	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	114	<1	<1	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	5370	5980	1060	4530	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	292	327	11	121	----
Magnesium	7439-95-4	1	mg/L	240	496	13	82	----
Sodium	7440-23-5	1	mg/L	2860	2940	976	2260	----
Potassium	7440-09-7	1	mg/L	14	18	4	9	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.05	<0.01	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	0.001	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.001	<0.001	0.002	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.003	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L	0.032	0.020	0.015	0.027	----
Molybdenum	7439-98-7	0.001	mg/L	0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.001	0.002	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	G2307	C2136	R2009	R2010	----
			Client sampling date / time	01-Mar-2019 12:20	01-Mar-2019 13:30	01-Mar-2019 15:00	01-Mar-2019 16:10	----
Compound	CAS Number	LOR	Unit	EB1905469-001	EB1905469-002	EB1905469-003	EB1905469-004	--------
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	**0.001**	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	**0.02**	----
Zinc	7440-66-6	0.005	mg/L	**0.008**	<0.005	**0.015**	**0.007**	----
Boron	7440-42-8	0.05	mg/L	**0.97**	**0.43**	**0.73**	**0.90**	----
Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	<0.05	<0.05	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.90**	**2.14**	**6.69**	**11.6**	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	**0.001**	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	**0.002**	**0.003**	**0.003**	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	**0.0005**	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.002**	**0.011**	**0.015**	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	**0.002**	**0.006**	**0.003**	----
Copper	7440-50-8	0.001	mg/L	**0.002**	**0.005**	**0.061**	**0.022**	----
Lead	7439-92-1	0.001	mg/L	<0.001	**0.003**	**0.009**	**0.008**	----
Manganese	7439-96-5	0.001	mg/L	**0.042**	**0.034**	**0.124**	**0.075**	----
Molybdenum	7439-98-7	0.001	mg/L	**0.002**	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	**0.004**	**0.014**	**0.007**	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	**0.001**	<0.001	<0.001	<0.001	----
Uranium	7440-61-1	0.001	mg/L	<0.001	**0.001**	<0.001	**0.002**	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	**0.02**	**0.04**	----
Zinc	7440-66-6	0.005	mg/L	**0.015**	**0.016**	**0.045**	**0.042**	----
Boron	7440-42-8	0.05	mg/L	**0.96**	**0.43**	**0.82**	**0.95**	----
Iron	7439-89-6	0.05	mg/L	**1.69**	**2.11**	**9.48**	**7.52**	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	<0.1	<0.1	**0.5**	**0.2**	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**158**	**183**	**45.3**	**135**	----
Total Cations	----	0.01	meq/L	**159**	**185**	**44.2**	**111**	----

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	G2307	C2136	R2009	R2010	----
			Client sampling date / time	01-Mar-2019 12:20	01-Mar-2019 13:30	01-Mar-2019 15:00	01-Mar-2019 16:10	----
Compound	CAS Number	LOR	Unit	EB1905469-001	EB1905469-002	EB1905469-003	EB1905469-004	--------
				Result	Result	Result	Result	----
EN055: Ionic Balance - Continued								
Ionic Balance	----	0.01	%	**0.38**	**0.76**	**1.31**	**9.55**	**----**

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1907783**	Page	: 1 of 5
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 4012 - Winchester South	Date Samples Received	: 28-Mar-2019 09:35
Order number	:	Date Analysis Commenced	: 28-Mar-2019
C-O-C number	: ----	Issue Date	: 24-Apr-2019 09:29
Sampler	: THOMAS MUEHE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- TSS by EA-025 may bias low due to fine particulate matter passing through the prescribed filter.
- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW 4	SW 5a	SW 2	SW 1	----
			Client sampling date / time	25-Mar-2019 10:45	25-Mar-2019 13:30	25-Mar-2019 14:45	25-Mar-2019 17:15	----
Compound	CAS Number	LOR	Unit	EB1907783-001	EB1907783-002	EB1907783-003	EB1907783-004	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.44	7.45	8.55	7.92	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	1.12	0.84	0.74	1.80	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	160	211	294	230	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	104	137	191	150	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	69	61	435	111	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	690	174	543	609	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	39	69	99	56	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	12	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	52	80	105	99	----
Total Alkalinity as CaCO3	----	1	mg/L	52	80	117	99	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	5	6	3	4	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	16	17	22	13	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	9	16	25	16	----
Magnesium	7439-95-4	1	mg/L	4	7	9	4	----
Sodium	7440-23-5	1	mg/L	16	16	17	31	----
Potassium	7440-09-7	1	mg/L	4	6	15	4	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.44	<0.01	<0.01	0.04	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	0.002	0.003	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	0.049	0.087	0.110	0.056	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW 4	SW 5a	SW 2	SW 1	----
			Client sampling date / time	25-Mar-2019 10:45	25-Mar-2019 13:30	25-Mar-2019 14:45	25-Mar-2019 17:15	----
Compound	CAS Number	LOR	Unit	EB1907783-001	EB1907783-002	EB1907783-003	EB1907783-004	--------
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	0.002	0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	0.002	0.001	0.005	0.004	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Manganese	7439-96-5	0.001	mg/L	0.017	0.587	0.022	0.005	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.002	0.004	----
Nickel	7440-02-0	0.001	mg/L	0.002	0.002	0.005	0.003	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	0.133	0.223	0.514	0.344	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	0.008	<0.005	<0.005	0.013	----
Boron	7440-42-8	0.05	mg/L	<0.05	0.05	0.15	0.08	----
Iron	7439-89-6	0.05	mg/L	0.20	<0.05	<0.05	<0.05	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	12.6	3.40	3.87	18.2	----
Arsenic	7440-38-2	0.001	mg/L	0.002	0.003	0.004	0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	0.156	0.123	0.168	0.250	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	0.017	0.004	0.005	0.046	----
Cobalt	7440-48-4	0.001	mg/L	0.005	0.004	0.004	0.006	----
Copper	7440-50-8	0.001	mg/L	0.012	0.004	0.009	0.021	----
Lead	7439-92-1	0.001	mg/L	0.006	0.002	0.003	0.004	----
Manganese	7439-96-5	0.001	mg/L	0.178	0.697	0.386	0.178	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.002	0.001	----
Nickel	7440-02-0	0.001	mg/L	0.016	0.006	0.009	0.040	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	0.172	0.247	0.571	0.450	----
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	0.03	<0.01	0.02	0.05	----
Zinc	7440-66-6	0.005	mg/L	0.026	0.019	0.020	0.023	----
Boron	7440-42-8	0.05	mg/L	<0.05	0.05	0.15	0.08	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	SW 4	SW 5a	SW 2	SW 1	----
			Client sampling date / time	25-Mar-2019 10:45	25-Mar-2019 13:30	25-Mar-2019 14:45	25-Mar-2019 17:15	----
Compound	CAS Number	LOR	Unit	EB1907783-001	EB1907783-002	EB1907783-003	EB1907783-004	--------
				Result	Result	Result	Result	----
EG020T: Total Metals by ICP-MS - Continued								
Iron	7439-89-6	0.05	mg/L	14.1	4.84	3.93	17.5	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	12.4	15.7	7.4	17.3	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.4	0.8	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	<0.01	<0.01	<0.01	0.03	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	0.44	<0.01	<0.01	<0.01	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.44	<0.01	<0.01	<0.01	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.1	0.8	2.1	1.2	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	1.5	0.8	2.1	1.2	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	0.30	0.12	0.20	0.25	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	1.59	2.20	3.02	2.43	----
Total Cations	----	0.01	meq/L	1.58	2.22	3.11	2.58	----
Ionic Balance	----	0.01	%	----	----	1.48	----	----
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	0.036	0.033	0.127	0.052	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1908392**	Page	: 1 of 9
Client	: **Oasis Hydrogeology Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: Daniel Barclay	Contact	: Customer Services EB
Address	: 149 Boundary Street Bardon 4065	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: ----	Telephone	: +61-7-3243 7222
Project	: 4012 - Winchester South	Date Samples Received	: 02-Apr-2019 09:15
Order number	:	Date Analysis Commenced	: 03-Apr-2019
C-O-C number	: ----	Issue Date	: 24-Apr-2019 08:58
Sampler	: THOMAS MUEHE		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD
Santusha Pandra	Organic Chemist	Brisbane Organics, Stafford, QLD

General Comments

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

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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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EA016: Calculated TDS is determined from Electrical conductivity using a conversion factor of 0.65.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2054	R2055	G2307	C2136	R2035
			Client sampling date / time	26-Mar-2019 11:00	26-Mar-2019 12:30	26-Mar-2019 14:00	26-Mar-2019 15:30	26-Mar-2019 17:20
Compound	CAS Number	LOR	Unit	EB1908392-001	EB1908392-002	EB1908392-003	EB1908392-004	EB1908392-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.83	7.76	7.75	7.31	7.64
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	31.9	20.6	28.5	22.0	16.8
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	8140	8180	15000	15100	4680
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	5290	5320	9750	9820	3040
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	488	948	1670	2490	486
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	516	598	334	737	718
Total Alkalinity as CaCO3	----	1	mg/L	516	598	334	737	718
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	107	12
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	2650	2640	5540	5440	1200
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	136	190	286	334	112
Magnesium	7439-95-4	1	mg/L	36	115	232	403	50
Sodium	7440-23-5	1	mg/L	1620	1460	2680	2530	854
Potassium	7440-09-7	1	mg/L	7	9	13	16	6
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.004	0.002
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Barium	7440-39-3	0.001	mg/L	11.3	12.5	13.0	0.395	4.22
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	0.001	<0.001
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2054	R2055	G2307	C2136	R2035
			Client sampling date / time	26-Mar-2019 11:00	26-Mar-2019 12:30	26-Mar-2019 14:00	26-Mar-2019 15:30	26-Mar-2019 17:20
Compound	CAS Number	LOR	Unit	EB1908392-001	EB1908392-002	EB1908392-003	EB1908392-004	EB1908392-005
				Result	Result	Result	Result	Result
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	0.002	0.008	0.043	0.043	0.096
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.001	<0.001	0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	0.002	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	17.2	25.2	26.2	36.5	13.3
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Zinc	7440-66-6	0.005	mg/L	0.012	0.011	0.012	0.007	0.008
Boron	7440-42-8	0.05	mg/L	0.85	0.79	0.93	0.43	0.58
Iron	7439-89-6	0.05	mg/L	0.27	0.44	1.91	1.60	0.20
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	9.64	0.44	3.00	18.5	57.9
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	0.008	0.014
Beryllium	7440-41-7	0.001	mg/L	0.002	<0.001	<0.001	0.002	0.007
Barium	7440-39-3	0.001	mg/L	13.7	14.1	15.6	0.510	8.66
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	0.0001	0.0004
Chromium	7440-47-3	0.001	mg/L	0.013	<0.001	0.002	0.014	0.160
Cobalt	7440-48-4	0.001	mg/L	0.002	<0.001	<0.001	0.005	0.029
Copper	7440-50-8	0.001	mg/L	0.012	0.001	0.003	0.018	0.098
Lead	7439-92-1	0.001	mg/L	0.010	<0.001	0.003	0.024	0.089
Manganese	7439-96-5	0.001	mg/L	0.077	0.012	0.075	0.174	1.53
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.001	0.001	0.002
Nickel	7440-02-0	0.001	mg/L	0.005	<0.001	0.001	0.008	0.038
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Strontium	7440-24-6	0.001	mg/L	18.8	26.9	28.6	38.7	18.4
Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	<0.001	0.004	0.010
Vanadium	7440-62-2	0.01	mg/L	0.02	<0.01	<0.01	0.03	0.24
Zinc	7440-66-6	0.005	mg/L	0.023	0.008	0.016	0.032	0.209
Boron	7440-42-8	0.05	mg/L	0.92	0.84	1.03	0.49	0.64
Iron	7439-89-6	0.05	mg/L	6.76	0.74	3.71	12.6	103
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2054	R2055	G2307	C2136	R2035
			Client sampling date / time	26-Mar-2019 11:00	26-Mar-2019 12:30	26-Mar-2019 14:00	26-Mar-2019 15:30	26-Mar-2019 17:20
Compound	CAS Number	LOR	Unit	EB1908392-001	EB1908392-002	EB1908392-003	EB1908392-004	EB1908392-005
				Result	Result	Result	Result	Result
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	14.1	14.0	16.3	19.3	15.8
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.1	0.1	<0.1	<0.1	0.1
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	85.1	86.4	163	170	48.4
Total Cations	----	0.01	meq/L	80.4	82.7	150	160	47.0
Ionic Balance	----	0.01	%	2.82	2.21	4.05	3.06	1.51
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	5.75	5.75	12.0	10.2	2.54
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	96.3	97.4	95.6	95.3	97.0
Toluene-D8	2037-26-5	2	%	104	101	104	101	104
4-Bromofluorobenzene	460-00-4	2	%	108	108	110	107	110

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	R2032	----
			Client sampling date / time	27-Mar-2019 10:20	27-Mar-2019 11:40	27-Mar-2019 13:45	27-Mar-2019 17:00	----
Compound	CAS Number	LOR	Unit	EB1908392-006	EB1908392-007	EB1908392-008	EB1908392-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.93	8.05	7.77	7.64	----
EA006: Sodium Adsorption Ratio (SAR)								
^ Sodium Adsorption Ratio	----	0.01	-	37.1	41.4	43.9	27.2	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	10300	4370	7970	11600	----
EA016: Calculated TDS (from Electrical Conductivity)								
Total Dissolved Solids (Calc.)	----	1	mg/L	6700	2840	5180	7540	----
EA065: Total Hardness as CaCO3								
Total Hardness as CaCO3	----	1	mg/L	567	98	258	1200	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	496	748	360	519	----
Total Alkalinity as CaCO3	----	1	mg/L	496	748	360	519	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	<1	<1	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	3510	1080	2640	4110	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	120	18	57	286	----
Magnesium	7439-95-4	1	mg/L	65	13	28	118	----
Sodium	7440-23-5	1	mg/L	2030	945	1620	2170	----
Potassium	7440-09-7	1	mg/L	7	4	6	11	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	0.001	0.003	<0.001	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	8.23	0.758	4.46	23.5	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L	<0.001	0.001	0.007	<0.001	----
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	R2032	----
			Client sampling date / time	27-Mar-2019 10:20	27-Mar-2019 11:40	27-Mar-2019 13:45	27-Mar-2019 17:00	----
Compound	CAS Number	LOR	Unit	EB1908392-006	EB1908392-007	EB1908392-008	EB1908392-009	--------
				Result	Result	Result	Result	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Manganese	7439-96-5	0.001	mg/L	**0.020**	**0.021**	**0.032**	**0.002**	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	**0.001**	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	**18.2**	**1.94**	**7.44**	**37.3**	----
Uranium	7440-61-1	0.001	mg/L	**0.002**	<0.001	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	**0.009**	**0.007**	**0.014**	**0.019**	----
Boron	7440-42-8	0.05	mg/L	**0.96**	**0.76**	**0.88**	**0.69**	----
Iron	7439-89-6	0.05	mg/L	**0.30**	<0.05	<0.05	**0.99**	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**1.20**	**3.75**	**3.80**	**3.82**	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	**0.001**	<0.001	----
Arsenic	7440-38-2	0.001	mg/L	**0.002**	**0.004**	**0.002**	<0.001	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Barium	7440-39-3	0.001	mg/L	**9.77**	**0.979**	**5.58**	**27.5**	----
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	**0.0001**	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L	<0.001	**0.005**	**0.007**	**0.005**	----
Cobalt	7440-48-4	0.001	mg/L	<0.001	**0.002**	**0.002**	<0.001	----
Copper	7440-50-8	0.001	mg/L	**0.002**	**0.018**	**0.134**	**0.004**	----
Lead	7439-92-1	0.001	mg/L	**0.001**	**0.004**	**0.008**	**0.004**	----
Manganese	7439-96-5	0.001	mg/L	**0.030**	**0.058**	**0.139**	**0.037**	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	**0.004**	<0.001	----
Nickel	7440-02-0	0.001	mg/L	**0.001**	**0.005**	**0.006**	**0.002**	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	----
Strontium	7440-24-6	0.001	mg/L	**18.8**	**2.06**	**7.94**	**39.8**	----
Uranium	7440-61-1	0.001	mg/L	**0.003**	<0.001	<0.001	<0.001	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	----
Zinc	7440-66-6	0.005	mg/L	**0.013**	**0.018**	**0.068**	**0.021**	----
Boron	7440-42-8	0.05	mg/L	**1.03**	**0.79**	**0.93**	**0.75**	----
Iron	7439-89-6	0.05	mg/L	**2.97**	**4.38**	**10.4**	**3.75**	----
EG035F: Dissolved Mercury by FIMS								

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	R2008	R2009	R2010	R2032	----
			Client sampling date / time	27-Mar-2019 10:20	27-Mar-2019 11:40	27-Mar-2019 13:45	27-Mar-2019 17:00	----
Compound	CAS Number	LOR	Unit	EB1908392-006	EB1908392-007	EB1908392-008	EB1908392-009	--------
				Result	Result	Result	Result	----
EG035F: Dissolved Mercury by FIMS - Continued								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	----
EG052F: Dissolved Silica by ICPAES								
Silicon as SiO2	14464-46-1	0.1	mg/L	13.1	12.8	11.8	14.0	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	0.3	0.6	0.2	0.2	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	109	45.4	81.7	126	----
Total Cations	----	0.01	meq/L	99.8	43.2	75.8	119	----
Ionic Balance	----	0.01	%	4.36	2.52	3.74	3.12	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----
ED009: Anions								
Bromide	24959-67-9	0.010	mg/L	6.80	2.48	5.20	5.35	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	94.9	96.1	96.0	98.3	----
Toluene-D8	2037-26-5	2	%	104	102	103	106	----
4-Bromofluorobenzene	460-00-4	2	%	104	107	106	108	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

Eagle Downs Mine Groundwater Quality

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1825785**	Page	: 1 of 9
Amendment	: **1**		
Client	: **SLR Consulting Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR PAUL TETT	Contact	: Tyler Cachia
Address	: 33A PEEL STREET MACKAY QLD 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3181 3300	Telephone	: +61 2 8784 8555
Project	: Quarterly Environmental Monitoring	Date Samples Received	: 26-Oct-2018 09:20
Order number	:	Date Analysis Commenced	: 26-Oct-2018
C-O-C number	: ----	Issue Date	: 28-Nov-2018 11:16
Sampler	: PAUL TETT		
Site	: ----		
Quote number	: BN/350/17		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Sarah Ashworth	Laboratory Manager - Brisbane	Brisbane Organics, Stafford, QLD
Tom Maloney	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (28/11/2018): This report has been amended following the change in date for sample #7 as requested by client.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	MB1	MB2	MB3	MB4	MB5
			Client sampling date / time	09-Oct-2018 14:00	23-Oct-2018 14:50	24-Oct-2018 09:00	23-Oct-2018 12:18	23-Oct-2018 09:20
Compound	CAS Number	LOR	Unit	EB1825785-001	EB1825785-002	EB1825785-003	EB1825785-004	EB1825785-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.86	8.11	7.47	7.53	7.74
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2080	4280	18700	13100	5440
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1200	2370	12600	8750	3050
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	516	292	331	367	484
Total Alkalinity as CaCO3	----	1	mg/L	516	292	331	367	484
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	26	<1	100	107	33
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	370	1130	6320	4400	1400
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	96	81	735	687	206
Magnesium	7439-95-4	1	mg/L	51	13	350	192	53
Sodium	7440-23-5	1	mg/L	276	751	2610	1950	880
Potassium	7440-09-7	1	mg/L	4	4	12	10	6
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	0.002	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.002	0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L	0.002	<0.001	0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	7439-89-6	0.05	mg/L	<0.05	0.33	4.84	3.58	3.12
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.11	<0.01	0.46	0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	0.004	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.003	<0.001	0.002	0.002	<0.001
Molybdenum	7439-98-7	0.001	mg/L	0.002	<0.001	0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	MB1	MB2	MB3	MB4	MB5
			Client sampling date / time	09-Oct-2018 14:00	23-Oct-2018 14:50	24-Oct-2018 09:00	23-Oct-2018 12:18	23-Oct-2018 09:20
Compound	CAS Number	LOR	Unit	EB1825785-001	EB1825785-002	EB1825785-003	EB1825785-004	EB1825785-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Iron	7439-89-6	0.05	mg/L	**0.34**	**0.33**	**6.28**	**3.80**	**3.27**
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**21.3**	**37.7**	**187**	**134**	**49.8**
Total Cations	----	0.01	meq/L	**21.1**	**37.9**	**179**	**135**	**53.1**
Ionic Balance	----	0.01	%	**0.45**	**0.22**	**2.09**	**0.55**	**3.13**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	**170**	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	**100**	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	**120**	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	**220**	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	**180**	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	**180**	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	**200**	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	**200**	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)			Client sample ID	MB1	MB2	MB3	MB4	MB5
			Client sampling date / time	09-Oct-2018 14:00	23-Oct-2018 14:50	24-Oct-2018 09:00	23-Oct-2018 12:18	23-Oct-2018 09:20
Compound	CAS Number	LOR	Unit	EB1825785-001	EB1825785-002	EB1825785-003	EB1825785-004	EB1825785-005
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**107**	**110**	**97.1**	**109**	**105**
Toluene-D8	2037-26-5	2	%	**103**	**99.1**	**98.8**	**81.9**	**99.1**
4-Bromofluorobenzene	460-00-4	2	%	**97.5**	**108**	**102**	**106**	**118**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	LB8	Dup Blind (Blind Duplicate)	Rinsate QA 1 and 2	Trip Blank	----
			Client sampling date / time	23-Oct-2018 16:10	23-Oct-2018 00:00	24-Oct-2018 10:00	08-Oct-2018 00:00	----
Compound	CAS Number	LOR	Unit	EB1825785-006	EB1825785-007	EB1825785-008	EB1825785-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.59	7.68	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	7900	5410	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	5420	3020	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	430	487	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	430	487	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	445	35	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	2330	1400	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	413	204	----	----	----
Magnesium	7439-95-4	1	mg/L	287	52	----	----	----
Sodium	7440-23-5	1	mg/L	834	870	----	----	----
Potassium	7440-09-7	1	mg/L	10	6	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Iron	7439-89-6	0.05	mg/L	1.76	3.05	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	0.01	<0.01	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	LB8	Dup Blind (Blind Duplicate)	Rinsate QA 1 and 2	Trip Blank	----
			Client sampling date / time	23-Oct-2018 16:10	23-Oct-2018 00:00	24-Oct-2018 10:00	08-Oct-2018 00:00	----
Compound	CAS Number	LOR	Unit	EB1825785-006	EB1825785-007	EB1825785-008	EB1825785-009	--------
				Result	Result	Result	Result	----
EG020T: Total Metals by ICP-MS - Continued								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Iron	7439-89-6	0.05	mg/L	**1.80**	**3.30**	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**83.6**	**50.0**	----	----	----
Total Cations	----	0.01	meq/L	**80.8**	**52.4**	----	----	----
Ionic Balance	----	0.01	%	**1.72**	**2.44**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L	<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	LB8	Dup Blind (Blind Duplicate)	Rinsate QA 1 and 2	Trip Blank	----
			Client sampling date / time	23-Oct-2018 16:10	23-Oct-2018 00:00	24-Oct-2018 10:00	08-Oct-2018 00:00	----
Compound	CAS Number	LOR	Unit	EB1825785-006	EB1825785-007	EB1825785-008	EB1825785-009	--------
				Result	Result	Result	Result	----
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**108**	**108**	**103**	**118**	----
Toluene-D8	2037-26-5	2	%	**98.6**	**103**	**99.4**	**94.6**	----
4-Bromofluorobenzene	460-00-4	2	%	**121**	**116**	**108**	**91.7**	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ET1701370**	Page	: 1 of 9
Client	: **SLR Consulting Australia Pty Ltd**	Laboratory	: Environmental Division Townsville
Contact	: MR PAUL TETT	Contact	: Customer Services ET
Address	: 33A PEEL STREET MACKAY QLD 4740	Address	: 14-15 Desma Ct, Bohle Townsville QLD AUSTRALIA 4814
Telephone	: +61 07 3181 3300	Telephone	: +61 7 4796 0600
Project	: Quarterly Environmental Monitoring	Date Samples Received	: 20-Oct-2017 09:45
Order number	: N/A	Date Analysis Commenced	: 20-Oct-2017
C-O-C number	: ----	Issue Date	: 27-Oct-2017 12:40
Sampler	: ----		
Site	: ----		
Quote number	: BN/350/17		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

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- Analytical Results
- Surrogate Control Limits

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Signatories

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Signatories	*Position*	*Accreditation Category*
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Greg Vogel		Townsville Inorganics, Townsville, QLD
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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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.

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LOR = Limit of reporting
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS) for some samples. However, the difference is within experimental variation of the methods.
- EA005-P, EA010-P, EA015H, ED037-P, ED041G, and ED045G analysis conducted by ALS Townsville, NATA accreditation no. 825, (Site no. 23313)

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	MB1	MB2	MB3	MB4	MB5
			Client sampling date / time	17-Oct-2017 13:30	17-Oct-2017 16:30	18-Oct-2017 08:10	18-Oct-2017 12:15	18-Oct-2017 12:35
Compound	CAS Number	LOR	Unit	ET1701370-001	ET1701370-002	ET1701370-003	ET1701370-004	ET1701370-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	8.13	8.17	7.86	7.89	8.20
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	2030	4160	18700	12300	6440
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	1130	2340	12800	7540	3620
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	595	323	246	405	547
Total Alkalinity as CaCO3	----	1	mg/L	595	323	246	405	547
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	23	<1	122	95	66
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	340	1070	6010	3820	1700
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	98	76	715	591	287
Magnesium	7439-95-4	1	mg/L	54	13	401	169	90
Sodium	7440-23-5	1	mg/L	297	820	2790	1970	1060
Potassium	7440-09-7	1	mg/L	4	3	11	10	7
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.004	<0.001	0.002	0.001	<0.001
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Iron	7439-89-6	0.05	mg/L	0.59	0.25	5.32	3.16	3.28
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	0.16	0.02	0.02	<0.01	<0.01
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Arsenic	7440-38-2	0.001	mg/L	0.006	<0.001	0.002	0.002	<0.001
Molybdenum	7439-98-7	0.001	mg/L	0.001	<0.001	<0.001	<0.001	<0.001
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	MB1	MB2	MB3	MB4	MB5
			Client sampling date / time	17-Oct-2017 13:30	17-Oct-2017 16:30	18-Oct-2017 08:10	18-Oct-2017 12:15	18-Oct-2017 12:35
Compound	CAS Number	LOR	Unit	ET1701370-001	ET1701370-002	ET1701370-003	ET1701370-004	ET1701370-005
				Result	Result	Result	Result	Result
EG020T: Total Metals by ICP-MS - Continued								
Iron	7439-89-6	0.05	mg/L	**0.70**	**0.28**	**5.20**	**3.07**	**3.10**
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**22.0**	**36.6**	**177**	**118**	**60.2**
Total Cations	----	0.01	meq/L	**22.4**	**40.6**	**190**	**129**	**68.0**
Ionic Balance	----	0.01	%	**0.90**	**5.14**	**3.63**	**4.66**	**6.05**
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	<20
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	<50	<50
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	<20
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	<20
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	<100	<100
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	<100	<100
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	<1
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	<2
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	<2
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	<2
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	<2
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	<2
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	<5

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	MB1	MB2	MB3	MB4	MB5
			Client sampling date / time	17-Oct-2017 13:30	17-Oct-2017 16:30	18-Oct-2017 08:10	18-Oct-2017 12:15	18-Oct-2017 12:35
Compound	CAS Number	LOR	Unit	ET1701370-001	ET1701370-002	ET1701370-003	ET1701370-004	ET1701370-005
				Result	Result	Result	Result	Result
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**99.8**	**99.5**	**100**	**101**	**103**
Toluene-D8	2037-26-5	2	%	**98.0**	**98.4**	**98.6**	**99.7**	**98.0**
4-Bromofluorobenzene	460-00-4	2	%	**109**	**109**	**92.3**	**92.2**	**108**

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	LB8	Dup Blind (Blind Duplicate)	Rinsate QA 1 and 2	Trip Blank	----
			Client sampling date / time	17-Oct-2017 15:27	18-Oct-2017 00:00	18-Oct-2017 16:10	12-Oct-2017 00:00	----
Compound	CAS Number	LOR	Unit	ET1701370-006	ET1701370-007	ET1701370-008	ET1701370-009	--------
				Result	Result	Result	Result	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**8.40**	**8.22**	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**4230**	**4210**	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**2400**	**2390**	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	**10**	<1	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**520**	**527**	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**530**	**527**	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**150**	**148**	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**952**	**948**	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**196**	**195**	----	----	----
Magnesium	7439-95-4	1	mg/L	**129**	**129**	----	----	----
Sodium	7440-23-5	1	mg/L	**546**	**543**	----	----	----
Potassium	7440-09-7	1	mg/L	**6**	**6**	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	----	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	----	----	----
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.54**	**0.67**	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	**0.01**	----	----
Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.001**	<0.001	<0.001	----	----
Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	LB8	Dup Blind (Blind Duplicate)	Rinsate QA 1 and 2	Trip Blank	----
			Client sampling date / time	17-Oct-2017 15:27	18-Oct-2017 00:00	18-Oct-2017 16:10	12-Oct-2017 00:00	----
Compound	CAS Number	LOR	Unit	ET1701370-006	ET1701370-007	ET1701370-008	ET1701370-009	--------
				Result	Result	Result	Result	----
EG020T: Total Metals by ICP-MS - Continued								
Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	<0.001	----	----
Iron	7439-89-6	0.05	mg/L	**0.84**	**0.83**	<0.05	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**40.6**	**40.4**	----	----	----
Total Cations	----	0.01	meq/L	**44.3**	**44.1**	----	----	----
Ionic Balance	----	0.01	%	**4.40**	**4.46**	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L	<50	<50	<50	----	----
C15 - C28 Fraction	----	100	µg/L	<100	<100	<100	----	----
C29 - C36 Fraction	----	50	µg/L	<50	<50	<50	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	<50	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	<100	<100	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	<100	<100	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	<100	<100	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L	<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	<2	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L	<1	<1	<1	<1	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	LB8	Dup Blind (Blind Duplicate)	Rinsate QA 1 and 2	Trip Blank	----
			Client sampling date / time	17-Oct-2017 15:27	18-Oct-2017 00:00	18-Oct-2017 16:10	12-Oct-2017 00:00	----
Compound	CAS Number	LOR	Unit	ET1701370-006	ET1701370-007	ET1701370-008	ET1701370-009	--------
				Result	Result	Result	Result	----
EP080: BTEXN - Continued								
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	<5	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**99.8**	**99.9**	**103**	**103**	----
Toluene-D8	2037-26-5	2	%	**99.8**	**97.7**	**98.9**	**99.5**	----
4-Bromofluorobenzene	460-00-4	2	%	**92.6**	**110**	**112**	**109**	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1825785**	Page	: 1 of 9
Amendment	: **1**		
Client	: **SLR Consulting Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR PAUL TETT	Contact	: Tyler Cachia
Address	: 33A PEEL STREET MACKAY QLD 4740	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3181 3300	Telephone	: +61 2 8784 8555
Project	: Quarterly Environmental Monitoring	Date Samples Received	: 26-Oct-2018
Order number	:	Date Analysis Commenced	: 26-Oct-2018
C-O-C number	: ----	Issue Date	: 28-Nov-2018
Sampler	: PAUL TETT		
Site	: ----		
Quote number	: BN/350/17		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Mark Hallas	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Matt Frost	Senior Organic Chemist	Brisbane Organics, Stafford, QLD
Sarah Ashworth	Laboratory Manager - Brisbane	Brisbane Organics, Stafford, QLD
Tom Maloney	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA005P: pH by PC Titrator (QC Lot: 2007121)									
EB1825785-001	MB1	EA005-P: pH Value	----	0.01	pH Unit	7.86	7.87	0.127	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 2007120)									
EB1825782-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	2	1	0.00	No Limit
EB1825866-007	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	328	328	0.00	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2004051)									
EB1825785-001	MB1	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1200	1170	2.89	0% - 20%
EB1825824-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	819	812	0.858	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 2007118)									
EB1825782-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	5	4	0.00	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	5	4	0.00	No Limit
EB1825866-007	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	85	82	3.15	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	85	82	3.15	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2009441)									
EB1825785-001	MB1	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	26	25	0.00	0% - 20%
EB1825905-004	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	<1	0.00	No Limit
ED045G: Chloride by Discrete Analyser (QC Lot: 2009442)									
EB1825785-001	MB1	ED045G: Chloride	16887-00-6	1	mg/L	370	369	0.00	0% - 20%
EB1825905-004	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	8570	8530	0.436	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 2005604)									
EB1825780-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	1120	1110	0.400	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 2005604) - continued									
EB1825780-001	Anonymous	ED093F: Magnesium	7439-95-4	1	mg/L	72	72	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	2930	2920	0.269	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	10	10	0.00	0% - 50%
EB1825785-004	MB4	ED093F: Calcium	7440-70-2	1	mg/L	687	688	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	192	191	0.556	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	1950	1930	1.11	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	10	10	0.00	0% - 50%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2005605)									
EB1825780-001	Anonymous	EG020A-F: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.081	0.081	0.00	0% - 20%
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.26	0.26	0.00	No Limit
EB1825785-004	MB4	EG020A-F: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	3.58	3.58	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2005607)									
EB1825785-004	MB4	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EB1825824-007	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 2005749)									
EB1825785-001	MB1	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EB1825916-002	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	<1 µg/L	<0.001	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 2005750)									
EB1825785-001	MB1	EG020A-T: Antimony	7440-36-0	0.001	mg/L	0.004	0.003	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.003	0.002	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.11	0.13	15.8	0% - 50%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.34	0.36	4.12	No Limit
EB1825916-002	Anonymous	EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	14 µg/L	0.014	0.00	0% - 50%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<1 µg/L	<0.001	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	116000 µg/L	107	8.30	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<10 µg/L	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	146000 µg/L	132	10.00	0% - 20%

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG035F: Dissolved Mercury by FIMS (QC Lot: 2005606)									
EB1825785-001	MB1	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EB1825824-004	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2005747)									
EB1825785-001	MB1	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EB1825916-004	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.1 µg/L	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2006047)									
EB1825389-099	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2010865)									
EB1825785-002	MB2	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EB1825805-003	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2006047)									
EB1825389-099	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2010865)									
EB1825785-002	MB2	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EB1825805-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2006047)									
EB1825389-099	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EP080: BTEXN (QC Lot: 2010865)									
EB1825785-002	MB2	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EB1825805-003	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 2007121)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	99.8	98	102
				----	7 pH Unit	100	98	102
EA010P: Conductivity by PC Titrator (QCLot: 2007120)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	2100 µS/cm	100	91	107
				<1	24800 µS/cm	101	91	107
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 2004051)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	102	88	112
				<10	2000 mg/L	97.4	88	112
ED037P: Alkalinity by PC Titrator (QCLot: 2007118)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	91.7	80	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2009441)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	109	85	118
				<1	100 mg/L	94.6	85	118
ED045G: Chloride by Discrete Analyser (QCLot: 2009442)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	93.8	90	115
				<1	1000 mg/L	99.2	90	115
ED093F: Dissolved Major Cations (QCLot: 2005604)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
ED093F: Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
ED093F: Sodium	7440-23-5	1	mg/L	<1	----	----	----	----
ED093F: Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 2005605)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	98.4	79	118
EG020A-F: Antimony	7440-36-0	0.001	mg/L	<0.001	0.1 mg/L	101	87	113
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.4	88	116
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	102	89	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	96.2	83	112
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	95.8	82	114
EG020F: Dissolved Metals by ICP-MS (QCLot: 2005607)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.1 mg/L	92.3	85	114
EG020T: Total Metals by ICP-MS (QCLot: 2005749)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.1 mg/L	96.4	84	117
EG020T: Total Metals by ICP-MS (QCLot: 2005750)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 2005750) - continued								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	93.7	80	114
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.1 mg/L	102	87	115
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	88	112
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	96.9	90	114
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.8	79	111
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	104	82	118
EG035F: Dissolved Mercury by FIMS (QCLot: 2005606)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	112	84	118
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2005747)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	101	84	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2004977)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	1070 µg/L	88.9	38	114
EP071: C15 - C28 Fraction	----	100	µg/L	<100	1770 µg/L	89.0	50	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2005830)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	1070 µg/L	87.2	38	114
EP071: C15 - C28 Fraction	----	100	µg/L	<100	1770 µg/L	88.6	50	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2006047)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	160 µg/L	106	76	122
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2008537)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	1070 µg/L	101	38	114
EP071: C15 - C28 Fraction	----	100	µg/L	<100	1770 µg/L	90.7	50	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2010865)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	160 µg/L	90.3	76	122
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2010872)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	1070 µg/L	93.4	38	114
EP071: C15 - C28 Fraction	----	100	µg/L	<100	1770 µg/L	98.1	50	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2004977)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	1560 µg/L	89.1	43	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	1190 µg/L	86.8	49	134
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2005830)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	1560 µg/L	88.1	43	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	1190 µg/L	87.8	49	134

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2005830) - continued								
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2006047)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	185 µg/L	105	75	123
EP080: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2008537)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	1560 µg/L	96.2	43	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	1190 µg/L	91.7	49	134
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2010865)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	185 µg/L	89.8	75	123
EP080: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2010872)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	1560 µg/L	95.7	43	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	1190 µg/L	99.5	49	134
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN (QCLot: 2006047)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	94.6	77	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	100	78	122
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	103	78	119
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	99.1	77	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	104	76	121
EP080: Total Xylenes	----	2	µg/L	<2	----	----	----	----
EP080: Sum of BTEX	----	1	µg/L	<1	----	----	----	----
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	96.9	75	120
EP080: BTEXN (QCLot: 2010865)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	93.3	77	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	88.3	78	122
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	86.9	78	119
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	90.8	77	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	89.1	76	121
EP080: Total Xylenes	----	2	µg/L	<2	----	----	----	----
EP080: Sum of BTEX	----	1	µg/L	<1	----	----	----	----
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	90.8	75	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2009441)							
EB1825785-002	MB2	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	102	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 2009442)							
EB1825785-002	MB2	ED045G: Chloride	16887-00-6	400 mg/L	75.8	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2005605)							
EB1825780-002	Anonymous	EG020A-F: Aluminium	7429-90-5	0.5 mg/L	86.9	70	130
		EG020A-F: Antimony	7440-36-0	0.1 mg/L	96.6	70	130
		EG020A-F: Arsenic	7440-38-2	0.1 mg/L	86.0	70	130
		EG020A-F: Molybdenum	7439-98-7	0.1 mg/L	84.4	70	130
		EG020A-F: Selenium	7782-49-2	0.1 mg/L	78.4	70	130
EG020T: Total Metals by ICP-MS (QCLot: 2005750)							
EB1825785-002	MB2	EG020A-T: Arsenic	7440-38-2	1 mg/L	104	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 2005606)							
EB1825785-002	MB2	EG035F: Mercury	7439-97-6	0.01 mg/L	106	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2005747)							
EB1825785-002	MB2	EG035T: Mercury	7439-97-6	0.01 mg/L	90.1	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2006047)							
EB1825785-001	MB1	EP080: C6 - C9 Fraction	----	40 µg/L	77.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2010865)							
EB1825785-003	MB3	EP080: C6 - C9 Fraction	----	40 µg/L	# Not Determined	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2006047)							
EB1825785-001	MB1	EP080: C6 - C10 Fraction	C6_C10	40 µg/L	74.9	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2010865)							
EB1825785-003	MB3	EP080: C6 - C10 Fraction	C6_C10	40 µg/L	# Not Determined	70	130
EP080: BTEXN (QCLot: 2006047)							
EB1825785-001	MB1	EP080: Benzene	71-43-2	10 µg/L	101	70	130
		EP080: Toluene	108-88-3	10 µg/L	94.0	70	130
EP080: BTEXN (QCLot: 2010865)							
EB1825785-003	MB3	EP080: Benzene	71-43-2	10 µg/L	96.8	70	130
		EP080: Toluene	108-88-3	10 µg/L	97.2	70	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ET1701370**	Page	: 1 of 7
Client	: **SLR Consulting Australia Pty Ltd**	Laboratory	: Environmental Division Townsville
Contact	: MR PAUL TETT	Contact	: Customer Services ET
Address	: 33A PEEL STREET MACKAY QLD 4740	Address	: 14-15 Desma Ct, Bohle Townsville QLD AUSTRALIA 4814
Telephone	: +61 07 3181 3300	Telephone	: +61 7 4796 0600
Project	: Quarterly Environmental Monitoring	Date Samples Received	: 20-Oct-2017
Order number	: N/A	Date Analysis Commenced	: 20-Oct-2017
C-O-C number	: ----	Issue Date	: 27-Oct-2017
Sampler	: ----		
Site	: ----		
Quote number	: BN/350/17		
No. of samples received	: 9		
No. of samples analysed	: 9		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Diana Mesa	2IC Organic Chemist	Brisbane Organics, Stafford, QLD
Greg Vogel		Townsville Inorganics, Townsville, QLD
Greg Vogel	Laboratory Manager	Brisbane Inorganics, Stafford, QLD
Kim McCabe		Townsville Inorganics, Townsville, QLD
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD

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

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EA005P: pH by PC Titrator (QC Lot: 1189215)									
ET1701370-005	MB5	EA005-P: pH Value	----	0.01	pH Unit	8.20	8.30	1.21	0% - 20%
ET1701358-001	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	7.41	7.39	0.270	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 1189214)									
ET1701370-002	MB2	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	4160	4170	0.216	0% - 20%
ET1701358-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	264	239	9.95	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 1189347)									
ET1701361-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	3360	3380	0.445	0% - 20%
ET1701370-001	MB1	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1130	1150	1.23	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 1189213)									
ET1701370-005	MB5	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	547	546	0.311	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	547	546	0.311	0% - 20%
ET1701358-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	66	66	0.00	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	66	66	0.00	0% - 20%
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 1191988)									
ET1701367-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	29	31	6.15	0% - 20%
ET1701378-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	130	131	0.00	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 1191989)									
ET1701370-001	MB1	ED045G: Chloride	16887-00-6	1	mg/L	340	342	0.533	0% - 20%
ET1701378-004	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	192	192	0.00	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 1197297)									

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 1197297) - continued									
EM1714493-004	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	368	367	0.307	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	603	603	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	2690	2690	0.123	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	52	52	0.00	0% - 20%
EB1721959-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	3	3	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	695	685	1.37	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	3	3	0.00	No Limit
ED093F: Dissolved Major Cations (QC Lot: 1197298)									
ET1701375-006	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	1	1	0.00	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.00	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	20	20	0.00	0% - 50%
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.00	No Limit
ET1701370-005	MB5	ED093F: Calcium	7440-70-2	1	mg/L	287	282	1.87	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	90	91	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	1060	1050	0.419	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	7	7	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1197294)									
EB1721959-001	Anonymous	EG020A-F: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.002	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.09	0.09	0.00	No Limit
ET1701370-005	MB5	EG020A-F: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	3.28	3.27	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 1197295)									
EB1721959-001	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
ET1701370-005	MB5	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 1197385)									
EB1721966-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EB1722026-001	Anonymous	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.005	<0.005	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 1197386)									
EB1721966-001	Anonymous	EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 1197386) - continued									
EB1721966-001	Anonymous	EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.19	0.19	0.00	No Limit
EB1722026-001	Anonymous	EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.005	<0.005	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.007	0.007	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.010	0.010	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.11	0.10	15.3	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.05	<0.05	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.18	0.16	8.38	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 1197296)									
EB1721959-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ET1701370-005	MB5	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 1197404)									
EB1721966-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
ET1701358-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 1197423)									
EB1721094-024	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EB1722057-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 1197423)									
EB1721094-024	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EB1722057-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 1197423)									
EB1721094-024	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EB1722057-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EA005P: pH by PC Titrator (QCLot: 1189215)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	98.5	98	102
				----	7 pH Unit	101	98	102
EA010P: Conductivity by PC Titrator (QCLot: 1189214)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	147 µS/cm	94.6	91	107
				<1	12890 µS/cm	98.4	91	107
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 1189347)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	99.0	88	112
				<10	2000 mg/L	97.9	88	112
ED037P: Alkalinity by PC Titrator (QCLot: 1189213)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	200 mg/L	101	87	112
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 1191988)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	100 mg/L	103	80	120
				<1	25 mg/L	105	80	120
ED045G: Chloride by Discrete Analyser (QCLot: 1191989)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	1000 mg/L	95.4	80	120
				<1	10 mg/L	103	80	120
ED093F: Dissolved Major Cations (QCLot: 1197297)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
ED093F: Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
ED093F: Sodium	7440-23-5	1	mg/L	<1	----	----	----	----
ED093F: Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
ED093F: Dissolved Major Cations (QCLot: 1197298)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
ED093F: Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
ED093F: Sodium	7440-23-5	1	mg/L	<1	----	----	----	----
ED093F: Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 1197294)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	79	118
EG020A-F: Antimony	7440-36-0	0.001	mg/L	<0.001	0.1 mg/L	96.2	87	113
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	100	88	116
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	99.2	89	112
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	99.4	83	112
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	103	82	114

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020F: Dissolved Metals by ICP-MS (QCLot: 1197295)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.1 mg/L	107	85	114
EG020T: Total Metals by ICP-MS (QCLot: 1197385)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.1 mg/L	105	84	117
EG020T: Total Metals by ICP-MS (QCLot: 1197386)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	100	80	114
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.1 mg/L	104	87	115
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	88	112
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	104	90	114
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.4	79	111
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	107	82	118
EG035F: Dissolved Mercury by FIMS (QCLot: 1197296)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.5	84	118
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1197404)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.6	84	118
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1195938)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	1211 µg/L	68.9	38	114
EP071: C15 - C28 Fraction	----	100	µg/L	<100	2103 µg/L	78.0	50	132
EP071: C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1197423)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	160 µg/L	85.7	76	122
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1195938)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	1696 µg/L	71.3	43	119
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	1496 µg/L	80.9	49	134
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1197423)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	185 µg/L	82.7	75	123
EP080: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
EP080: BTEXN (QCLot: 1197423)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	88.2	77	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	88.6	78	122
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	85.6	78	119
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	87.5	77	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	89.7	76	121
EP080: Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----
EP080: Sum of BTEX	----	1	µg/L	<1	----	----	----	----

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080: BTEXN (QCLot: 1197423) - continued								
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	95.4	75	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 1191988)							
ET1701367-002	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	97.4	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 1191989)							
ET1701370-002	MB2	ED045G: Chloride	16887-00-6	400 mg/L	91.6	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 1197294)							
EB1721959-002	Anonymous	EG020A-F: Aluminium	7429-90-5	0.5 mg/L	93.6	70	130
		EG020A-F: Antimony	7440-36-0	0.06 mg/L	90.8	70	130
		EG020A-F: Arsenic	7440-38-2	0.1 mg/L	98.6	70	130
		EG020A-F: Molybdenum	7439-98-7	0.1 mg/L	70.1	70	130
		EG020A-F: Selenium	7782-49-2	0.1 mg/L	89.0	70	130
EG020T: Total Metals by ICP-MS (QCLot: 1197386)							
EB1721966-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	98.9	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 1197296)							
EB1721959-002	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	81.1	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 1197404)							
EB1721966-002	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	88.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 1197423)							
EB1721094-026	Anonymous	EP080: C6 - C9 Fraction	----	40 µg/L	84.5	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 1197423)							
EB1721094-026	Anonymous	EP080: C6 - C10 Fraction	C6_C10	40 µg/L	85.2	70	130
EP080: BTEXN (QCLot: 1197423)							
EB1721094-026	Anonymous	EP080: Benzene	71-43-2	10 µg/L	92.7	70	130
		EP080: Toluene	108-88-3	10 µg/L	91.9	70	130

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1825785**	Page	: 1 of 12
Amendment	: **1**		
Client	: **SLR Consulting Australia Pty Ltd**	Laboratory	: Environmental Division Brisbane
Contact	: MR PAUL TETT	Telephone	: +61 2 8784 8555
Project	: Quarterly Environmental Monitoring	Date Samples Received	: 26-Oct-2018
Site	: ----	Issue Date	: 28-Nov-2018
Sampler	: PAUL TETT	No. of samples received	: 9
Order number	:	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP080/071: Total Petroleum Hydrocarbons	EB1825785--003	MB3	**C6 - C9 Fraction**	----	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	EB1825785--003	MB3	**C6 - C10 Fraction**	C6_C10	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Regular Sample Surrogates

Sub-Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP080S: TPH(V)/BTEX Surrogates	EB1825785-006	LB8	**4-Bromofluorobenzene**	460-00-4	121 %	74-118 %	**Recovery greater than upper data quality objective**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method		*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)		*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural MB1		----	----	----	29-Oct-2018	09-Oct-2018	**20**
Clear Plastic Bottle - Natural MB2, MB5, Dup Blind (Blind Duplicate)	MB4, LB8,	----	----	----	29-Oct-2018	23-Oct-2018	**6**
Clear Plastic Bottle - Natural MB3		----	----	----	29-Oct-2018	24-Oct-2018	**5**
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural MB1		----	----	----	29-Oct-2018	16-Oct-2018	**13**
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural MB1		----	----	----	29-Oct-2018	23-Oct-2018	**6**
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved MB1		26-Oct-2018	16-Oct-2018	**10**	----	----	----
Amber VOC Vial - Sulfuric Acid Trip Blank		29-Oct-2018	22-Oct-2018	**7**	29-Oct-2018	22-Oct-2018	**7**

Matrix: **WATER**

Method / Container / Client Sample ID(s)	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EP080/071: Total Petroleum Hydrocarbons - Analysis Holding Time Compliance						
Amber VOC Vial - Sulfuric Acid						
MB1	29-Oct-2018	23-Oct-2018	**6**	29-Oct-2018	23-Oct-2018	**6**
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions						
Amber Glass Bottle - Unpreserved						
MB1	26-Oct-2018	16-Oct-2018	**10**	----	----	----
Amber VOC Vial - Sulfuric Acid						
Trip Blank	29-Oct-2018	22-Oct-2018	**7**	29-Oct-2018	22-Oct-2018	**7**
Amber VOC Vial - Sulfuric Acid						
MB1	29-Oct-2018	23-Oct-2018	**6**	29-Oct-2018	23-Oct-2018	**6**
EP080: BTEXN						
Amber VOC Vial - Sulfuric Acid						
Trip Blank	29-Oct-2018	22-Oct-2018	**7**	29-Oct-2018	22-Oct-2018	**7**
Amber VOC Vial - Sulfuric Acid						
MB1	29-Oct-2018	23-Oct-2018	**6**	29-Oct-2018	23-Oct-2018	**6**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	0	61	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	61	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P) MB1	**09-Oct-2018**	**----**	----	----	**29-Oct-2018**	09-Oct-2018	×
Clear Plastic Bottle - Natural (EA005-P) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**29-Oct-2018**	23-Oct-2018	×
Clear Plastic Bottle - Natural (EA005-P) MB3	**24-Oct-2018**	**----**	----	----	**29-Oct-2018**	24-Oct-2018	×
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) MB1	**09-Oct-2018**	**----**	----	----	**29-Oct-2018**	06-Nov-2018	✓
Clear Plastic Bottle - Natural (EA010-P) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**29-Oct-2018**	20-Nov-2018	✓
Clear Plastic Bottle - Natural (EA010-P) MB3	**24-Oct-2018**	**----**	----	----	**29-Oct-2018**	21-Nov-2018	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H) MB1	**09-Oct-2018**	**----**	----	----	**29-Oct-2018**	16-Oct-2018	×
Clear Plastic Bottle - Natural (EA015H) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**29-Oct-2018**	30-Oct-2018	✓
Clear Plastic Bottle - Natural (EA015H) MB3	**24-Oct-2018**	**----**	----	----	**29-Oct-2018**	31-Oct-2018	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) MB1	**09-Oct-2018**	**----**	----	----	**29-Oct-2018**	23-Oct-2018	×
Clear Plastic Bottle - Natural (ED037-P) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**29-Oct-2018**	06-Nov-2018	✓
Clear Plastic Bottle - Natural (ED037-P) MB3	**24-Oct-2018**	**----**	----	----	**29-Oct-2018**	07-Nov-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) MB1	**09-Oct-2018**	**----**	----	----	**30-Oct-2018**	06-Nov-2018	✓
Clear Plastic Bottle - Natural (ED041G) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**30-Oct-2018**	20-Nov-2018	✓
Clear Plastic Bottle - Natural (ED041G) MB3	**24-Oct-2018**	**----**	----	----	**30-Oct-2018**	21-Nov-2018	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G) MB1	**09-Oct-2018**	**----**	----	----	**30-Oct-2018**	06-Nov-2018	✓
Clear Plastic Bottle - Natural (ED045G) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**30-Oct-2018**	20-Nov-2018	✓
Clear Plastic Bottle - Natural (ED045G) MB3	**24-Oct-2018**	**----**	----	----	**30-Oct-2018**	21-Nov-2018	✓
ED093F: Dissolved Major Cations							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F) MB3	**24-Oct-2018**	**----**	----	----	**29-Oct-2018**	21-Nov-2018	✓
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) MB1	**09-Oct-2018**	**----**	----	----	**29-Oct-2018**	06-Nov-2018	✓
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**29-Oct-2018**	20-Nov-2018	✓
EG020F: Dissolved Metals by ICP-MS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020B-F) MB3	**24-Oct-2018**	**----**	----	----	**29-Oct-2018**	22-Apr-2019	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG020B-F) MB1	**09-Oct-2018**	**----**	----	----	**29-Oct-2018**	07-Apr-2019	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG020B-F) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**29-Oct-2018**	21-Apr-2019	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020B-T) MB3	**24-Oct-2018**	**30-Oct-2018**	22-Apr-2019	✓	**30-Oct-2018**	22-Apr-2019	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T) MB1	**09-Oct-2018**	**30-Oct-2018**	07-Apr-2019	✓	**30-Oct-2018**	07-Apr-2019	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**30-Oct-2018**	21-Apr-2019	✓	**30-Oct-2018**	21-Apr-2019	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T) Rinsate QA 1 and 2	**24-Oct-2018**	**30-Oct-2018**	22-Apr-2019	✓	**30-Oct-2018**	22-Apr-2019	✓
EG035F: Dissolved Mercury by FIMS							
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F) MB3	**24-Oct-2018**	**----**	----	----	**29-Oct-2018**	21-Nov-2018	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) MB1	**09-Oct-2018**	**----**	----	----	**29-Oct-2018**	06-Nov-2018	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**29-Oct-2018**	20-Nov-2018	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T) MB3	**24-Oct-2018**	**----**	----	----	**30-Oct-2018**	21-Nov-2018	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) MB1	**09-Oct-2018**	**----**	----	----	**30-Oct-2018**	06-Nov-2018	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**----**	----	----	**30-Oct-2018**	20-Nov-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) MB1	**09-Oct-2018**	**26-Oct-2018**	16-Oct-2018	×	**31-Oct-2018**	05-Dec-2018	✓
Amber Glass Bottle - Unpreserved (EP071) Dup Blind (Blind Duplicate)	**23-Oct-2018**	**26-Oct-2018**	30-Oct-2018	✓	**31-Oct-2018**	05-Dec-2018	✓
Amber Glass Bottle - Unpreserved (EP071) MB2, MB4, MB5	**23-Oct-2018**	**29-Oct-2018**	30-Oct-2018	✓	**29-Oct-2018**	08-Dec-2018	✓
Amber Glass Bottle - Unpreserved (EP071) LB8	**23-Oct-2018**	**30-Oct-2018**	30-Oct-2018	✓	**31-Oct-2018**	09-Dec-2018	✓
Amber Glass Bottle - Unpreserved (EP071) MB3, Rinsate QA 1 and 2	**24-Oct-2018**	**31-Oct-2018**	31-Oct-2018	✓	**31-Oct-2018**	10-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) Trip Blank	**08-Oct-2018**	**29-Oct-2018**	22-Oct-2018	×	**29-Oct-2018**	22-Oct-2018	×
Amber VOC Vial - Sulfuric Acid (EP080) MB1	**09-Oct-2018**	**29-Oct-2018**	23-Oct-2018	×	**29-Oct-2018**	23-Oct-2018	×
Amber VOC Vial - Sulfuric Acid (EP080) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**31-Oct-2018**	06-Nov-2018	✓	**31-Oct-2018**	06-Nov-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) MB3, Rinsate QA 1 and 2	**24-Oct-2018**	**31-Oct-2018**	07-Nov-2018	✓	**31-Oct-2018**	07-Nov-2018	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) MB1	**09-Oct-2018**	**26-Oct-2018**	16-Oct-2018	×	**31-Oct-2018**	05-Dec-2018	✓
Amber Glass Bottle - Unpreserved (EP071) Dup Blind (Blind Duplicate)	**23-Oct-2018**	**26-Oct-2018**	30-Oct-2018	✓	**31-Oct-2018**	05-Dec-2018	✓
Amber Glass Bottle - Unpreserved (EP071) MB2, MB4, MB5	**23-Oct-2018**	**29-Oct-2018**	30-Oct-2018	✓	**29-Oct-2018**	08-Dec-2018	✓
Amber Glass Bottle - Unpreserved (EP071) LB8	**23-Oct-2018**	**30-Oct-2018**	30-Oct-2018	✓	**31-Oct-2018**	09-Dec-2018	✓
Amber Glass Bottle - Unpreserved (EP071) MB3, Rinsate QA 1 and 2	**24-Oct-2018**	**31-Oct-2018**	31-Oct-2018	✓	**31-Oct-2018**	10-Dec-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) Trip Blank	**08-Oct-2018**	**29-Oct-2018**	22-Oct-2018	×	**29-Oct-2018**	22-Oct-2018	×
Amber VOC Vial - Sulfuric Acid (EP080) MB1	**09-Oct-2018**	**29-Oct-2018**	23-Oct-2018	×	**29-Oct-2018**	23-Oct-2018	×
Amber VOC Vial - Sulfuric Acid (EP080) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**31-Oct-2018**	06-Nov-2018	✓	**31-Oct-2018**	06-Nov-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) MB3, Rinsate QA 1 and 2	**24-Oct-2018**	**31-Oct-2018**	07-Nov-2018	✓	**31-Oct-2018**	07-Nov-2018	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) Trip Blank	**08-Oct-2018**	**29-Oct-2018**	22-Oct-2018	×	**29-Oct-2018**	22-Oct-2018	×
Amber VOC Vial - Sulfuric Acid (EP080) MB1	**09-Oct-2018**	**29-Oct-2018**	23-Oct-2018	×	**29-Oct-2018**	23-Oct-2018	×
Amber VOC Vial - Sulfuric Acid (EP080) MB2, MB4, MB5, LB8, Dup Blind (Blind Duplicate)	**23-Oct-2018**	**31-Oct-2018**	06-Nov-2018	✓	**31-Oct-2018**	06-Nov-2018	✓
Amber VOC Vial - Sulfuric Acid (EP080) MB3, Rinsate QA 1 and 2	**24-Oct-2018**	**31-Oct-2018**	07-Nov-2018	✓	**31-Oct-2018**	07-Nov-2018	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	7	28.57	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	1	9	11.11	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	61	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	3	28	10.71	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	9	22.22	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	4	61	6.56	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	28	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Major Cations - Dissolved	ED093F	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	4	61	**6.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	28	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	61	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	28	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ET1701370**	Page	: 1 of 9
Client	: **SLR Consulting Australia Pty Ltd**	Laboratory	: Environmental Division Townsville
Contact	: MR PAUL TETT	Telephone	: +61 7 4796 0600
Project	: Quarterly Environmental Monitoring	Date Samples Received	: 20-Oct-2017
Site	: ----	Issue Date	: 27-Oct-2017
Sampler	: ----	No. of samples received	: 9
Order number	: N/A	No. of samples analysed	: 9

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **NO Matrix Spike outliers occur.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method / Container / Client Sample ID(s)		Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Days overdue	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Days overdue
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural							
MB1, LB8	MB2,	----	----	----	20-Oct-2017	17-Oct-2017	**3**
Clear Plastic Bottle - Natural							
MB3, MB5,	MB4, Dup Blind (Blind Duplicate)	----	----	----	20-Oct-2017	18-Oct-2017	**2**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count: QC	Count: Regular	Rate (%): Actual	Rate (%): Expected	Quality Control Specification
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	0	14	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	14	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation: Date extracted	Extraction / Preparation: Due for extraction	Extraction / Preparation: Evaluation	Analysis: Date analysed	Analysis: Due for analysis	Analysis: Evaluation
EA005P: pH by PC Titrator								
Clear Plastic Bottle - Natural (EA005-P)								
MB1, LB8	MB2,	**17-Oct-2017**	**----**	----	----	**20-Oct-2017**	17-Oct-2017	×
Clear Plastic Bottle - Natural (EA005-P)								
MB3, MB5,	MB4, Dup Blind (Blind Duplicate)	**18-Oct-2017**	**----**	----	----	**20-Oct-2017**	18-Oct-2017	×

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator								
Clear Plastic Bottle - Natural (EA010-P)								
MB1,	MB2,	**17-Oct-2017**	**----**	----	----	**20-Oct-2017**	14-Nov-2017	✓
LB8								
Clear Plastic Bottle - Natural (EA010-P)								
MB3,	MB4,	**18-Oct-2017**	**----**	----	----	**20-Oct-2017**	15-Nov-2017	✓
MB5,	Dup Blind (Blind Duplicate)							
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H)								
MB1,	MB2,	**17-Oct-2017**	**----**	----	----	**20-Oct-2017**	24-Oct-2017	✓
LB8								
Clear Plastic Bottle - Natural (EA015H)								
MB3,	MB4,	**18-Oct-2017**	**----**	----	----	**20-Oct-2017**	25-Oct-2017	✓
MB5,	Dup Blind (Blind Duplicate)							
ED037P: Alkalinity by PC Titrator								
Clear Plastic Bottle - Natural (ED037-P)								
MB1,	MB2,	**17-Oct-2017**	**----**	----	----	**20-Oct-2017**	31-Oct-2017	✓
LB8								
Clear Plastic Bottle - Natural (ED037-P)								
MB3,	MB4,	**18-Oct-2017**	**----**	----	----	**20-Oct-2017**	01-Nov-2017	✓
MB5,	Dup Blind (Blind Duplicate)							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Clear Plastic Bottle - Natural (ED041G)								
MB1,	MB2,	**17-Oct-2017**	**----**	----	----	**23-Oct-2017**	14-Nov-2017	✓
LB8								
Clear Plastic Bottle - Natural (ED041G)								
MB3,	MB4,	**18-Oct-2017**	**----**	----	----	**23-Oct-2017**	15-Nov-2017	✓
MB5,	Dup Blind (Blind Duplicate)							
ED045G: Chloride by Discrete Analyser								
Clear Plastic Bottle - Natural (ED045G)								
MB1,	MB2,	**17-Oct-2017**	**----**	----	----	**23-Oct-2017**	14-Nov-2017	✓
LB8								
Clear Plastic Bottle - Natural (ED045G)								
MB3,	MB4,	**18-Oct-2017**	**----**	----	----	**23-Oct-2017**	15-Nov-2017	✓
MB5,	Dup Blind (Blind Duplicate)							
ED093F: Dissolved Major Cations								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (ED093F)								
MB3,	MB4	**18-Oct-2017**	**----**	----	----	**26-Oct-2017**	15-Nov-2017	✓
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)								
MB1,	MB2,	**17-Oct-2017**	**----**	----	----	**26-Oct-2017**	14-Nov-2017	✓
LB8								
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)								
MB5,	Dup Blind (Blind Duplicate)	**18-Oct-2017**	**----**	----	----	**26-Oct-2017**	15-Nov-2017	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)		Sample Date	Extraction / Preparation			Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG020B-F)								
MB3,	MB4	**18-Oct-2017**	**----**	----	----	**26-Oct-2017**	16-Apr-2018	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG020B-F)								
MB1, LB8	MB2,	**17-Oct-2017**	**----**	----	----	**26-Oct-2017**	15-Apr-2018	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG020B-F)								
MB5,	Dup Blind (Blind Duplicate)	**18-Oct-2017**	**----**	----	----	**26-Oct-2017**	16-Apr-2018	✓
EG020T: Total Metals by ICP-MS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG020B-T)								
MB3,	MB4	**18-Oct-2017**	**25-Oct-2017**	16-Apr-2018	✓	**25-Oct-2017**	16-Apr-2018	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T)								
MB1, LB8	MB2,	**17-Oct-2017**	**25-Oct-2017**	15-Apr-2018	✓	**25-Oct-2017**	15-Apr-2018	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020B-T)								
MB5, Rinsate QA 1 and 2	Dup Blind (Blind Duplicate),	**18-Oct-2017**	**25-Oct-2017**	16-Apr-2018	✓	**25-Oct-2017**	16-Apr-2018	✓
EG035F: Dissolved Mercury by FIMS								
Clear HDPE (U-T ORC) - Filtered; Lab-acidified (EG035F)								
MB3,	MB4	**18-Oct-2017**	**----**	----	----	**26-Oct-2017**	15-Nov-2017	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F)								
MB1, LB8	MB2,	**17-Oct-2017**	**----**	----	----	**26-Oct-2017**	14-Nov-2017	✓
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F)								
MB5,	Dup Blind (Blind Duplicate)	**18-Oct-2017**	**----**	----	----	**26-Oct-2017**	15-Nov-2017	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear HDPE (U-T ORC) - Unfiltered; Lab-acidified (EG035T)								
MB3,	MB4	**18-Oct-2017**	**----**	----	----	**25-Oct-2017**	15-Nov-2017	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T)								
MB1, LB8	MB2,	**17-Oct-2017**	**----**	----	----	**25-Oct-2017**	14-Nov-2017	✓
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T)								
MB5,	Dup Blind (Blind Duplicate)	**18-Oct-2017**	**----**	----	----	**25-Oct-2017**	15-Nov-2017	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) MB1, MB2, LB8	**17-Oct-2017**	**24-Oct-2017**	24-Oct-2017	✓	**25-Oct-2017**	03-Dec-2017	✓
Amber Glass Bottle - Unpreserved (EP071) MB3, MB4, MB5, Dup Blind (Blind Duplicate), Rinsate QA 1 and 2	**18-Oct-2017**	**24-Oct-2017**	25-Oct-2017	✓	**25-Oct-2017**	03-Dec-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) Trip Blank	**12-Oct-2017**	**25-Oct-2017**	26-Oct-2017	✓	**25-Oct-2017**	26-Oct-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) MB1, MB2, LB8	**17-Oct-2017**	**25-Oct-2017**	31-Oct-2017	✓	**25-Oct-2017**	31-Oct-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) MB3, MB4, MB5, Dup Blind (Blind Duplicate), Rinsate QA 1 and 2	**18-Oct-2017**	**25-Oct-2017**	01-Nov-2017	✓	**25-Oct-2017**	01-Nov-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) MB1, MB2, LB8	**17-Oct-2017**	**24-Oct-2017**	24-Oct-2017	✓	**25-Oct-2017**	03-Dec-2017	✓
Amber Glass Bottle - Unpreserved (EP071) MB3, MB4, MB5, Dup Blind (Blind Duplicate), Rinsate QA 1 and 2	**18-Oct-2017**	**24-Oct-2017**	25-Oct-2017	✓	**25-Oct-2017**	03-Dec-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) Trip Blank	**12-Oct-2017**	**25-Oct-2017**	26-Oct-2017	✓	**25-Oct-2017**	26-Oct-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) MB1, MB2, LB8	**17-Oct-2017**	**25-Oct-2017**	31-Oct-2017	✓	**25-Oct-2017**	31-Oct-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) MB3, MB4, MB5, Dup Blind (Blind Duplicate), Rinsate QA 1 and 2	**18-Oct-2017**	**25-Oct-2017**	01-Nov-2017	✓	**25-Oct-2017**	01-Nov-2017	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) Trip Blank	**12-Oct-2017**	**25-Oct-2017**	26-Oct-2017	✓	**25-Oct-2017**	26-Oct-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) MB1, MB2, LB8	**17-Oct-2017**	**25-Oct-2017**	31-Oct-2017	✓	**25-Oct-2017**	31-Oct-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080) MB3, MB4, MB5, Dup Blind (Blind Duplicate), Rinsate QA 1 and 2	**18-Oct-2017**	**25-Oct-2017**	01-Nov-2017	✓	**25-Oct-2017**	01-Nov-2017	✓

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: ✗ = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	4	37	**10.81**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	14	**0.00**	**10.00**	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Method Blanks (MB) - Continued							
Major Cations - Dissolved	ED093F	2	37	**5.41**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	14	**0.00**	**5.00**	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

Appendix A4 - Olive Downs Project, Moorvale South Project and Winchester South Project Bore Census Surveys

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 13040180**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	13040180
Easting (GDA94):	667825	**GPS Elevation:**	147
Northing:	7516351		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**28**	**Year Drilled:**	1970
Casing Stick Up (SU):	**0**	**Drilled By**	**IWSC**
Casing Material	**Steel**	**Internal Diameter**	200
Initial Water Quality Measurement (Driller Log)	6000 µS/cm		
Construction Summary (Driller Log)	**PVC Slotted 0-28.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**monitoring**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**16.24**	**Date / Time of Measurement:**	8:20:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**20.3**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**199**	**Temp**	**26**	**pH**	**7.54**	**ORP**	**-75.3**	**DO (%)** **20.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Bottom of well felt silty

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 13040180**

Photograph 2 **Carfax - 13040180**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040180

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-04	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**	IR	**LONGITUDE**	148-37-51	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	667824	**MAP-NO**	8653
D/O FILE NO.	520/001(69)	**LOT**		**NORTHING**	7516333	**MAP NAME**	BOMBANDY
R/O FILE NO.	81-01045	**PLAN**		**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	RD RSV ADJ P9	**ACCURACY**		**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.45106271	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	B1S1
GIS LNG	148.63092451	**COUNTY**				**BORE LINE**	BOM-BOMBANDY LINE
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	07/12/1970			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	ERNST L				
ROLES	IN	**DRILL COMPANY**	IWSC				
	SM	**METHOD OF CONST.**	CABLE TOOL				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	07/12/1970	1	Polyvinyl Chloride	3.100	WT	60	0.00	28.50
A	07/12/1970	2	Perforated or Slotted Casing		AP	60		28.50

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.30	TOP SOIL
3	0.30	3.04	CLAYEY SAND
5	3.04	4.87	CLAYBOUND SAND
7	4.87	9.44	CLAY
9	9.44	11.58	SANDY CLAY
11	11.58	14.32	CLAY
13	14.32	18.28	SAND

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RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
15	18.28	21.79	CLAYEY SAND
17	21.79	24.53	SANDY CLAY
19	24.53	24.68	SAND
21	24.68	30.78	CLAYEY SAND
23	30.78	32.00	DECOMPOSED ROCK

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00	30.80	ISAAC RIVER ALLUVIUM

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	24.00	30.00	SAND	07/12/1970	-17.20	N	6000 US/CM		Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	13/07/1971	145.08	SVY	STD	R	
X	13/07/1971	144.98	SVY	STD	N	

WATER ANALYSIS PART1

BORE REPORT

REG NUMBER 13040180

PIPE	DATE	RD ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH
A	17/05/1971	1 GCL	048750	31.00	BA	GB	6000	7.5		3659.30	3430.06	390	370	0.1	26.3	
A	25/07/1989	1 GCL	130767	31.00	PU	GB	4050	8.4	5	2653.00	2271.69	143	652		30.6	10.17
A	03/10/1990	1 GCL	136449		PU	GB	3980	8.5	3	2755.53	2364.23	123	673	0.1	34.7	10.99
A	15/07/1999	1 GCL	201500		PU	GB	5290	9.0	2	3598.61	3169.70	197	833	0.1	37.5	12.71

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	17/05/1971	1	1195.0		26.0	79.0		451.0			1710.0	0.30		198.0				
A	25/07/1989	1	840.0	4.3	11.0	28.0	0.05	760.0	0.05	17.0	980.0	0.10	2.5	10.0				
A	03/10/1990	1	886.0	4.1	5.7	26.5	0.00	776.1	0.00	22.0	1032.0	0.16	2.9	0.0				
A	15/07/1999	1	1209.5	5.3	3.9	45.5	0.01	848.1	0.00	82.3	1316.3	0.02	0.0	87.4	0.00	0.00	0.20	0.00

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	07/12/1970	-17.30	R		NR	A	13/07/1971	-17.05	R		NR	A	28/09/1971	-17.00	R		NR
A	17/11/1971	-17.05	R		NR	A	11/12/1974	-16.90	R		NR	A	16/04/1975	-16.68	R		NR
A	02/07/1975	-16.65	R		NR	A	07/10/1975	-16.67	R		NR	A	25/11/1975	-15.03	R		NR
A	06/04/1976	-14.01	R		NR	A	07/07/1976	-14.43	R		NR	A	21/09/1976	-16.40	R		NR
A	16/11/1976	-16.42	R		NR	A	23/02/1977	-16.40	R		NR	A	14/04/1977	-16.30	R		NR
A	28/06/1977	-16.34	R		NR	A	06/09/1977	-16.32	R		NR	A	06/12/1977	-16.25	R		NR
A	07/03/1978	-16.18	R		NR	A	27/06/1978	-16.10	R		NR	A	05/09/1978	-16.13	R		NR
A	01/12/1978	-16.37	R		NR	A	03/04/1979	-15.92	R		NR	A	02/08/1979	-15.90	R		NR
A	13/11/1979	-15.95	R		NR	A	11/03/1980	-15.41	R		NR	A	03/06/1980	-15.40	R		NR
A	09/09/1980	-15.45	R		NR	A	03/12/1980	-15.58	R		NR	A	24/02/1981	-15.32	R		NR
A	28/04/1981	-15.38	R		NR	A	28/07/1981	-15.32	R		NR	A	30/09/1981	-15.52	R		NR
A	01/12/1981	-15.50	R		NR	A	01/09/1982	-15.90	R		NR	A	10/08/1983	-12.65	R		NR
A	14/03/1984	-16.00	R		NR	A	04/09/1984	-16.00	R		NR	A	13/02/1985	-16.15	R		NR
A	12/09/1985	-15.70	R		NR	A	03/03/1986	-15.68	R		NR	A	09/07/1986	-15.70	R		NR
A	13/08/1987	-16.40	R		NR	A	25/07/1989	-15.76	R		NR	A	07/12/1989	-15.77	R		NR
A	04/10/1990	-15.75	R		NR	A	27/03/1991	-15.26	R		NR	A	14/08/1991	-15.28	R		NR
A	28/09/1994	-15.75	R		NR	A	27/03/1996	-16.00	R		NR	A	10/07/1996	-16.07	R		NR

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PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	01/10/1996	-16.06	R		NR	A	15/01/1997	-16.21	R		NR	A	28/05/1997	-16.25	R		NR
A	08/08/1997	-16.31	R		NR	A	12/11/1997	-16.39	R		NR	A	01/04/1998	-16.50	R		NR
A	20/07/1998	-16.58	R		NR	A	16/12/1998	-16.45	R		NR	A	15/07/1999	-16.49	R		NR
A	30/11/1999	-16.55	R		NR	A	28/03/2000	-16.65	R		NR	A	28/06/2000	-16.63	R		NR
A	20/02/2001	-16.65	R		NR	A	09/05/2001	-16.67	R		NR	A	20/07/2001	-16.76	R		NR
A	07/11/2001	-16.82	R		ACT	A	21/08/2002	-17.01	R		ACT	A	14/01/2003	-17.27	R		ACT
A	22/07/2003	-17.30	R		ACT	A	23/09/2003	-17.34	R		ACT	A	20/02/2004	-17.43	R		ACT
A	29/03/2004	-17.53	R		ACT	A	21/11/2005	-17.97	R		ACT	A	02/03/2006	-18.07	R		ACT
A	12/05/2006	-18.14	R		ACT	A	22/08/2006	-18.11	R		ACT	A	17/12/2006	-18.26	R		ACT
A	03/04/2007	-18.28	R		NR	A	26/07/2007	-18.27	R		NR	A	09/10/2007	-18.24	R		ACT
A	17/12/2007	-18.26	R		ACT	A	03/04/2008	-17.85	R		ACT	A	08/08/2008	-17.70	R		ACT
A	28/10/2008	-18.11	R		NR	A	17/12/2008	-17.66	R		ACT	A	01/04/2009	-17.60	R		ACT
A	11/06/2009	-17.61	R		ACT	A	01/12/2009	-17.65	R		ACT	A	31/05/2010	-17.57	R		ACT
A	12/05/2011	-16.10	R		ACT	A	25/10/2011	-16.49	R		ACT	A	16/01/2013	-16.61	R		ACT
A	09/04/2013	-16.50	R		ACT	A	01/08/2013	-16.43	R		ACT	A	19/11/2013	-16.42	R		ACT
A	05/02/2014	-15.34	R		NR	A	21/05/2014	-16.37	R		ACT	A	16/09/2014	-16.41	R		ACT
A	13/01/2015	-16.39	R		NR	A	14/04/2015	-16.38	R		ACT	A	08/07/2015	-16.43	R		ACT
A	22/09/2015	-16.44	R		ACT	A	12/01/2016	-16.48	R		ACT	A	24/05/2016	-16.44	R		ACT
A	02/08/2016	-16.34	R		ACT	A	08/11/2016	-16.34	R		ACT	A	07/02/2017	-16.33	R		ACT
A	06/06/2017	-16.22	R		ACT	A	12/09/2017	-16.26	R		ACT						

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	09/07/1986		710							PU	GB
A	08/10/1986		700							PU	GB
A	25/07/1989		3110							PU	GB
A	04/10/1990		4320							PU	GB
A	14/08/1991		4400							PU	GB

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PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	10/07/1996		3800							PU	
A	08/08/1997		7400							PU	
A	20/07/1998		7000							PU	
A	15/07/1999		5260	8.8	27.1					PG	GB
A	07/11/2001		6700	7.9	24.5					PG	GB
A	21/08/2002		6250	7.9	20.8					PG	GB
A	23/09/2003		6850	8.4	28.0					PG	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 13040181**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	13040181
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1971
Casing Stick Up (SU):	-	**Drilled By**	**IWSC**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	726 µS/cm		
Construction Summary (Driller Log)	**PVC Slotted 0-18.6**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore report status abandoned and destroyed

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 13040181**

Photograph 2 **Carfax - 13040181**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040181

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-12	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**	IR	**LONGITUDE**	148-37-57	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	667995	**MAP-NO**	8653
D/O FILE NO.	520/00169	**LOT**	1	**NORTHING**	7516067	**MAP NAME**	BOMBANDY
R/O FILE NO.	81-01045	**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**		**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.453446034	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	B5S2
GIS LNG	148.632608746	**COUNTY**	CAIRNS			**BORE LINE**	BOM-BOMBANDY LINE
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	04/05/1971			**DATA OWNER**	DNR
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	A. ERICKSON				
ROLES	IN	**DRILL COMPANY**	IWSC				
	SM	**METHOD OF CONST.**	CABLE TOOL				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	04/05/1971	1	Polyvinyl Chloride	3.100	WT	60	0.00	18.60
A	04/05/1971	2	Perforated or Slotted Casing		AP	60		18.60

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.13	TOP SOIL
3	2.13	8.38	SANDY CLAY
5	8.38	14.93	SAND
7	14.93	15.84	COARSE SAND
9	15.84	18.59	SANDY CLAY
10	18.59	19.50	SHALE AND SANDSTONE

STRATIGRAPHY DETAILS

BORE REPORT

REG NUMBER 13040181

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00	18.60	ISAAC RIVER ALLUVIUM

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.90	15.80	SAND	04/05/1971	-15.12	N	726 US/CM		Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	13/07/1971	142.22	SVY	STD	R	
X	13/07/1971	141.89	SVY	STD	N	

WATER ANALYSIS PART1

PIPE	DATE	RD	ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH
A	04/05/1971	1	GCL	048748	16.00	BA	GB	726	8.0		619.00	445.16	101	280	0.3	6.3	3.59
A	03/10/1990	1	GCL	136440		PU	GB	630	7.5	17	499.19	365.52	191	244	1.4	2.0	1.06
A	27/10/1993	1	GCL	154829		PU	GB	685	7.3	23	517.60	399.27	199	228	1.3	2.1	0.58

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	04/05/1971	1	145.0		14.0	16.0		342.0			80.0	1.00		21.0				

BORE REPORT

REG NUMBER 13040181

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	03/10/1990	1	64.6	9.2	37.7	23.5	0.00	296.4	0.00	0.6	56.8	0.25	5.4	4.7				
A	27/10/1993	1	69.2	7.0	39.8	24.2	0.00	277.1	0.00	0.4	83.2	0.13	12.9	3.7				

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	13/07/1971	-15.12	R		NR	A	28/09/1971	-15.03	R		NR	A	17/11/1971	-15.14	R		NR
A	06/04/1972	-15.20	R		NR	A	08/08/1972	-15.34	R		NR	A	31/10/1972	-15.46	R		NR
A	05/02/1973	-15.46	R		NR	A	10/04/1973	-15.46	R		NR	A	04/09/1973	-15.36	R		NR
A	03/04/1974	-14.95	R		NR	A	24/07/1974	-15.41	R		NR	A	01/10/1974	-15.40	R		NR
A	11/12/1974	-15.35	R		NR	A	16/04/1975	-15.15	R		NR	A	02/07/1975	-15.30	R		NR
A	07/10/1975	-15.10	R		NR	A	25/11/1975	-14.00	R		NR	A	06/04/1976	-13.12	R		NR
A	07/07/1976	-13.50	R		NR	A	21/09/1976	-13.31	R		NR	A	16/11/1976	-13.35	R		NR
A	23/02/1977	-13.29	R		NR	A	14/04/1977	-13.08	R		NR	A	28/06/1977	-13.00	R		NR
A	06/09/1977	-12.95	R		NR	A	06/12/1977	-12.90	R		NR	A	07/03/1978	-12.86	R		NR
A	27/06/1978	-12.60	R		NR	A	05/09/1978	-12.60	R		NR	A	01/12/1978	-12.88	R		NR
A	03/04/1979	-12.30	R		NR	A	02/08/1979	-12.30	R		NR	A	13/11/1979	-12.32	R		NR
A	11/03/1980	-11.97	R		NR	A	03/06/1980	-11.95	R		NR	A	09/09/1980	-11.95	R		NR
A	03/12/1980	-12.10	R		NR	A	24/02/1981	-12.00	R		NR	A	28/04/1981	-12.02	R		NR
A	28/07/1981	-12.00	R		NR	A	30/09/1981	-12.16	R		NR	A	01/12/1981	-12.09	R		NR
A	01/09/1982	-12.41	R		NR	A	14/03/1984	-12.58	R		NR	A	04/09/1984	-12.60	R		NR
A	13/02/1985	-12.68	R		NR	A	12/09/1985	-12.15	R		NR	A	03/03/1986	-12.01	R		NR
A	09/07/1986	-12.20	R		NR	A	26/03/1987	-13.05	R		NR	A	13/08/1987	-13.18	R		NR
A	07/03/1989	-13.05	R		NR	A	25/07/1989	-12.75	R		NR	A	07/12/1989	-12.30	R		NR
A	04/10/1990	-12.26	R		NR	A	27/03/1991	-11.57	R		NR	A	14/08/1991	-11.21	R		NR
A	27/10/1993	-12.14	R		NR	A	28/09/1994	-12.47	R		NR	A	27/03/1996	-13.02	R		NR
A	10/07/1996	-13.11	R		NR	A	01/10/1996	-13.22	R		NR	A	15/01/1997	-13.31	R		NR
A	28/05/1997	-13.44	R		NR	A	08/08/1997	-13.53	R		NR	A	12/11/1997	-13.65	R		NR
A	01/04/1998	-13.85	R		NR	A	20/07/1998	-13.95	R		NR	A	16/12/1998	-13.90	R		NR
A	15/07/1999	-13.96	R	D	NR	A	30/11/1999	-14.09	R	D	NR	A	28/03/2000	-14.17	R	D	NR
A	28/06/2000	-14.20	R	D	NR	A	04/10/2000	-14.17	R	D	NR	A	20/02/2001	-8.40	R	D	NR
A	09/05/2001	-8.38	R	D	NR	A	20/07/2001	-8.38	R	D	NR	A	07/11/2001	-8.38	R	D	ACT
A	21/01/2002	-8.38	R	D	NR	A	21/08/2002	-8.45	R	D	ACT	A	14/01/2003	-8.60	R	D	ACT
A	22/07/2003	-8.67	R	D	ACT	A	23/09/2003	-8.67	R	D	ACT	A	20/02/2004	-8.99	R	D	ACT

BORE REPORT

REG NUMBER 13040181

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	30/03/2004	-9.08	R	D	ACT	A	21/11/2005	-11.86	R		ACT						

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	03/03/1986		640							PU	GB
A	09/07/1986		650							PU	GB
A	08/10/1986		660							PU	GB
A	26/03/1987		655							PU	GB
A	08/10/1987		584							PU	GB
A	20/04/1988		480							PU	GB
A	04/10/1990		760							PU	GB
A	27/10/1993		700							PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 13040182**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	13040182
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1971
Casing Stick Up (SU):	-	**Drilled By**	**IWSC**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No Record**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore report status abandoned but still usable. No mention of water in bore report

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**phone call**	**Photo**	no

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 13040182**

Photograph 2 **Carfax - 13040182**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040182

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-29	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**	IR	**LONGITUDE**	148-38-14	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	668470	**MAP-NO**	8653
D/O FILE NO.	520/001(69)	**LOT**	1	**NORTHING**	7515544	**MAP NAME**	BOMBANDY
R/O FILE NO.	81-01045	**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**		**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.458118501	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	B4S3 BOMBANDY LINE
GIS LNG	148.63728161	**COUNTY**	CAIRNS			**BORE LINE**	BOM-BOMBANDY LINE
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	23/04/1971			**DATA OWNER**	DNR
STATUS	Abandoned but Still Usable	**DRILLERS NAME**	L.ERNST				
ROLES		**DRILL COMPANY**	IWSC				
		METHOD OF CONST.	CABLE TOOL				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.76	TOPSOIL
2	0.76	4.88	SANDY CLAY
3	4.88	11.58	SAND
4	11.58	14.02	COARSE SAND
5	14.02	17.06	SANDY CLAY
6	17.06	18.28	SHALE AND SANDSTONE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 13040182

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
X	23/04/1971	143.02	SVY	STD	N	17929

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 13040183**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	13040183
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1971
Casing Stick Up (SU):	-	**Drilled By**	**IWSC**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC Slotted 0-18.8**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore report status abandoned and destroyed

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 13040183**

Photograph 2 **Carfax - 13040183**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040183

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-47	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**	IR	**LONGITUDE**	148-38-30	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	668911	**MAP-NO**	8653
D/O FILE NO.	520/00169	**LOT**	1	**NORTHING**	7514985	**MAP NAME**	BOMBANDY
R/O FILE NO.	81-01045	**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**		**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.463124794	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	B2S4 BOMBANDY LINE
GIS LNG	148.641620655	**COUNTY**	CAIRNS			**BORE LINE**	BOM-BOMBANDY LINE
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	29/03/1971			**DATA OWNER**	DNR
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	ERNST L				
ROLES	IN	**DRILL COMPANY**	IWSC				
	SM	**METHOD OF CONST.**	CABLE TOOL				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	29/03/1971	1	Polyvinyl Chloride	3.100	WT	60	0.00	16.80
A	29/03/1971	2	Perforated or Slotted Casing		AP	60		16.80

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.52	TOPSOIL
2	1.52	2.44	SAND
3	2.44	4.88	CLAY
4	4.88	5.49	CLAYBOUND SAND
5	5.49	6.40	SAND
6	6.40	9.14	CLAY
7	9.14	9.45	SAND

BORE REPORT

REG NUMBER 13040183

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
8	9.45	13.72	CLAY
9	13.72	16.76	CLAYBOUND SAND
10	16.76	19.81	CLAYBOUND GRAVEL
11	19.81	21.95	SANDSTONE

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00	19.80	ISAAC RIVER ALLUVIUM

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	15.70	19.80	CSAN GRAV	23/09/1971	-15.72	N			Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	29/03/1971	143.05	SVY	STD	R	17929
X	29/03/1971	142.76	SVY	STD	N	17929

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 13040183

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	13/07/1971	-15.94	R		NR	A	28/09/1971	-15.89	R		NR	A	17/11/1971	-15.98	R		NR
A	06/04/1972	-15.92	R		NR	A	08/08/1972	-16.06	R		NR	A	31/10/1972	-16.08	R		NR
A	05/02/1973	-16.11	R		NR	A	10/04/1973	-16.06	R		NR	A	04/09/1973	-16.07	R		NR
A	24/07/1974	-16.08	R		NR	A	01/10/1974	-16.12	R		NR	A	11/12/1974	-16.00	R		NR
A	16/04/1975	-15.81	R		NR	A	02/07/1975	-15.96	R		NR	A	07/10/1975	-15.97	R		NR
A	25/11/1975	-15.01	R		NR	A	07/07/1976	-15.85	R		NR	A	21/09/1976	-15.83	R		NR
A	16/11/1976	-15.84	R		NR	A	28/06/1977	-15.80	R		NR	A	06/09/1977	-15.78	R		NR
A	06/12/1977	-15.69	R		NR	A	07/03/1978	-15.78	R		NR	A	27/06/1978	-15.65	R		NR
A	05/09/1978	-15.66	R		NR	A	01/12/1978	-15.99	R		NR	A	03/04/1979	-15.23	R		NR
A	02/08/1979	-15.25	R		NR	A	13/11/1979	-15.40	R		NR	A	11/03/1980	-15.11	R		NR
A	03/06/1980	-15.24	R		NR	A	09/09/1980	-15.50	R		NR	A	03/12/1980	-15.60	R		NR
A	24/02/1981	-15.48	R		NR	A	28/04/1981	-15.47	R		NR	A	28/07/1981	-15.49	R		NR
A	30/09/1981	-15.60	R		NR	A	01/12/1981	-15.50	R		NR	A	01/09/1982	-15.84	R		NR
A	10/08/1983	-15.70	R		NR	A	14/03/1984	-15.92	R		NR						

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 13040184**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	13040184
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1971
Casing Stick Up (SU):	-	**Drilled By**	**IWSC**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	36800 µS/cm		
Construction Summary (Driller Log)	**PVC Slotted 0-18.6**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore report status abandoned and destroyed

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 13040184**

Photograph 2 **Carfax - 13040184**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040184

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-28-06	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**	IR	**LONGITUDE**	148-38-50	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	669488	**MAP-NO**	8653
D/O FILE NO.	520/00169	**LOT**	1	**NORTHING**	7514387	**MAP NAME**	BOMBANDY
R/O FILE NO.	81-01045	**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**		**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.468464729	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	B3S5 BOMBANDY LINE
GIS LNG	148.647294837	**COUNTY**	CAIRNS			**BORE LINE**	BOM-BOMBANDY LINE
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	20/04/1971			**DATA OWNER**	DNR
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	ERNST L				
ROLES	IN	**DRILL COMPANY**	IWSC				
		METHOD OF CONST.	CABLE TOOL				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	20/04/1971	1	Polyvinyl Chloride	3.100	WT	60	0.00	18.60
A	20/04/1971	2	Perforated or Slotted Casing		AP	60		18.60

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.61	TOPSOIL
2	0.61	1.83	CLAYBOUND SAND
3	1.83	7.62	SANDY CLAY
4	7.62	10.67	CLAY
5	10.67	13.72	SANDY CLAY
6	13.72	15.24	CLAY
7	15.24	17.98	SANDY CLAY

BORE REPORT

REG NUMBER 13040184

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
8	17.98	19.81	SAND
9	19.81	21.34	SANDY CLAY
10	21.34	21.95	SHALE & SANDSTONE

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00	21.30	ISAAC RIVER ALLUVIUM

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	18.00	19.80	SAND	20/04/1971	-14.42	N	36800 US/CM		Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	20/04/1971	141.78	SVY	STD	R	17929
X	20/04/1971	141.45	SVY	STD	N	17929

WATER ANALYSIS PART1

PIPE	DATE	RD	ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040184

PIPE	DATE	RD	ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH
A	20/04/1971	1	GCL	048749	20.00	BA	GB	36800	7.0		27677.40	27351.58	12356	526	1.0	22.8	

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	20/04/1971	1	5832.0		560.0	2663.0		641.0			15720.0	1.40		2260.0				

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	13/07/1971	-14.39	R		NR	A	28/09/1971	-14.41	R		NR	A	17/11/1971	-14.47	R		NR
A	06/04/1972	-14.47	R		NR	A	08/08/1972	-14.49	R		NR	A	31/10/1972	-14.55	R		NR
A	05/02/1973	-14.68	R		NR	A	10/04/1973	-14.61	R		NR	A	04/09/1973	-14.62	R		NR
A	07/07/1976	-14.62	R		NR	A	21/09/1976	-14.58	R		NR	A	16/11/1976	-14.61	R		NR
A	28/06/1977	-14.60	R		NR	A	06/09/1977	-14.56	R		NR	A	06/12/1977	-14.53	R		NR
A	07/03/1978	-14.50	R		NR	A	27/06/1978	-14.56	R		NR	A	05/09/1978	-14.58	R		NR
A	01/12/1978	-14.69	R		NR	A	03/04/1979	-14.10	R		NR	A	02/08/1979	-14.10	R		NR
A	13/11/1979	-14.16	R		NR	A	11/03/1980	-13.90	R		NR	A	03/06/1980	-14.23	R		NR
A	09/09/1980	-14.28	R		NR	A	03/12/1980	-14.41	R		NR	A	24/02/1981	-14.35	R		NR
A	28/04/1981	-14.36	R		NR	A	28/07/1981	-14.35	R		NR	A	30/09/1981	-14.52	R		NR
A	01/12/1981	-14.41	R		NR	A	01/09/1982	-14.73	R		NR	A	10/08/1983	-14.68	R		NR
A	14/03/1984	-14.80	R		NR												

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - Unknown Bore 1**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	Unknown Bore 1	**Ref No/GW Number:**	-
Easting (GDA94):	670295	**GPS Elevation:**	145
Northing:	7516420		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**17.8**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.3**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	140
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**poor**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	60000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**13.765**	**Date / Time of Measurement:**	11:20:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.3**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**343**	**Temp**	**27.5**	**pH**	**6.01**	**ORP**	**-76**	**DO (%)**	**19.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Near to powerline

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - Unknown Bore 1**

Photograph 2 **Carfax - Unknown Bore 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - Unknown Bore 2**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	Unknown Bore 2	**Ref No/GW Number:**	-
Easting (GDA94):	670294	**GPS Elevation:**	135
Northing:	7516425		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**1.35**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	153
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**poor**	**Pump Type**	likely piston (downhole)
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	60000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	11:35:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.1**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

pump rods deployed down bore

GROUNDWATER BORE REPORT CARD

Additional Notes

Threaded steel casing; potentially drill rod. Not sample due to pump rods deployed/broken down bore

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**phone call**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - Unknown Bore 2**

Photograph 2 **Carfax - Unknown Bore 2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90341**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	90341
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1984
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-18.1** **Slotted 16.0-18.1**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90341**

Photograph 2 **Carfax - 90341**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90341

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-26-54	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-39-20	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	670362	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7516607	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	L1 RP884523	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.448437021	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	SANDY BORE
GIS LNG	148.655536384	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	19/09/1984			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	19/09/1984	1	Plastic Casing	5.900	WT	140	0.00	16.00
A	19/09/1984	2	Screen		AP	140	16.00	18.10

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.61	TOP SOIL
2	0.61	7.32	BROWN CLAY
3	7.32	18.08	SAND & WATER *

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

BORE REPORT

REG NUMBER 90341

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	7.32	18.08	SAND			N			Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90075**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	Bridge Bore	**Ref No/GW Number:**	90075
Easting (GDA94):	674591	**GPS Elevation:**	144
Northing:	7517833		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1992
Casing Stick Up (SU):	**0.29**	**Drilled By**	**McCarthy Drilling**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-29.0** **Slotted 17.0-29.0** **Open hole 29.0-35.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**steel manifold to 3" Poly**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:30:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90075**

Photograph 2 **Carfax - 90075**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90075

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-26-05	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-41-46	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	674554	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7518068	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.434825706	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	BRIDGE BORE
GIS LNG	148.696091677	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/01/1992			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	MCCARTHY				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1992	1	Plastic Casing			127	0.00	29.00
A	01/01/1992	2	Perforated or Slotted Casing			127	17.00	29.00
A	01/01/1992	3	Open Hole				29.00	35.00
A	01/01/1992	4	Gravel Pack					

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	6.00	SANDY LOAM
2	6.00	6.50	SAND
3	6.50	11.00	SANDSTONE
4	11.00	11.50	SANDY CLAY
5	11.50	35.00	SANDSTONE

BORE REPORT

REG NUMBER 90075

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	11.50	35.00	SDST SSTO	01/01/1993	-17.06	N	GOOD	0.63	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
X	22/07/1993	-17.07	N		NR												

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 90075

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 103082**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	2nd Bridge Bore	**Ref No/GW Number:**	103082
Easting (GDA94):	674586	**GPS Elevation:**	148
Northing:	7517730		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1997
Casing Stick Up (SU):	**1.2**	**Drilled By**	**McCarthy Drilling**
Casing Material	**PVC**	**Internal Diameter**	141 (OD)
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Plastic Casing 0-30.0** **Slotted casing 20.0-27.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" steel to 2" poly.** **No sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	60000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:52:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 103082**

Photograph 2 **Carfax - 103082**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 103082

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-26-13	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-41-45	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	674522	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7517822	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.437047938	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	2ND BUDGE BORE
GIS LNG	148.695813873	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	08/10/1997			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	MCCARTHY DM				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	08/10/1997	1	Plastic Casing	5.900	WT	141	0.00	30.00
A	08/10/1997	2	Perforated or Slotted Casing		AP	141	20.00	27.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOOPSOIL
2	0.50	9.50	CLAY (DARK BROWN)
3	9.50	16.00	BASALT (BROWN WEATHERED)
4	16.00	21.00	BASALT (GREY)
5	21.00	26.00	JOINTED ROCK
6	26.00	30.00	SANDSTONE

STRATIGRAPHY DETAILS

BORE REPORT

REG NUMBER 103082

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	21.00	26.00	SDST SSTO	08/10/1997	-18.00	N		0.40	Y	FR	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 103082

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 103515**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	103515
Easting (GDA94):	674298	**GPS Elevation:**	143
Northing:	7517580		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1999
Casing Stick Up (SU):	**0.39**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	141 (OD)
Initial Water Quality Measurement (Driller Log)	1100 µS/cm		
Construction Summary (Driller Log)	**Plastic Casing 0-43.90** **Slotted casing 19.2-43.9**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" steel to 2" poly.** **No sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	1:01:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 103515**

Photograph 2 **Carfax - 103515**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 103515

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-26-22	**MAP-SCALE**	104
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-41-39	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	674342	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7517545	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.439465577	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	
GIS LNG	148.694107581	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	17/10/1999			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	RIDDELL W				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY RIG				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	17/10/1999	1	Plastic Casing	5.900	WT	141	0.00	43.90
A	17/10/1999	2	Perforated or Slotted Casing		AP	141	19.20	43.90

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.90	TOP SOIL
2	1.90	13.10	CLAY
3	13.10	17.00	WEATHERED ROCK
4	17.00	22.40	WEATHERED SANDSTONE
5	22.40	31.00	SANDSTONE
6	31.00	33.20	VERY HARD BAND SID
7	33.20	37.60	SANDSTONE

BORE REPORT

REG NUMBER 103515

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
8	37.60	38.90	SHALE AND COKED COAL
9	38.90	43.90	SANDSTONE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	19.20	43.89	SDST	17/10/1999	-18.29	N	1100 US/CM	1.30	Y	PS	BLENHEIM FORMATION

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 103515

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 151344/1**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	151344
Easting (GDA94):	675224	**GPS Elevation:**	136
Northing:	7519939		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**18.67**	**Year Drilled:**	2006
Casing Stick Up (SU):	**0.7**	**Drilled By**	**EMA Drilling**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	potable		
Construction Summary (Driller Log)	**Steel casing 0-23.0** **Stainless screen 21.0-22.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	25000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.337**	**Date / Time of Measurement:**	1:51:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0.4**	**H_2S ppm:**	**1**	**CO ppm:**	**1**	**O_2 %:**	**19.1**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**1**			
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)**	**-**

COMMENTS

water not field tested, dead snake in bore

GROUNDWATER BORE REPORT CARD

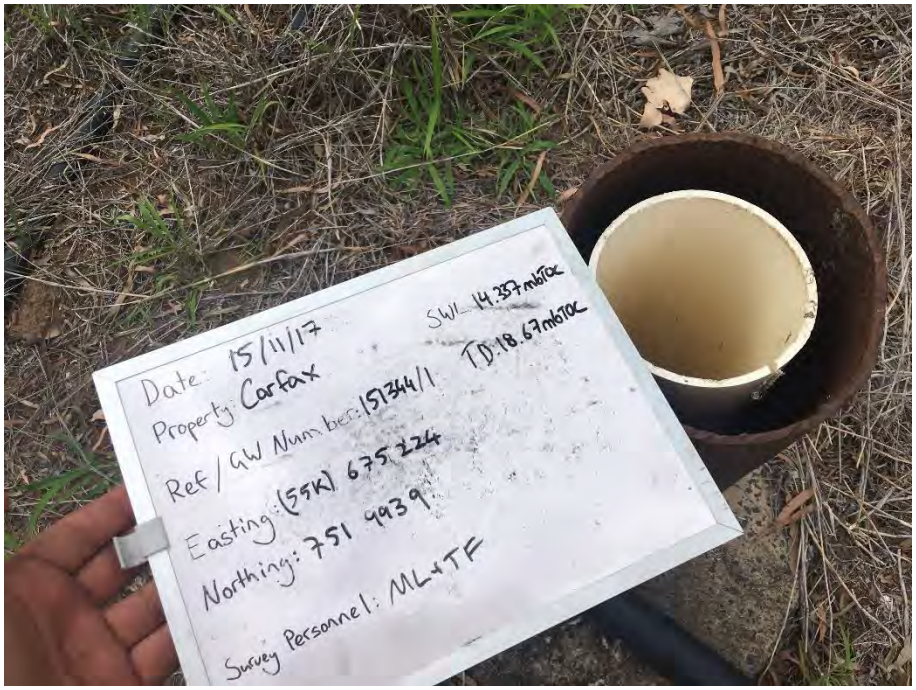
Additional Notes

Bores present at site of a similar depth to bore report but of a PVC, not steel well construction

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 151344/1**



Photograph 2 **Carfax - 151344/1**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 151344

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-25-08	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-42-11	**MAP-SERIES**	
DATE LOG RECD	13-JUN-06	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	675288	**MAP-NO**	8653
D/O FILE NO.		**LOT**	3	**NORTHING**	7519813	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	5		
GIS LAT	-22.4188889	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	
GIS LNG	148.7030556	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	21/04/2006			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	BERNET, EBERHARD MARION				
ROLES	WS	**DRILL COMPANY**	EMA DRILLING				
		METHOD OF CONST.	CABLE TOOL				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	21/04/2006	1	Steel Casing				0.00	23.00
A	21/04/2006	2	Stainless Steel				21.00	22.50
A	21/04/2006	3	Gravel Pack				15.00	22.50
A	21/04/2006	4	Grout				0.00	2.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	4.00	SANDY LOAM
2	4.00	7.00	DARK GRAY CLAY
3	7.00	13.00	TIGHT SANDY CLAY
4	13.00	15.00	FINE SAND
5	15.00	16.50	MED SAND

BORE REPORT

REG NUMBER 151344

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	16.50	18.10	MED TO COARSE SAND AND GRAVEL
7	18.10	20.70	BROWN AND GREY SANDY CLAY
8	20.70	22.50	MED TO COARSE SAND AND GRAVEL
9	22.50	23.00	DARK GREY SHALE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	15.20	23.00	SAND	21/04/2006	-15.20	N	POTABLE	1.26	Y	XX	SAND

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 151344

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 151344/2**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	151344
Easting (GDA94):	675226	**GPS Elevation:**	145
Northing:	7519939		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**16.33**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.36**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	25000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.035**	**Date / Time of Measurement:**	2:09:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**20.2**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**698**	**Temp**	**25.7**	**pH**	**7.4**	**ORP**	**-123**	**DO (%)**	**28.5**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes*	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 151344/2**

Photograph 2 **Carfax - 151344/2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 103280**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	103280
Easting (GDA94):	675289	**GPS Elevation:**	147
Northing:	7519820		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1999
Casing Stick Up (SU):	**0.72**	**Drilled By**	**Depco**
Casing Material	**Unknown**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	2100 µS/cm		
Construction Summary (Driller Log)	**No record of casing**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" steel into 3" poly with sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	2:40:00 PM
Pumping History	Pumping at time of inspection		

PART F: WATER QUALITY

Well Head Gas Screening:		**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:** **-**
Sample Collection Point	**Sample Tap**	**Sample Method**		**Bucket**		**Purge Volume**		**20**
Electrical Conductivity (µS/cm)	**1173**	**Temp**	**27.6**	**pH**	**6.76**	**ORP**	**110.8**	**DO (%)** **20.6**

COMMENTS

pump deployed; sample tap present

GROUNDWATER BORE REPORT CARD

Additional Notes

Slow drip coming from bore manifold. Possiable decommissioned bore approximately 30cm from pumping bore

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 103280**

Photograph 2 **Carfax - 103280**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 103280

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-25-05	**MAP-SCALE**	104
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-42-15	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	675400	**MAP-NO**	8653
D/O FILE NO.	50-2116	**LOT**	3	**NORTHING**	7519901	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.418082682	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	
GIS LNG	148.704127959	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	17/10/1999			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	RIDDELL WAYNE				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.60	SANDY TOP SOIL
2	1.60	3.10	SAND
3	3.10	8.30	CLAY
4	8.30	9.00	ORANGE SILT
5	9.00	10.00	FINE SAND
6	10.00	13.00	LOAM
7	13.00	14.00	FINE SAND
8	14.00	17.00	COARSE SAND AND GRAVEL
9	17.00	24.00	ORANGE AND GREY CLAY

STRATIGRAPHY DETAILS

BORE REPORT

REG NUMBER 103280

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.00	17.00	SAND GRAV	17/10/1999	-14.87	N	2100 US/CM	0.25	Y	PS	SEDIMENTARY - UNDIFF.

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 103280

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90074/1**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	3 Mile - 1	**Ref No/GW Number:**	90074
Easting (GDA94):	671886	**GPS Elevation:**	157
Northing:	7511445		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.46**	**Drilled By**	**-**
Casing Material	**Unknown**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**unknown**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**Bore encased in concrete filled 44 gal drum**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**dam**	**Approximate Volume**	100000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	3:25:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes*	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90074/1**

Photograph 2 **Carfax - 90074/1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90074/2**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	3 Mile - 2	**Ref No/GW Number:**	90074
Easting (GDA94):	671877	**GPS Elevation:**	157
Northing:	7511442		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.29**	**Drilled By**	**-**
Casing Material	**Unknown**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**solar**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" riser to 1" poly**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**dam**	**Approximate Volume**	100000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	3:30:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes*	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90074/2**

Photograph 2 **Carfax - 90074/2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90074/3**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	3 Mile - 3	**Ref No/GW Number:**	90074
Easting (GDA94):	671883	**GPS Elevation:**	153
Northing:	7511437		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1963
Casing Stick Up (SU):	**0.35**	**Drilled By**	**Fallinsky A**
Casing Material	**steel**	**Internal Diameter**	120
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**Steel casing 0-44.8** **Perforated casing 26.5-44.8**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**unknown**	**Pump Type**	likely piston (downhole)
Power Source	**windmill**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**windmill - not connected**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**dam**	**Approximate Volume**	100000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	3:41:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

3 bores present at site. From drillers construction log this is likely the original bore.

Windmill not connected/functional

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**phone call**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90074/3**

Photograph 2 **Carfax - 90074/3**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90074

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-30-09	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-04	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	671554	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7510596	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.5026042	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	3 MILE BORE
GIS LNG	148.66775819	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/01/1963			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	FALLINSKY A				
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1963	1	Steel Casing			152	0.00	19.50
A	01/01/1963	2	Steel Casing			127	0.00	44.80
A	01/01/1963	3	Perforated or Slotted Casing			127	26.50	44.80

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.76	SOIL
2	0.76	2.74	BLACK CLAY
3	2.74	5.18	DRY SANDY CLAYS
4	5.18	12.80	BROWN SANDY CLAY - HARD
5	12.80	15.54	SOFT SANDY CLAY - MOIST
6	15.54	17.07	DRY SAND WITH BELTS OF CLAY

BORE REPORT

REG NUMBER 90074

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	17.07	26.52	BROWN SANDY CLAY WITH ROCK BANDS
8	26.52	40.23	MUDSTONE (JOINTED AT 40M)
9	40.23	46.33	JOINTED MUDSTONE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	40.23	46.33	SDST SSTO	01/01/1963	-18.30	N	GOOD	0.45	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

PIPE	DATE	PIPE	DATE	N/R	RMK

BORE REPORT

REG NUMBER 90074

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
X	22/07/1993	-18.28	N		NR												

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90440**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	Spelt Paddock Bore	**Ref No/GW Number:**	90440
Easting (GDA94):	674723	**GPS Elevation:**	156
Northing:	7515024		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1995
Casing Stick Up (SU):	**0.35**	**Drilled By**	**McCarthy Drilling**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Plastic casing 0-39.0** **Perforated 21.0-36.0** **Open hole 39.0-42.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" Steel manifold to 2" Poly. No sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	float actuated pressure switch
Storage Type	**tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	5:10:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

-

GROUNDWATER BORE REPORT CARD

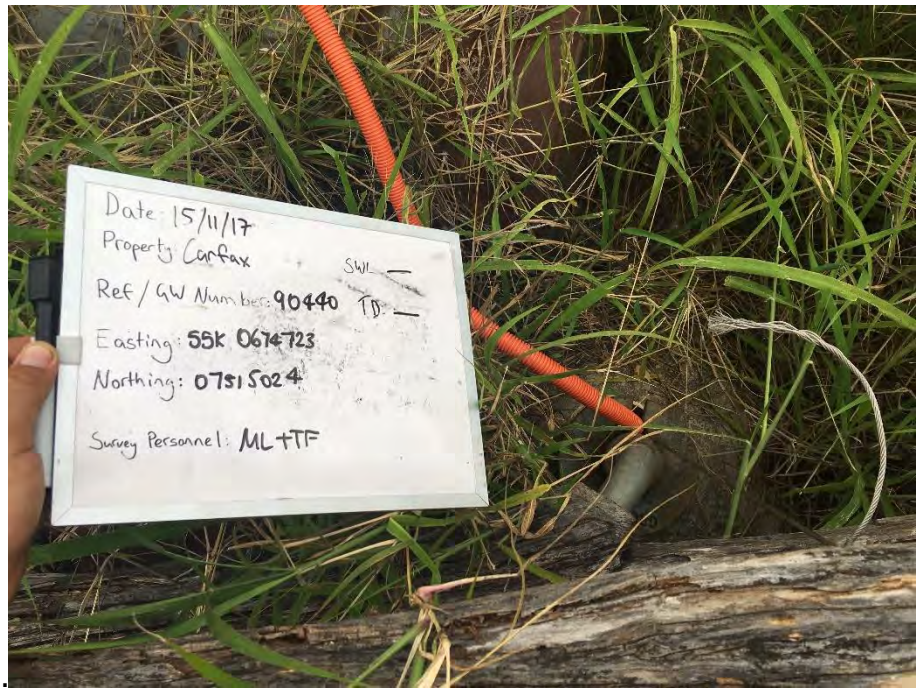
Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90440**



Photograph 2 **Carfax - 90440**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90440

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-17	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-41-43	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	674443	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7515854	**MAP NAME**	BOMBANDY
R/O FILE NO.	50-0030	**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	L1 RP884523	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.4548259	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	SPELL PADDOCK BORE
GIS LNG	148.695258253	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	10/11/1995			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	MCCARTHY D				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	10/11/1995	1	Plastic Casing	5.900	WT	141	0.00	39.00
A	10/11/1995	2	Perforated or Slotted Casing		AP	141	21.00	36.00
A	10/11/1995	3	Open Hole				39.00	42.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	14.00	SAND WITH MINOR CLAY BANDS
2	14.00	21.00	CLAY BROWN
3	21.00	37.00	JOINTED ROCK WATER
4	37.00	42.00	SANDSTONE

STRATIGRAPHY DETAILS

DNR	1	0.00	BLACKWATER GROUP

BORE REPORT

REG NUMBER 90440

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	21.00	36.00	SDST	10/11/1995	-18.30	N		1.00	Y	FR	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90441**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	Petes Bore	**Ref No/GW Number:**	90441
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1995
Casing Stick Up (SU):	-	**Drilled By**	**McCarthy Drilling**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Plastic casing 0-36.0** **Perforated 24.0-36.0** **Open hole 39.0-42.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90441**

Photograph 2 **Carfax - 90441**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90441

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-29-57	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-20	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672015	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7510960	**MAP NAME**	BOMBANDY
R/O FILE NO.	50-0030	**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	L1 RP884523	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.499270891	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	PETES BORE
GIS LNG	148.672202514	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	10/11/1995			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	MCCATHY D				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	10/11/1995	1	Plastic Casing	5.900	WT	141	0.00	36.00
A	10/11/1995	2	Perforated or Slotted Casing		AP	141	24.00	36.00
A	10/11/1995	3	Open Hole				39.00	42.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOPSOIL
2	0.50	7.00	SAND
3	7.00	7.50	CLAY
4	7.50	11.00	SAND WITH SILT BANDS
5	11.00	14.00	CLAY
6	14.00	39.00	SANDSTONE BROWN WATER

BORE REPORT

REG NUMBER 90441

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	39.00	42.00	SANDSTONE GREY

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00		BLACKWATER GROUP

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	24.00	36.00	SDST	10/11/1995	-25.90	N		1.60	Y	FR	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 90441

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90076**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	House Bore	**Ref No/GW Number:**	90076
Easting (GDA94):	672641	**GPS Elevation:**	144
Northing:	7515517		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1968
Casing Stick Up (SU):	**0.515**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**Steel casing 0-39.6** **Perforated 21.0-39.6**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" Steel manifold to 2" Poly. No sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock and domestic**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	4:40:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

manual control switch

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90076**

Photograph 2 **Carfax - 90076**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90076

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-30	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-31	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672380	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7515478	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.458437083	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	HOUSE BORE
GIS LNG	148.675258423	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	19/09/1968			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	19/09/1968	1	Steel Casing			152	0.00	29.60
A	19/09/1968	2	Steel Casing			127	0.00	39.60
A	19/09/1968	3	Perforated or Slotted Casing			127	21.00	39.60

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.61	TOPSOIL
2	0.61	6.71	HARD SANDY CLAY
3	6.71	8.84	SANDY CLAY (FALLING IN)
4	8.84	13.41	SANDY CLAY MEDIUM HARD
5	13.41	14.02	CONGLOMERATE
6	14.02	16.46	SANDY CLAY

BORE REPORT

REG NUMBER 90076

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	16.46	17.07	SANDSTONE *
8	17.07	30.18	BANDS OF CLAY AND SILT
9	30.18	30.48	BAND OF GRAVEL
10	30.48	39.62	BANDS OF CLAY AND SILT

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	16.46	17.07	SDST SSTO	01/01/1993	-10.80	N	GOOD	1.00	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

BORE REPORT

REG NUMBER 90076

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
X	22/07/1993	-10.76	N		NR												

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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**** End of Report. Produced:** 14/11/2017 07:34:12 PM ******

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 1529**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	1529
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	phone call	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 1529**

Photograph 2 **Carfax - 1529**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle Camp Gully**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Cattle Camp Gully	**Ref No/GW Number:**	-
Easting (GDA94):	671137	**GPS Elevation:**	154
Northing:	7536973		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**89.8**	**Year Drilled:**	~1930
Casing Stick Up (SU):	**0.4**	**Drilled By**	**B.G Wilson**
Casing Material	**Steel**	**Internal Diameter**	135
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Steel Casing 0-260ft** **Open Hole 260ft-315ft**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Fair**	**Pump Type**	piston (not deployed)
Power Source	**motor**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**7.31**	**Date / Time of Measurement:**	2:00:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**1**	**CO ppm:**	**1**	**O_2 %:**	**19.3**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**900**	**Temp**	**26.82**	**pH**	**7.7**	**ORP**	**-132.3**	**DO (%)**	**19.3**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle Camp Gully**

Photograph 2 **Cattle Camp Gully**

Bore details.

Cattle Camp Gully Bore put down by B. G. Wilson at 12 shillings per ft. £194-17-6 324 ft. deep, good fresh water.

Remarks. Soil to 3ft., Rotten sandstone to 60 ft. First water 60 ft. Clay & Slippery Rock to 195 ft. Seams of coal between 195 & 200 ft. Black shale to 214 ft. Sandstone to 276 ft ~~Second stream~~ Black shale to 324 ft. Second stream about 290 ft, 3rd stream about 315 ft.

Total depth 324 ft.

Water rises to within 18 ft of surface pumps down to 110 ft & holds & holds pumping 540 gals per hr. w/- 8 gal sand pumps. Bore cased with 6 inch casing to 260 ft. 260 ft 6" casing at 7/- per ft. = £91-0-0

Equipping bore w/- 4" casing & wooden pump rods.

88992
Prot Bore

x6

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161578**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Powerline	**Ref No/GW Number:**	161578
Easting (GDA94):	672586	**GPS Elevation:**	191
Northing:	7535520		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**114**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.58**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	potable		
Construction Summary (Driller Log)	**PVC 0-142.0** **PVC Slotted 96.0-142.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**47.435**	**Date / Time of Measurement:**	1:20:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.6**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**2,208**	**Temp**	**28.97**	**pH**	**7.05**	**ORP**	**-238.90**	**DO (%)**	**21.50**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161578**

Photograph 2 **Cattle camp - 161578**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161578

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-16-38	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-34	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672691	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7535518	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.27733206	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.67613184	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**				**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	20/01/2017	1	Polyvinyl Chloride	7.650	WT	140	0.00	142.00
A	20/01/2017	2	Perforated or Slotted Casing	3.000	AP	140	96.00	142.00
X	20/01/2017	3	Grout			184	0.00	6.50
X	20/01/2017	4	Cuttings or other fill between casing and ho			184	6.50	90.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.00	RED LOAMY CLAY
2	3.00	3.50	HARD YELLOW ROCK
3	3.50	30.00	RED AND YELLOW BAKED CLAY
4	30.00	46.00	BASALT: FRESH, BLUE
5	46.00	54.00	WHITE CLAY ROCK

BORE REPORT

REG NUMBER 161578

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	54.00	62.00	YELLOW CLAY ROCK
7	62.00	66.00	GREY SHALE: SILTY
8	66.00	98.00	RED, WHITE AND YELLOW CLAY BANDS
9	98.00	132.00	SANDSTONE
10	132.00	156.00	GREY SHALE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	98.00	132.00	SDST	20/01/2017	-50.00	N	POTABLE	0.85	Y	PS	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	20/01/2017	1	161578	98.00	132.00		PUM		AIR	96.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	20/01/2017	1	120	-50.00			46.00	0.85						96.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

BORE REPORT

REG NUMBER 161578

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	20/01/2017		1446	7.1						PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 111719**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Bore Behind Dam	**Ref No/GW Number:**	111719
Easting (GDA94):	673489	**GPS Elevation:**	149
Northing:	7537157		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2002
Casing Stick Up (SU):	**0.45**	**Drilled By**	**McCarthy Drilling**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-66.0** **Slotted 52.0-60.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow gauge and power meter
Headworks	**Steel taps with 2" HDPE output**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:52:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

Sample tap ceased

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 111719**

Photograph 2 **Cattle camp - 111719**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 111719

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-43	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-58	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	673385	**MAP-NO**	8653
D/O FILE NO.	515/030/2723	**LOT**	4	**NORTHING**	7537221	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.26188327	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	MAHOOD
GIS LNG	148.682681595	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	21/05/2002			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	MCCARTHY D				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	21/05/2002	1	Polyvinyl Chloride	5.900	WT	140	0.00	66.00
A	21/05/2002	2	Perforated or Slotted Casing				52.00	60.00
A	21/05/2002	3	Gravel Pack	12.000	GR	165	0.00	66.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOP SOIL
2	0.50	2.50	CLAY
3	2.50	20.00	WEATHERED ROCK
4	20.00	24.00	WEATHERED ROCK
5	24.00	31.00	WEATHERED BASALT
6	31.00	49.00	SANDSTONE WEATHERED

BORE REPORT

REG NUMBER 111719

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	49.00	58.00	BROKEN BASALT *
8	58.00	66.00	SANDSTONE (SOFT)

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	54.00	60.00	BSLT			N	BRACKISH	1.39	Y	FR	TERTIARY - UNDEFINED

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 111719

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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**** End of Report. Produced:** 29/01/2018 07:26:06 PM ******

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 88992**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Mandle Brot Bore	**Ref No/GW Number:**	88992
Easting (GDA94):	672888	**GPS Elevation:**	156
Northing:	7537124		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1993
Casing Stick Up (SU):	**0.42**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	980 µS/cm		
Construction Summary (Driller Log)	**PVC 0-35.0** **PVC Slotted 35.0-59.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Fair**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	flow gauge
Headworks	**Steel taps with 2" HDPE output**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:35:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 88992**

Photograph 2 **Cattle camp - 88992**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 88992

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-42	**MAP-SCALE**	103
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-36	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672757	**MAP-NO**	8653
D/O FILE NO.	515/030/2723	**LOT**	4	**NORTHING**	7537240	**MAP NAME**	BOMBANDY
R/O FILE NO.	30-2723	**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P4	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.261769741	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	
GIS LNG	148.676582533	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	09/08/1993			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WEST K				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	09/08/1993	1	Polyvinyl Chloride	5.900	WT	141	0.00	59.00
A	09/08/1993	2	Perforated or Slotted Casing	3.000	AP	141	35.00	59.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	TOP
2	1.00	11.50	SANDSTONE
3	11.50	13.00	CLAY LAYERS
4	13.00	24.00	WEATHERED BASALT
5	24.00	30.00	FRESH BASALT
6	30.00	59.00	FRESH BASALT AND CLAY BANDS
7	59.00	62.00	CLAY

BORE REPORT

REG NUMBER 88992

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00		BLACKWATER GROUP

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	39.00	59.00	BSLT	09/08/1993	-31.00	N	980 US/CM	0.75	Y	VS	BASALT

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

BORE REPORT

REG NUMBER 88992

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161572**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	House Bore	**Ref No/GW Number:**	161572
Easting (GDA94):	672572	**GPS Elevation:**	178
Northing:	7538233		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**184.65**	**Year Drilled:**	2016
Casing Stick Up (SU):	**0.28**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-77.0** **PVC Slotted 77.0-161.0** **PVC 161.0-173.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**37.715**	**Date / Time of Measurement:**	11:42:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**2**	**O_2 %:**	**19.5**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**631**	**Temp**	**27.9**	**pH**	**8.2**	**ORP**	**47.3**	**DO (%)** **49.3**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161572**

Photograph 2 **Cattle camp - 161572**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161572

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-10	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-29	**MAP-SERIES**	
DATE LOG RECD	03-FEB-17	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672567	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7538236	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.25279986	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.67463656	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	21/12/2016			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	FARNES, DYLAN				
ROLES	WS	**DRILL COMPANY**	DEPCO DRILLING PTY LTD				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	21/12/2016	1	Polyvinyl Chloride	7.650	WT	140	0.00	77.00
A	21/12/2016	2	Perforated or Slotted Casing	4.000	AP	140	77.00	161.00
A	21/12/2016	3	Polyvinyl Chloride	7.650	WT	140	161.00	173.00
X	21/12/2016	4	Grout			197	0.00	54.00
X	21/12/2016	5	Centraliser				0.00	173.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	SILTY SAND: RED
2	2.00	24.00	MUDSTONE: RED
3	24.00	50.00	WEATHERED BASALT: BLUE
4	50.00	78.00	SHALE: BLUE

BORE REPORT

REG NUMBER 161572

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	78.00	174.00	SANDSTONE: FINE, BLUE, WITH BANDS OF SHALE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	78.00	174.00	SDST SHLE	21/12/2016	-42.00	N	POTABLE	0.50	Y	PS	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	21/12/2016	1	161572	78.00	174.00		PUM		AIR	64.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	21/12/2016	1	60	-42.00			22.00	0.50						64.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

BORE REPORT

REG NUMBER 161572

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161573**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	House Supply	**Ref No/GW Number:**	161573
Easting (GDA94):	672562	**GPS Elevation:**	175
Northing:	7538229		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**57.8**	**Year Drilled:**	2016
Casing Stick Up (SU):	**0.33**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	potable		
Construction Summary (Driller Log)	**PVC 0-46.0** **PVC 46.0-53.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**37**	**Date / Time of Measurement:**	11:15:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**2**	**O_2 %:**	**19.5**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**710**	**Temp**	**28.72**	**pH**	**6.84**	**ORP**	**98.6**	**DO (%)** **28.5**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161573**

Photograph 2 **Cattle camp - 161573**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161573

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-10	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-28	**MAP-SERIES**	
DATE LOG RECD	03-FEB-17	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672546	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7538227	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.25288323	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.67443381	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	21/12/2016			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WHITE, LEE				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	21/12/2016	1	Polyvinyl Chloride	7.650	WT	140	0.00	53.00
A	21/12/2016	2	Perforated or Slotted Casing	3.000	AP	140	46.00	53.00
X	21/12/2016	3	Grout			184	0.00	6.00
X	21/12/2016	4	Cuttings or other fill between casing and ho			184	6.00	40.00
X	21/12/2016	5	Centraliser				6.00	48.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	RED SANDY CLAY
2	1.00	1.50	HARD YELLOW ROCK
3	1.50	18.00	RED CLAY, ROCK, WEATHERED
4	18.00	30.00	RED AND YELLOW CLAY, ROCK, WEATHERED

BORE REPORT

REG NUMBER 161573

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	30.00	35.00	BLUE BASALT
6	35.00	36.00	GREY AND YELLOW SHALE
7	36.00	45.00	WEATHERED BASALT
8	45.00	54.00	WEATHERED BASALT, FRACTURED
9	54.00	60.00	YELLOW MUDSTONE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	45.00	54.00	BSLT			N	POTABLE	0.60	Y	FR	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	21/12/2016	1	161573	45.00	54.00		PUM		AIR	50.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	21/12/2016	1	120	-38.00			12.00	0.60						50.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

BORE REPORT

REG NUMBER 161573

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	21/12/2016		693	7.8						PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161 575**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Rosewood	**Ref No/GW Number:**	161 575
Easting (GDA94):	672394	**GPS Elevation:**	198
Northing:	7543106		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**83.5**	**Year Drilled:**	2017
Casing Stick Up (SU):	**0.36**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	320ppm		
Construction Summary (Driller Log)	**PVC 0-60.0** **PVC Slotted 60.0-84.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**28.07**	**Date / Time of Measurement:**	10:15:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**6**	**O_2 %:**	**18.2**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**499**	**Temp**	**27.98**	**pH**	**6.71**	**ORP**	**103**	**DO (%)** **23.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161 575**

Photograph 2 **Cattle camp - 161 575**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161575

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-12-31	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-21	**MAP-SERIES**	
DATE LOG RECD	03-FEB-17	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672392	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7543123	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.20868556	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.67241516	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	16/01/2017			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WHITE, LEE				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	16/01/2017	1	Polyvinyl Chloride	7.650	WT	140	0.00	84.00
A	16/01/2017	2	Perforated or Slotted Casing	3.000	AP	140	60.00	84.00
X	16/01/2017	3	Grout			184	0.00	6.00
X	16/01/2017	4	Cuttings or other fill between casing and ho			184	6.00	56.00
X	16/01/2017	5	Centraliser				6.00	54.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.00	RED SANDY CLAY
2	3.00	6.00	RED CLAY AND IRONSTONE
3	6.00	48.00	RED AND WHITE LAYERED CLAY BANDS
4	48.00	60.00	YELLOW CLAY

BORE REPORT

REG NUMBER 161575

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	60.00	78.00	WHITE AND GREY FRACTURED ROCK, TRACES OF SAND
6	78.00	84.00	SHALE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	60.00	78.00	XXXX	16/01/2017	-30.00	N	320 PPM	1.50	Y	FR	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	16/01/2017	1	161575	60.00	78.00		PUM		AIR	60.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	16/01/2017	1	120	-30.00			30.00	0.75						60.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

BORE REPORT

REG NUMBER 161575

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	16/01/2017		499	7.2						PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161574**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	KP	**Ref No/GW Number:**	161574
Easting (GDA94):	673374	**GPS Elevation:**	203
Northing:	7543006		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**121.9**	**Year Drilled:**	2017
Casing Stick Up (SU):	**0.5**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-120.0** **PVC Slotted 90.0-120.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**25.75**	**Date / Time of Measurement:**	9:30:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**18**	**O_2 %:**	**17.9**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**889**	**Temp**	**27.63**	**pH**	**7.39**	**ORP**	**-195.3**	**DO (%)** **22.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161574**

Photograph 2 **Cattle camp - 161574**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161574

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-12-35	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-55	**MAP-SERIES**	
DATE LOG RECD	03-FEB-17	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	673376	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7543002	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.2096799	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.68197106	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	14/01/2017			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WHITE, LEE				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	14/01/2017	1	Polyvinyl Chloride	7.650	WT	140	0.00	120.00
A	14/01/2017	2	Perforated or Slotted Casing	3.000	AP	140	90.00	120.00
X	14/01/2017	3	Grout			184	0.00	9.00
X	14/01/2017	4	Cuttings or other fill between casing and ho			184	9.00	86.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	RED LOAMY CLAY
2	1.00	8.00	RED WEATHERED SILTSTONE
3	8.00	12.00	RED CLAY
4	12.00	78.00	RED, WHITE AND YELLOW LAYERED CLAY
5	78.00	89.00	SHALE: GREY

BORE REPORT

REG NUMBER 161574

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	89.00	114.00	SANDSTONE
7	114.00	120.00	SHALE: 2M COAL

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	96.00		SDST	14/01/2017	-30.00	N	POTABLE	1.10	Y	PS	BACK CREEK GROUP

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	14/01/2017	1	161574				PUM			90.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	14/01/2017	1	120	-30.00				1.10						90.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

BORE REPORT

REG NUMBER 161574

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	14/01/2017		811	7.1						PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 13040286**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	-	**Ref No/GW Number:**	13040286
Easting (GDA94):	659986	**GPS Elevation:**	165
Northing:	7536977		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2004
Casing Stick Up (SU):	**0.41**	**Drilled By**	**NRM**
Casing Material	**Unknown**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	5100 µS/cm		
Construction Summary (Driller Log)	**PVC 0-94.3** **PVC Slotted 94.3-100.3** **PVC 100.3-106.3**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**Unknown**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	N/A
Headworks	**N/A**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	2:30:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

*Measurement obtained from DNR online output. Data provided in MBGL

GROUNDWATER BORE REPORT CARD

Additional Notes

Data Available online

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	no	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 13040286**

Photograph 2 **Cattle camp - 13040286**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040286

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-56	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-33-10	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	659983	**MAP-NO**	
D/O FILE NO.		**LOT**		**NORTHING**	7536966	**MAP NAME**	
R/O FILE NO.		**PLAN**		**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	FITZROY DEVELOPMENT ROAD 2	**ACCURACY**	GPS	**PRES EQUIPMENT**	NE
				GPS ACC	25		
GIS LAT	-22.265556	**PARISH NAME**	4116-RYTON			**ORIGINAL BORE NO**	NAP ISAAC RIVER SITE 5
GIS LNG	148.552778	**COUNTY**	RYTON			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	05/09/2004			**DATA OWNER**	NAP
STATUS	Existing	**DRILLERS NAME**	W MCLEAN				
ROLES	IN	**DRILL COMPANY**	NRM				
	SM	**METHOD OF CONST.**	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	07/09/2004	1	Polyvinyl Chloride	3.300	WT	60	0.00	94.30
A	07/09/2004	2	Perforated or Slotted Casing	1.000	AP	60	94.30	100.30
A	07/09/2004	3	Polyvinyl Chloride	3.300	WT	60	100.30	106.30
X	07/09/2004	4	Grout				0.00	6.00
X	07/09/2004	5	Cuttings or other fill between casing and ho				6.00	60.00
X	07/09/2004	6	Bentonite Seal				60.00	61.00
X	07/09/2004	7	Gravel Pack	10.000	GR		61.00	107.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	ROAD AGGREGATE
2	1.00	4.00	PALE BROWN CLAYEY F SAND

BORE REPORT

REG NUMBER 13040286

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	4.00	6.00	PALE BROWN CLAYEY F-VC SAND
4	6.00	7.00	RED BROWN CLAYEY F-M SAND
5	7.00	10.00	PALE GREY SANDY CLAY
6	10.00	13.00	PALE GREY CLAYEY VF-F SAND
7	13.00	15.00	PALE BROWN CLAYEY VF-VC SAND & GRAVEL
8	15.00	16.00	RUST BROWN CLAYEY VF-F SAND
9	16.00	18.00	PALE GREY SANDY CLAY,
10			RUST BROWN MOTTLING
11	18.00	29.00	GREY SANDY CLAY, RUST BROWN MOTTLING
12	29.00	34.00	GREY CLAY, RED BROWN MOTTLING
13	34.00	36.00	PALE GREY SANDY CLAY,
14			RED BROWN MOTTLING
15	36.00	38.00	PALE GREY CLAYSTONE
16	38.00	44.00	PALE GREY CLAYSTONE WITH DARK RUST
17			RED FERRICRETE BANDS & MOTTLING
18	44.00	50.00	OFF WHITE SILTY CLAYSTONE
19	50.00	56.00	OFF WHITE CLAYEY VF-F SANDSTONE; DAMP
20	56.00	63.00	PALE BROWN CLAYSTONE,
21			RUST BROWN MOTTLING
22	63.00	70.00	YELLOW BROWN CLAYEY VF SANDSTONE
23	70.00	79.00	BROWN SHALE
24	79.00	94.00	DARK BROWN SHALE & SILTSTONE
25	94.00	101.00	GREY SILTSTONE & VF-M SANDSTONE
26	101.00	107.00	DARK BROWN SHALE & GREY SILTSTONE

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
NAP	1	0.00	16.00	QUATERNARY - UNDEFINED
NAP	2	16.00	56.00	DUARINGA FORMATION
NAP	3	56.00	107.00	BLACKWATER GROUP

BORE REPORT

REG NUMBER 13040286

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	50.00	56.00	SDST			N			N	PS	DUARINGA FORMATION
2	94.00	100.00	SSTO			N			Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	14/07/2006	171.85	SVY	AHD	R	DERM SURVEYORS
A	27/10/2015	171.92	SVY	AHD	R	ANSWERSG
X	04/10/2006	171.50	SVY	AHD	N	DERM SURVEYORS

WATER ANALYSIS PART1

PIPE	DATE	RD	ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH
A	08/09/2004	1	DNR	050142	94.00	AI	GB	5100	7.2		2878.42	2766.59	633	183	0.3	15.0	

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	08/09/2004	1	865.0	14.9	89.9	99.0		220.0		< 1.0	1490.0	< 0.02	0.7	97.4				

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	07/04/2005	-44.80	R		NR	A	09/10/2005	-44.41	R		ACT	A	09/01/2006	-44.39	R		ACT

BORE REPORT

REG NUMBER 13040286

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	24/05/2006	-44.26	R		NR	A	18/12/2006	-44.52	R		ACT	A	09/10/2007	-44.43	R		ACT
A	27/10/2008	-44.63	R		NR	A	30/07/2009	-44.41	R		ACT	A	31/05/2010	-44.29	R		ACT
A	10/05/2011	-43.95	R		ACT	A	13/10/2011	-44.11	R		ACT	A	25/10/2011	-44.11	R		ACT
A	12/04/2012	-44.13	R		ACT	A	26/06/2012	-44.11	R		ACT	A	29/10/2012	-44.21	R		ACT
A	16/01/2013	-44.26	R		ACT	A	09/04/2013	-44.12	R		ACT	A	01/08/2013	-44.21	R		ACT
A	19/11/2013	-44.20	R		ACT	A	04/02/2014	-44.14	R		NR	A	21/05/2014	-44.14	R		ACT
A	16/09/2014	-44.14	R		ACT	A	13/01/2015	-44.04	R		NR	A	14/04/2015	-44.04	R		ACT
A	07/07/2015	-44.06	R		ACT	A	27/10/2015	-44.13	R		ACT	A	12/01/2016	-44.15	R	B	ACT
A	24/05/2016	-44.42	R		ACT	A	02/08/2016	-44.20	R		ACT	A	08/11/2016	-44.24	R		ACT
A	07/02/2017	-44.12	R		ACT	A	06/06/2017	-43.93	R		ACT	A	11/09/2017	-44.13	R		ACT
A	13/11/2017	-44.12	R		ACT												

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	08/09/2004		5110		24.9					AI	GB
A	24/05/2006		8650		21.5					PU	GB
A	12/01/2016	100.00	7860	9.0	27.9					AI	GB

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Deverill - 141677**

PART A: PROPERTY DETAILS

Property Name:	Deverill		
Local Bore Name:	-	**Ref No/GW Number:**	141677
Easting (GDA94):	642164	**GPS Elevation:**	191
Northing:	7548178		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**10.05**	**Year Drilled:**	2009
Casing Stick Up (SU):	**0.45**	**Drilled By**	**Q.D.S**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	potable		
Construction Summary (Driller Log)	**PVC 0-24.0** **Slotted 12.0-24.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**good**	**Pump Type**	no
Power Source	**near to mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**Dry**	**Date / Time of Measurement:**	5:30:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**18.4**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Field Measurements don't correlate with drillers logs

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Deverill - 141677**

Photograph 2 **Deverill - 141677**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 141677

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-09-57	**MAP-SCALE**	254
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-22-39	**MAP-SERIES**	
DATE LOG RECD	03-FEB-10	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	642041	**MAP-NO**	
D/O FILE NO.		**LOT**	18	**NORTHING**	7548177	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP113322	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.165801	**PARISH NAME**	2618-KERLONG			**ORIGINAL BORE NO**	
GIS LNG	148.3776006	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	13/12/2009			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	EVETTS, COREY				
ROLES		**DRILL COMPANY**	Q. D. S.				
		METHOD OF CONST.	ROTARY MUD				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	13/12/2009	1	Polyvinyl Chloride	5.900	WT	127	0.00	24.00
A	13/12/2009	2	Perforated or Slotted Casing				12.00	24.00
A	13/12/2009	3	Gravel Pack	5.000	GR		6.00	24.00
X	13/12/2009	4	Grout			200	0.00	6.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	6.00	SANDY LOAM
2	6.00	10.00	CLAY
3	10.00	13.00	SAND
4	13.00	20.00	CLAY WITH GRAVEL BANDS
5	20.00	24.00	CLAY, WHITE

BORE REPORT

REG NUMBER 141677

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	13.00	20.00	CLAY GRAV			N	POTABLE	0.38	N	SC	NEW CHUM FORMATION

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

ALK (mEq)	METH	SOURCE

BORE REPORT

REG NUMBER 141677

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	13/12/2009	24.00	779							PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE CENSUS

OLIVE DOWNS PROJECT

Prepared For: **Pembroke Olive Downs Pty Ltd**

Project Number: **ENRS0600**

Date: **2nd May 2018**

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Appendix A: Bore Census Database
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1.0 INTRODUCTION

Environment & Natural Resource Solutions (ENRS Pty Ltd) was commissioned as independent groundwater consultants in July 2017 by Pembroke Olive Downs Pty Ltd to complete a bore census for the Olive Downs Project (the Project).

This groundwater bore census report documents the results of a desktop data review supported by site inspections, field measurements and meetings with landowners and property managers. The report has been prepared with general consideration of the Queensland (Qld) Department of Environment and Heritage Protection (DEHP) (2017) minimum requirements for undertaking a baseline assessment on a water bore under Section 413 of the Water Act 2000.

1.1 OBJECTIVES

The overall purpose of the scope of works was to complete a census of existing bores in the Project area and surrounds including ground-truthing to assist with the development of the Environmental Impact Statement (EIS) groundwater model.

1.2 SCOPE OF WORK

The scope of work comprised the following tasks:

Review of the Project description to delineate the census area;

Desktop review of any previous reports and Qld Government registered bore records;

Preparation of landowner property maps to support site inspection (summary of available contact details, boundaries, access routes, and potential bore sites);

Landowner notifications to schedule site inspections;

Site inspections to meet with landowners and inspect bores:

- Meet with landowner, review property maps and identify any existing or historical bores, associated bore records and access routes;
- Record location of any existing bores (easting and northing);
- Photograph bore sites;
- Gauge base of borehole and depth to groundwater;
- Measure borehead gases (if any);
- Field measurement of water quality (e.g. pH, Electrical Conductivity);
- Collect representative water samples (where practical) and submit to National Association of Testing Authorities (NATA) accredited laboratory for testing;
- Document bore construction, equipment, purpose, and pumping regime;

Compile census results and prepare database; and

Document census methodology, results, and prepare groundwater bore census report.

1.3 PERSONNEL QUALIFICATIONS

The groundwater bore census was undertaken by experienced personnel with tertiary qualifications in Hydrogeology, supported by professional technical staff. As required by the QLD DEHP (2017) minimum requirements for undertaking a baseline assessment, the supervising Hydrogeologist has attained more than two (2) years experience in groundwater level monitoring and sampling, including monitoring of water levels in bores equipped with pumping infrastructure, and has practical knowledge of water bore construction infrastructure.

Position	Name	Qualification/Experience
Supervising Hydrogeologist	Rohan Last	BSc (2000), MSc Hydrogeology (2004) >15 years drilling, sampling and monitoring experience
Field Supervisor	Matt Lemcke	BSc (2013) Geology, currently undertaking postgraduate studies in Hydrogeology >5 years sampling and environmental monitoring experience
Supporting Personnel	Andrew Fulton	BSc, MSc Hydrogeology >20 years drilling, sampling and monitoring experience
Supporting Personnel	Tamika Flannigan	BSc. >2 years environmental experience including inhouse training for groundwater monitoring

Considerable assistance was also received from landowners who provided borehole information and their time to locate and inspect bores.

2.0 CENSUS AREA

The initial targeted extent of the groundwater bore census was selected to encompass an adequate buffer including the Project area and surrounds extending approximately ten (10) kilometres in all directions from the Mining Lease Application (MLA) areas. The initial targeted extent of the groundwater bore census area is depicted on **Figure 1**.

3.0 DESKTOP DATA REVIEW

Preparation of the census database included the review and collation of information from various data sources including (where available): previous reports; Qld Government registered bore database;; aerial imagery; and landowner records.

3.1 PREVIOUS REPORTS

Results of past bore census results presented in the Lake Vermont Northern Extension Groundwater Impact Assessment (JBT Consulting 2016) were considered during the identification of the bore census investigation areas which included Vermont Park, Meadowbrook, Lake Vermont and Mockingbird Downs (the location of the existing Lake Vermont mine).

Besides summary assessment information presented in the Bowen Gas Project EIS, no other publicly accessible previous 'baseline assessment' bore reports were available for review at the time of the census. However, ENRS understand the area has likely been the subject of baseline assessments by the Coal Seam Gas (CSG) industry.

3.2 REGISTERED BORE DATABASE

A search of the registered groundwater bore database maintained by the Qld Department of Natural Resources, Mines and Energy (DNRME) was conducted. Where available, data includes summary reports on bore location, construction, geology, and aquifer details as derived from Drillers Logs (where available).

3.3 AERIAL IMAGERY

A search of online imagery from Qld globe and Google Earth was conducted to assist with the preparation of property maps. Imagery was inspected to validate the presence and location of groundwater sites, infrastructure, access routes and boundaries.

3.4 LANDOWNER RECORDS

Considerable information was provided by landowners and property managers, including details of: historical use and existing bores (if any); construction logs; equipment and pumping regimes; yield and water quality.

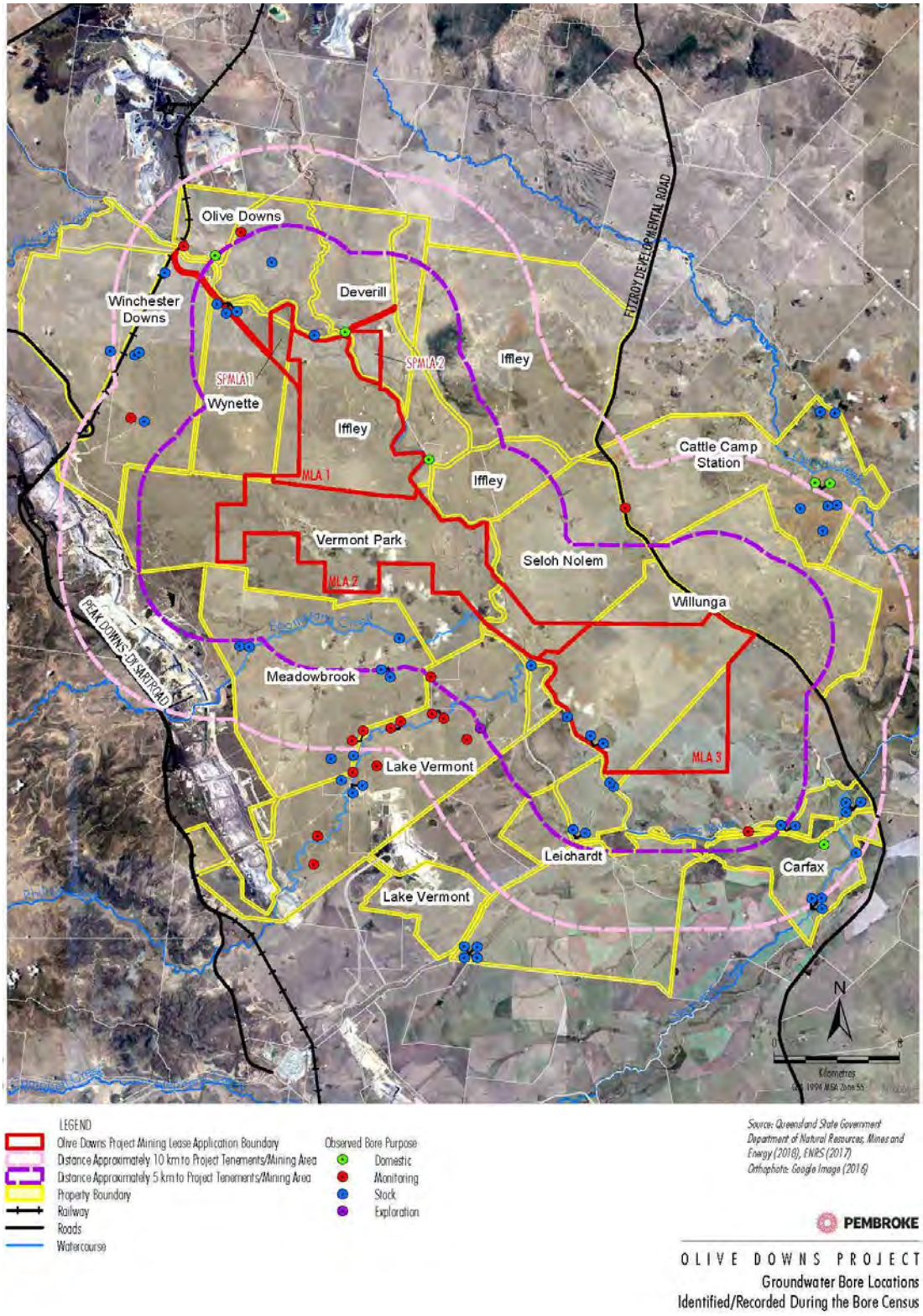
4.0 CENSUS METHODOLOGY

4.1 BORE CENSUS INVESTIGATION AREA

The desktop review culminated in a bore location map with a five (5) kilometre (km) radius (Stage 1) and 10 km (Stage 2) radius from the extents of the MLAs. It is noted that whilst undertaking the Stage 1 bore census many of the potential bores identified during the desktop review were unable to be located in the field and were

subsequently confirmed by the landowners not to have existed. Hence, the Stage 2 bore census was conducted to cover all of the potential bores identified on properties that fell within the 10 km buffer of the MLA extents, where accessible. The Stage 1 and Stage 2 bore census investigation areas are depicted on **Figure 1**.

Figure 1: Bore Census Coverage



4.2 LAND ACCESS PERMITS

Prior to census inspections landowners were notified to ensure the necessary approvals and permits were in place. No properties were accessed outside the approved times.

4.3 PROPERTY MAPS

Prior to the census inspections, individual property maps were prepared utilising existing data sources to map all potential bore sites. The maps provided a valuable tool to direct site inspections and confirm which bores were actually present on the ground. It is noted than many bores mapped from the Qld Government registered bore database were confirmed not to exist during landowner meetings.

4.4 LANDOWNER MEETINGS

When possible upon arrival at each property, the bore census team met with the landowner/property representative to provide an overview of the process and document information provided by the landowner/property representative. When a face to face meeting was not possible telephone conversations were used as an alternative.

From information obtained in the meeting, the property map was annotated with the assistance of the landowner to confirm which bores were present or did not exist. Sites were then visited to ground truth their location and survey the bore details and water quality (where accessible). General information and feedback obtained from the landowners was incorporated into the database where relevant.

4.5 BORE LOCATION SURVEY

The location of each bore inspected was surveyed by ENRS using a hand-held GPS to record the easting and northing. In general, a hand-held unit is expected to be accurate to within five (5) metres where supported by sufficient satellite coverage. Records were saved digitally by ENRS within the GPS unit and recorded manually on designated field sheets.

4.6 BOREHEAD PHOTOGRAPH

Digital photos were taken at each bore census site with the GPS location embedded within the file. Multiple photos were taken to record the bore head and surrounding infrastructure, if any. Where the bore was equipped, the photo frame was set to include the complete infrastructure.

4.7 BORE CONSTRUCTION LOG

A key aim of the census was to document the bore construction at each site. Where available, a copy of the Driller's Log was provided by the landowner. Where a Driller's Log was not available, the existing bore details, namely: location; depth; date and construction, were applied to correlate the site data with a registered bore number/detail where possible.

Where the available information collected in the field confirmed the correlation with a registered number, the database summary report was utilised to provide additional details of bore construction.

4.8 DEPTH MEASUREMENTS

Where the bore condition and equipment provided down hole access, the depth of the bore was gauged using a groundwater interface probe. The water level dipper comprised a metre tape reel with a weighted probe. The probe is approximately 12 millimetre (mm) in diameter, however in the majority of situations where a bore is equipped with a pump it is not possible to insert the dipper into the bore as either: (1) the bore head is sealed; (2) there is insufficient access; or (3) there is a high risk that the dipper will become entangled between the pump column and electrical cables which may require removing the entire pump column.

Field notes were made where access was restricted or the depth of the bore and groundwater level could not be gauged. The depth to groundwater (DTW) was gauged and recorded in designated field sheets. The stick-up height of the bore casing above ground level was measured and recorded to facilitate an accurate calculation of the groundwater depth relative to ground level.

4.9 WATER QUALITY

4.9.1 Gas Screening

Prior to opening of any borehead fastening, a calibrated multigas probe was activated to obtain a sample of gas readings inside the borehead prior to any purging or disturbance. Where practical, levels were recorded for concentrations of CH_4, H_2S, CO, and O_2. No detections for gases were reported during the census to trigger any further sampling or investigation.

4.9.2 Field Testing

Groundwater quality was tested in the field where conditions permitted access. Sampling was conducted by the preferred methods in the following order:

1. Existing pump operated to purge bore by removing at least three (3) to five (5) bore volumes prior to collection of sample;
2. Existing pump operated to purge bore for as long as practical prior to collecting sample;
3. Bailer lowered manually in unequipped bores to collect grab sample; and
4. Sample obtained from tap or break in pump line.

Field testing was conducted immediately after sampling to record physical water parameters. A multi-probe water quality meter was used to measure the following parameters:

Temperature;

Electrical Conductivity (Salinity - EC);

pH (Acidity);

Dissolved Oxygen (DO); and

Oxygen reduction potential (Redox / Eh).

Electrical Conductivity (EC) provides a measure of the total concentration of ion species and is widely used to assess the levels of dissolved salts in water (salinity). In general, drinking water is less than 800 µS/cm whilst sea water is 56,000 µS/cm.

Potential Hydrogen (pH) determines the balance between positive hydrogen ions (H+) and negative hydroxyl ions (OH-) and provides a test of water acidity (low pH) or alkalinity (high pH). Most natural freshwaters have a pH in the range 6.5 to 8.0 (ANZECC 2000) although groundwater can vary significantly due to bore construction and the host geology.

4.9.3 Sampling & Laboratory Analysis

Where further chemical testing was conducted, groundwater samples were collected from selected bores following adequate purging to obtain a representative sample. Groundwater samples for dissolved metal analysis were field filtered, using a disposable 0.45 µm membrane filter, prior to collection in acid preserved containers. Samples were sealed in laboratory prepared sampling containers appropriate for the analysis and clearly labelled with the sample identification. All samples were stored on ice immediately after their collection and transported to the laboratory under Chain of Custody (COC) documentation in general accordance with AS:5667 Sampling of Groundwaters (1998). A NATA registered laboratory was contracted to undertake the laboratory analysis in accordance with the NATA approved methods.

5.0 QUALITY ASSURANCE & QUALITY CONTROL

5.1 FIELD PROTOCOLS

The Quality Assurance and Quality Control (QA/QC) protocols used during the census fieldwork are shown below in **Table 1**.

Table 1: Field QA/QC

Protocol	Description
Census Team	Personnel comprised qualified environmental professionals & technical staff trained in conducting groundwater bore surveys.
Field Records	Bore data recorded both digitally and manually in designated field sheets.
Sample Equipment	All field testing equipment calibrated prior to operation. Sample equipment decontaminated between sample sites.
Chain of Custody Forms	All samples (if any) logged and transferred under appropriately completed Chain of Custody (COC) forms.

5.2 LABORATORY ANALYTICAL METHODS

Where chemical testing was undertaken, analysis of samples was conducted by a NATA accredited laboratory. QA/QC results are documented in the Laboratory Certificates of Analysis (COA).

5.3 DATA INTEGRITY ASSESSMENT

This bore census has utilised formal sources of information made publicly available by the Qld Government. These formal sources have been supplemented by information provided by the client, landowner, and observations made by ENRS professionals during site inspections.

Review and comparison of the groundwater records has been conducted to assess for and identify any significant data gaps or inconsistencies to trigger further investigations. Based on the sources and content obtained during the census, the data results may be considered to provide a reliable and satisfactory level of accuracy to support the record of groundwater bores for the development of the EIS groundwater model. Notwithstanding, the bore census findings for individual privately owned properties have been provided to the landowners for confirmation.

5.4 QA/QC DISCUSSION

The QA/QC indicators complied with the required standards. It is therefore concluded that the QA/QC results are adequate, and the quality of the census data is acceptable for use. A summary of the Data Quality performance is provided in **Table 2**.

Table 2: Data Quality Objectives and Criteria

Data Quality Objective (DQO)	Evaluation Criteria	Status
Documentation completeness	Completion of field records, equipment calibration, Site photos.	✓
Data comparability	Use of appropriate techniques for gauging, sampling, storage and transportation of samples. Use of NATA certified laboratory.	✓
Data representativeness	Census inspection covered all areas within a suitable radius surrounding the Project area.	✓
Precision & accuracy	Experienced and qualified field personnel. Appropriate field techniques & calibrated equipment.	✓

6.0 BORE CENSUS SUMMARY

6.1 REGISTERED BORE RECORDS AND PROPERTIES ACCESSED

The desktop review identified a number of registered bores on the Qld Government groundwater database with records distributed across Stages 1 and 2 of the bore census investigation area (Figure 1).

Twelve (12) properties were accessed and surveyed during the bore census between September 2017 and November 2017. The properties included:

Iffley and Deverill (Pembroke-owned);

Lake Vermont and Wynette (other resource company-owned); and

Willunga, Seloh Nolem / Vermont Park, Leichardt, Meadowbrook, Olive Downs, Carfax, Cattle Camp Station and Winchester Downs (privately owned properties).

The total survey coverage for the 12 properties accessed was approximately 161,188ha.

6.2 LANDOWNER RECORDS

ENRS survey personnel met with the following landowners and/or representatives:

Property	Landowner representative
Iffley and Deverill	Adam Keytes
Willunga and Cattle Camp	Geoffrey & Richard Bethel
Seloh Nolem/Vermont Park	Roy Rogers
Wynette and Lake Vermont	Robert Berry
Meadowbrook	John Fingers
Winchester Downs	Ken Braithwaite
Olive Downs	Karen Braithwaite

ENRS survey personnel also held telephone conversations with the following landowner representatives:

Property	Landowner representative
Carfax	Bruce Pownall
Leichardt	Judy Pownall

6.3 EXISTING BORES (SUMMARY)

The following sub-sections provides a summary of the key information obtained during the bore census site inspections and ground truthing. Further details area provided in **Appendix A** (Bore Census Database) and **Appendix B** (Bore Census Bore Cards).

6.3.1 Ground Surfaces Elevations

Ground surface elevations as recorded by handheld GPS averaged 173.5 mAHD, with the lowest point surveyed being 135 mAHD (Carfax – Unknown Bore 2) and the highest point surveyed being 215 mAHD (Winchester Downs – 162460).

6.3.2 Observed Bore Purpose

Four (4) primary observed bore purposes were noted during the bore census:

Domestic supply (six (6) bores surveyed):

- Cattle Camp – 161572
- Cattle Camp – 161573
- Olive Downs – Bore 9
- Carfax – 90076
- Deverill – 141677
- Iffley - 136090

Exploration bore (one (1) bore surveyed);

Groundwater monitoring bore (seventeen (17) bores surveyed); and

Stock watering supply (forty-seven (47) bores surveyed).

During site inspections twenty-six (25) bores were identified as equipped bores with pumping equipment deployed downhole, which either restricted or prevented field gauging of total bore depth, standing water level (SWL) and water quality measurements.

6.3.3 Borehead Gas Measurements

During the field survey borehead gas readings were conducted using a multigas probe where access permitted. When a bore presented with a removable cap a gas sample line was inserted into the well head with minimal exposure to the atmosphere. If the bore was not capped at the time of inspection the gas sample line was inserted into the borehead and a temporary cover emplaced to reduce the influence of atmospheric exposure. A summary of borehead gas readings is presented in the following sub-sections.

6.3.3.1 Methane (CH_4)

Methane is produced by anaerobic decay of organic matter and is a major component of common coal seam gas.

Borehead gas readings for methane only reported concentrations above the detectable limit (0.1%) in three (3) of the surveyed bores. These concentrations were

0.4% (Carfax – 151344/1), 0.6% (Wynette – Bore 3) and 2.4% (Winchester Downs – 15).

6.3.3.2 Hydrogen Sulphide (H_2S)

Hydrogen sulphide is commonly present in bore water due the presence of sulphate reducing bacteria and may also be a component of common coal seam gas.

Borehead gas readings for hydrogen sulphide only reported concentrations above the detectable limit (1ppm) in seven (7) boreheads.

Of these, the only borehead to present with gas concentrations above 2ppm was Meadowbrook – 122458/1 with a H_2S concentration of 26ppm.

6.3.3.3 Carbon Monoxide (CO)

Carbon monoxide is produced from the partial oxidation of carbon containing compounds and is commonly present at background atmospheric concentrations of ~0.1ppmv.

Borehead gas readings for carbon monoxide only reported concentrations above the detectable limit (1ppm) in six (6) boreheads. In these boreheads carbon monoxide concentrations ranged from 2ppm (Cattle Camp – 161572, Cattle Camp – 161573, Winchester Downs – 162460, Leichardt – Unknown 1) to 18ppm (Cattle Camp – 161574).

6.3.4 Water Quality

During the field survey, groundwater samples were collected where access permitted for the purpose of recording field parameters. A summary of water quality field parameters is presented below.

6.3.4.1 Electrical Conductivity (EC)

EC is a measure of the total dissolved solids and salinity. In general, fresh waters will have an EC of less than 1,470 µS/cm and the upper threshold for beef cattle stock watering is approximately 6,250 µS/cm (ANZECC 2000).

The EC of groundwaters surveyed during the bore census varied greatly with location and the depth of the bore. The average EC value of bores surveyed was 2,374 µS/cm with a minimum EC value of 140 µS/cm (Leichardt – Unknown 2) and a maximum value of 16,610 µS/cm (Lake Vermont – Unknown 1).

It should be noted that the primary method utilised for collecting groundwater samples during the field survey was by bailer grab samples as the purging of bores was not practical. As a result, the potential exists for the water present in the bore to be both stagnant and stratified. Furthermore, eighteen (18) boreholes were observed not to be fitted with a surface cap at the time of survey. This allows for the potential dilution of groundwater by rainfall.

6.3.4.2 pH

pH is a measure of hydrogen activity. pH determines the balance between positive hydrogen ions (H+) and negative hydroxyl ions (OH-) and provides a test of water acidity (low pH) or alkalinity (high pH). Most natural freshwaters have a pH in the range 6.5 to 8.0. Changes in pH may affect the physiological functioning of biota and affect the toxicity of contaminants. Both increases and decreases in pH can result in adverse effects, although decreases are likely to cause more significant problems.

Low pH indicates acidic conditions which may increase the mobility of heavy metals, whilst high pH indicates alkaline conditions.

The pH of groundwaters surveyed during the bore census are within the range of anticipated naturally occurring values. The average pH value of bores surveyed is pH 7.03 with a minimum pH of 5.98 (Winchester Downs – 141382) and a maximum pH of 8.2 (Cattle Camp – 161572).

6.3.4.3 Oxidisation Reduction Potential (Redox)

Oxidation Reduction Potential (ORP) is a measure of the capacity to either release electrons (positive=oxidation) or gain electrons (negative=reduction). Redox reactions govern the biological degradation of some contaminants and the mobility of many compounds such as nitrogen and sulphur. Microorganisms, such as bacteria, obtain energy for growth by transferring electrons from an electron donor to an electron acceptor. Biodegradation of potential organic contaminants will rapidly deplete DO levels. Once DO levels are depleted, anaerobic microorganisms will typically use available electron acceptors in the following order: nitrate, Mn(IV), Fe(III) hydroxide, sulfate, and carbon dioxide. Interpretation of ORP is also affected by ionic concentrations, as indicated by salinity.

The ORP of groundwaters surveyed during the bore census vary greatly. The average ORP of bores surveyed is -30.7 mV with a minimum ORP of -320 mV (Meadowbrook – Bullock Paddock) and a maximum ORP of 187.2 (Lake Vermont – Yard Bore 1).

6.4 DISCUSSION

Groundwater resources across the Project area and surrounds recorded a wide range in depth, yield and conductivity values, associated with the borehole location, depth and construction. From review of Qld Government groundwater database records and data collected during the bore census survey the following discussion is provided:

Isaac River Alluvium - through the centre of the census investigation area the primary source of lower salinity groundwater is associated with bores constructed in alluvium deposits along the Isaac River. In general, bores targeting this resource are approximately 20 metres in depth with a SWL noted to be commensurate with surface water level observed in the Isaac River. Water samples collected from bores targeting the Isaac Alluvium recorded an average EC reading of 924 µS/cm with a minimum of 199 µS/cm (Carfax 13040180) and a maximum of 2,903 µS/cm (Wynette – Bore 2);

Sedimentary Rock Aquifers - In the north eastern portion of the census investigation area the primary source of groundwater are deep sedimentary units. Bores targeting this resource are generally in excess of 80m depth with screened intervals ranging from 46m to 53m below ground level (Cattle Camp – 161573) and 77m to 161m below ground level (Cattle Camp – 161572). Water samples collected from bores in this region recorded an average EC reading of 973 µS/cm with a minimum of 499 µS/cm (Cattle Camp – 161575) and a maximum of 2,208 µS/cm (Cattle Camp – 161578);

Other bores in the census investigation area were noted to target either natural drainage lines or coal seams that were reported during historic exploration programs; and

From discussions and meetings with various landowners and property managers it is apparent that away from the Isaac River finding groundwater within an acceptable conductivity range and with adequate supply to warrant equipping for pumping is difficult. It is further noted that from review of the Qld Government database records for bores that were unable to be located or known not to exist, that many of these were likely to be test bores that encountered groundwater of high salinity and/or groundwater of low yield and the bore was subsequently abandoned.

7.0 CONCLUSIONS & RECOMMENDATIONS

Based on the findings and borehole data obtained during the scope of works the following conclusions and recommendations are provided:

A groundwater bore census was completed between September 2017 and November 2017 which included survey of 12 properties within the Project area and surrounds with a total coverage of approximately 161,188ha;

The bore census database combines staged results from desktop reviews, communications with landowners and property managers, site inspections and borehead surveys, and supplemented by Driller's Logs, records and registered bore reports (where available);

Eight (8) of the twelve (12) properties accessed are privately owned;

Four (4) primary observed bore purposes were noted during the bore census, including:

- Six (6) domestic supply bores;
- Forty-seven (47) stock supply bores;
- Seventeen (17) groundwater monitoring bores; and
- One (1) exploration bore.

The census methodology QA/QC indicators complied with the required standards. Hence, the census results are considered adequate and the quality of the census data is acceptable for development of the EIS groundwater model;

A summary of the census records is tabled in **Appendix A** with supporting information including bore census cards provided in **Appendix B**; and

This report must be read in conjunction with the Statement of Limitations in **Section 9.0.**

8.0 REFERENCES

ANZECC and ARMCANZ, 2000. Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Artarmon: Australian Water Association.

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Sundaram, B. et al., 2009. Groundwater Sampling and Analysis—A Field Guide, Canberra: Commonwealth of Australia.

9.0 LIMITATIONS

This report and the associated services performed by ENRS are in accordance with the scope of services set out in the contract between ENRS and the Client. The scope of services was defined by the requests of the Client, and primarily by the availability of access to Site.

ENRS derived the data in this report primarily from visual inspections, and, limited sample collection and analysis made on the dates indicated. In preparing this report, ENRS has relied upon, and presumed accurate, certain information provided by government authorities, the Client and others identified herein. The report has been prepared on the basis that while ENRS believes all the information in it is deemed reliable and accurate at the time of preparing the report, it does not warrant its accuracy or completeness and to the full extent allowed by law excludes liability in contract, tort or otherwise, for any loss or damage sustained by the Client arising from or in connection with the supply or use of the whole or any part of the information in the report through any cause whatsoever.

Limitations also apply to analytical methods used in the identification of substances (or parameters). These limitations may be due to non-homogenous material being sampled (i.e. the sample to be analysed may not be representative), low concentrations, the presence of 'masking' agents and the restrictions of the approved analytical technique. As such, non-statistically significant sampling results can only be interpreted as 'indicative' and not used for quantitative assessments.

The data, findings, observations, conclusions and recommendations in the report are based solely upon the state of Site at the time of the investigation. The passage of time, manifestation of latent conditions or impacts of future events (e.g. changes in legislation, scientific knowledge, land uses, etc) may render the report inaccurate. In those circumstances, ENRS shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of the report.

This report has been prepared on behalf of and for the exclusive use of the Client, and is subject to and issued in connection with the provisions of the agreement between ENRS and the Client. ENRS accepts no liability or responsibility whatsoever and expressly disclaims any responsibility for or in respect of any use of or reliance upon this report by any third party or parties.

It is the responsibility of the Client to accept if the Client so chooses any recommendations contained within and implement them in an appropriate, suitable and timely manner.

Appendix A:

Bore Census Database

Survey Date	Property	Bore_ID	Local Bore Name	Ref No/GW Number	Survey Personnel	Easting	Northing	Elevation mAHD (handheld)	Observed Purpose	TD_(mbTOC) Field Measured	Stick_up_(m) Field Measured	SWL_(mbTOC) Field Measured	EC (µS/cm)	Temperature (°C)	pH	ORP (mv)	DO (%)	CH_4	H_2S	CO	O_2	Meeting With Land Representative
15/11/2017	Carfax	Carfax - 13040180	-	13040180	ML + TF	667825	7516351	147	monitoring	28	0	16.24	199	26	7.54	-75.3	20.6	0	0	0	20.3	phone call
15/11/2017	Carfax	Carfax - Unknown Bore 2	Unknown Bore 2	-	ML + TF	670294	7516425	135	stock	-	1.35	-	-	-	-	-	-	0	0	0	19.1	phone call
15/11/2017	Carfax	Carfax - Unknown Bore 1	Unknown Bore 1	-	ML + TF	670295	7516420	145	stock	17.8	0.3	13.765	343	27.5	6.01	-76	19.6	0	0	1	19.3	phone call
15/11/2017	Carfax	Carfax - 90074/2	3 Mile - 2	90074	ML + TF	671877	7511442	157	stock	-	0.29	-	-	-	-	-	-	-	-	-	-	phone call
15/11/2017	Carfax	Carfax - 90074/3	3 Mile - 3	90074	ML + TF	671883	7511437	153	stock	-	0.35	-	-	-	-	-	-	-	-	-	-	phone call
15/11/2017	Carfax	Carfax - 90074/1	3 Mile - 1	90074	ML + TF	671886	7511445	157	stock	-	0.46	-	-	-	-	-	-	-	-	-	-	phone call
15/11/2017	Carfax	Carfax - 90076	House Bore	90076	ML + TF	672641	7515517	144	stock and domestic	-	0.515	-	-	-	-	-	-	-	-	-	-	phone call
15/11/2017	Carfax	Carfax - 103515	-	103515	ML + TF	674298	7517580	143	stock	-	0.39	-	-	-	-	-	-	-	-	-	-	phone call
15/11/2017	Carfax	Carfax - 103082	2nd Bridge Bore	103082	ML + TF	674586	7517730	148	stock	-	1.2	-	-	-	-	-	-	-	-	-	-	phone call
15/11/2017	Carfax	Carfax - 90075	Bridge Bore	90075	ML + TF	674591	7517833	144	stock	-	0.29	-	-	-	-	-	-	-	-	-	-	phone call
15/11/2017	Carfax	Carfax - 90440	Spelt Paddock Bore	90440	ML + TF	674723	7515024	156	stock	-	0.35	-	-	-	-	-	-	-	-	-	-	phone call
11/09/2017	Cattle camp	Cattle camp - 13040286	-	13040286	ML + TF	659986	7536977	165	Monitoring	-	0.41	-	-	-	-	-	-	-	-	-	-	no
30/09/2017	Cattle camp	Cattle Camp Gully	Cattle Camp Gully	-	ML + TF	671137	7536973	154	Stock	89.8	0.4	7.31	900	26.82	7.7	-132.3	19.3	0	1	1	19.3	yes
30/09/2017	Cattle camp	Cattle camp - 161 575	Rosewood	161 575	ML + TF	672394	7543106	198	Stock	83.5	0.36	28.07	499	27.98	6.71	103	23.6	0	0	6	18.2	yes
30/09/2017	Cattle camp	Cattle camp - 161573	House Supply	161573	ML + TF	672562	7538229	175	Domestic	57.8	0.33	37	710	28.72	6.84	98.6	28.5	0	0	2	19.5	yes
30/09/2017	Cattle camp	Cattle camp - 161572	House Bore	161572	ML + TF	672572	7538233	178	Domestic	184.65	0.28	37.715	631	27.9	8.2	47.3	49.3	0	0	2	19.5	yes
30/09/2017	Cattle camp	Cattle camp - 161578	Powerline	161578	ML + TF	672586	7535520	191	Stock	114	0.58	47.435	2,208	28.97	7.05	-238.90	21.50	0	0	1	19.6	yes
2/10/2017	Cattle camp	Cattle camp - 88992	Mandle Brot Bore	88992	ML + TF	672888	7537124	156	Stock	-	0.42	-	-	-	-	-	-	-	-	-	-	yes
30/09/2017	Cattle camp	Cattle camp - 161574	KP	161574	ML + TF	673374	7543006	203	Stock	121.9	0.5	25.75	889	27.63	7.39	-195.3	22.6	0	0	18	17.9	yes
1/10/2017	Cattle camp	Cattle camp - 111719	Bore Behind Dam	111719	ML + TF	673489	7537157	149	Stock	-	0.45	-	-	-	-	-	-	-	-	-	-	yes
12/09/2017	Deverill	Deverill - 141677	-	141677	ML + AF	642164	7548178	191	Domestic	10.05	0.45	Dry	-	-	-	-	-	0	0	0	18.4	yes
12/09/2017	Iffley	Iffley - 136090	Homestead Bore	136090	ML + AF	647486	7540034	183	Domestic	22.68	0.28	12.71	2187	26.37	6.62	83.7	55.4	0	0	0	20	Yes
12/11/2017	Lake Vermont	Lake Vermont - 158011	-	158011	ML + TF	640150	7514275	194	Monitoring	33.18	0.79	18.3	6340	25.9	7.03	-205	35.5	0	2	0	21.4	yes
12/11/2017	Lake Vermont	Lake Vermont - 165325	-	165325	ML + TF	640412	7516077	188	Monitoring	18.58	0.87	17.203	1439	27.9	6.96	33.2	27.4	0	0	1	13.4	yes
12/11/2017	Lake Vermont	Lake Vermont - Powerline bore	Powerline bore	-	ML + TF	641899	7519646	190	stock	-	0.34	-	1443	26.4	7.28	120.8	54.6	-	-	-	-	yes
12/11/2017	Lake Vermont	Lake Vermont - Yard Bore 1	Yard Bore 1	-	ML + TF	642611	7519351	185	stock	96	0.34	21.385	1512	25.6	7.49	187.2	58.9	0	0	0	20.4	yes
12/11/2017	Lake Vermont	Lake Vermont - Yard Bore 2	Yard Bore 2	-	ML + TF	642617	7519347	190	stock	-	0.04	-	-	-	-	-	-	-	-	-	-	yes
12/11/2017	Lake Vermont	Lake Vermont - 158010	-	158010	ML + TF	642638	7520120	186	Monitoring	35.2	0.9	17.915	1236	27.1	6.95	9.1	31.1	0	0	0	21.4	yes
12/11/2017	Lake Vermont	Lake Vermont - 158481 (VWP)	-	158481	ML + TF	643243	7522128	185	Monitoring	-	0.8	-	-	-	-	-	-	-	-	-	-	yes
12/11/2017	Lake Vermont	Lake Vermont - 158485	-	158485	ML + TF	643243	7522125	181	Monitoring	22.95	0.78	14.257	560	28.9	7.19	-12.1	25.6	0	0	0	21	yes
12/11/2017	Lake Vermont	Lake Vermont - 165122 (VWP)	-	165122	ML + TF	644182	7520541	181	Monitoring	-	0.7	-	-	-	-	-	-	-	-	-	-	yes
11/11/2017	Lake Vermont	Lake Vermont - 158483	-	158483	ML + TF	645638	7522932	171	Monitoring	20.71	0.74	DRY	-	-	-	-	-	0	0	1	16.1	yes
11/11/2017	Lake Vermont	Lake Vermont - 158482(VWP)	-	158482	ML + TF	645638	7522933	174	Monitoring	-	0.8	-	-	-	-	-	-	-	-	-	-	yes
11/11/2017	Lake Vermont	Lake Vermont - 165123 (VWP)	-	165123	ML + TF	647629	7526188	164	Monitoring	-	0.74	-	-	-	-	-	-	-	-	-	-	yes
11/11/2017	Lake Vermont	Lake Vermont - 158484	-	158484	ML + TF	648152	7524058	163	Monitoring	19.45	0.85	18.116	1401	26.8	7.18	112.8	62.8	0	0	1	13.5	yes
11/11/2017	Lake Vermont	Lake Vermont - 165124 (VWP)	-	165124	ML + TF	648156	7524044	163	Monitoring	-	0.49	-	-	-	-	-	-	-	-	-	-	yes

Survey Date	Property	Bore_ID	Local Bore Name	Ref No/GW Number	Survey Personnel	Easting	Northing	Elevation mAHD (handheld)	Observed Purpose	TD_(mbTOC) Field Measured	Stick_up_(m) Field Measured	SWL_(mbTOC) Field Measured	EC (µS/cm)	Temperature (°C)	pH	ORP (mv)	DO (%)	CH_4	H_2S	CO	O_2	Meeting With Land Representative
11/11/2017	Lake Vermont	Lake Vermont - 158480 (VWP)	-	158480	ML + TF	649913	7522233	166	Monitoring	-	-	-	-	-	-	-	-	-	-	-	-	yes
11/11/2017	Lake Vermont	Lake Vermont - Unknown 1	-		ML + TF	650783	7522929	160	exploration	131	0.16	30.965	16610	27.9	6.56	49.9	30.6	0	0	1	19.8	yes
11/11/2017	Lake Vermont	Lake Vermont - River Bore	River Bore	-	ML + TF	654027	7526947	166	stock	39	0.55	14.614	616	26.1	6.5	43	37	0	0	0	19	yes
14/11/2017	Leichardt	Leichardt - 136091/1	-	136091	ML + TF	650061	7508592	174	Stock	77	0.18	45.087	1662	27.3	6.79	-84.9	30.6	0	0	1	20.2	yes
14/11/2017	Leichardt	Leichardt - 136091/2	-	136091	ML + TF	650091	7508608	171	Stock	-	0.32	-	-	-	-	-	-	-	-	-	-	yes
14/11/2017	Leichardt	Leichardt - 136091/4	-	136091	ML + TF	650106	7508653	168	Stock	56	0.34	45.407	4419	27.2	7.06	58.4	15.6	0	0	1	19.4	yes
14/11/2017	Leichardt	Leichardt - 136091/3	-	136091	ML + TF	650116	7508649	186	Stock	85	0.47	46.65	4750	27.6	6.85	-119.4	30.1	0	0	1	19.1	yes
14/11/2017	Leichardt	Leichardt - Unknown 1	Yard Bore Large	-	ML + TF	656849	7515959	149	Stock	74	0.27	11.705	1324	26.6	6.95	99.2	46	0	0	2	19.8	yes
14/11/2017	Leichardt	Leichardt - Unknown 2	Yard Bore Small	-	ML + TF	656850	7515962	149	Stock	178	0.13	11.26	140	26.2	6.85	106.8	37.1	0	0	1	19	yes
18/11/2017	Meadowbrook	Meadowbrook - 132631	Iffley	132631	ML + TF	635452	7528174	200	stock	*328	0.59	-	-	-	-	-	-	-	-	-	-	yes
18/11/2017	Meadowbrook	Meadowbrook - Bullock Paddock	Bullock Paddock	-	ML + TF	636052	7528117	185	stock	50.2	0.3	21.625	6212	28.5	7.39	-320	1.4	0	1	0	20.2	yes
18/11/2017	Meadowbrook	Meadowbrook - Power Bore	Power Bore	-	ML + TF	641260	7520977	186	stock	-	0.46	16.5	-	-	-	-	-	0	0	0	19.9	yes
18/11/2017	Meadowbrook	Meadowbrook - Black Tank	Black Tank	-	ML + TF	642742	7521198	173	stock	-	0.385	-	-	-	-	-	-	0	0	1	19.2	Yes
18/11/2017	Meadowbrook	Meadowbrook - 122458/2	Rolfies #2	122458	ML + TF	644971	7526779	174	stock	103	0.15	21.74	8666	28.2	7.32	-267.7	2.5	0	1	1	18.8	yes
18/11/2017	Meadowbrook	Meadowbrook - 122458/1	Rolfies #1	122458	ML + TF	644973	7526776	172	stock	52.2	0.72	22.335	5098	28.2	7.29	-290	30.7	0	26	0	19.7	yes
18/11/2017	Meadowbrook	Meadowbrook - Swamp Bore	Swamp Bore	-	ML + TF	645595	7528661	171	stock	85	0.25	17.523	1078	27.7	7	-62	34	0	1	0	20.1	yes
13/11/2017	Olive Downs	Olive Downs - 162439	MB8	-	ML + TF	631866	7553657	196	Monitoring	12.578	0.7	12.517	-	-	-	-	-	0	0	1	10.7	Yes
13/11/2017	Olive Downs	Olive Downs - Bore 9	House Bore	162439	ML + TF	633886	7553064	189	Domestic	-	0.19	-	935.8	32	7.01	39.1	24.5	-	-	-	-	yes
13/11/2017	Olive Downs	Olive Downs - 162472	-	162472	ML + TF	635533	7554547	193	Monitoring	91.2	0.9	23.33	-	-	-	-	-	0	0	1	20.7	yes
13/11/2017	Olive Downs	Olive Downs - Bore 7	Saltwater Bore	-	ML + TF	637518	7552628	192	Stock	16.75	0.39	15.695	994	25.3	6.75	-109.9	24	0	0	0	20.2	yes
13/11/2017	Olive Downs	Olive Downs - Bore 8	5 Mile Bore	-	ML + TF	640186	7547990	188	Stock	-	0.1	-	-	-	-	-	-	-	-	-	-	yes
13/09/2017	Willunga	Willunga - 97181	Pisscutter	97181	ML + AF	656325	7523641	167	stock	19.77	0.8	12.69	298	26.31	6.93	90.1	30.96	0	0	1	19.9	yes
17/09/2017	Willunga	Willunga - 97182	Blue Pump 5"	97182	ML + AF	657944	7521843	165	stock	20.92	0.65	13.13	472.5	26.26	7.24	-142.1	26.53	0	0	0	19.9	yes
17/09/2017	Willunga	Willunga - 97183	Blue Pump 8"	97183	ML + AF	657950	7521838	165	stock	-	0.7	-	-	-	-	-	-	0	0	0	19.2	yes
17/09/2017	Willunga	Willunga - 97184	Leichardt Bore	97184	ML + AF	659014	7519480	163	stock	20.63	0.78	14.615	598.5	25.68	6.79	45.9	32.51	0	0	1	19.6	yes
17/09/2017	Willunga	Willunga - 97185	Bottom Bore	97185	ML + AF	659239	7519220	164	stock	19.53	0.73	14.25	442.8	26.23	7.12	-95.6	24.4	0	0	1	20.1	yes
10/11/2017	Winchester Downs	Winchester Downs - 162460	Number One	162460	ML + TF	627204	7546953	215	stock	11.23	0.36	dry	-	-	-	-	-	0	0	2	10.5	yes
10/11/2017	Winchester Downs	Winchester Downs - 141382	-	141382	ML + TF	628494	7542693	205	Monitoring	51.3	0.5	14.929	2281	27	5.98	-176.8	35.7	0	0	1	18.3	yes
10/11/2017	Winchester Downs	Winchester Downs - 14	-	-	ML + TF	628742	7546690	202	Stock	14.4	0.27	3.59	3003	25.3	7.17	-135	34.5	0	0	0	19.4	yes
10/11/2017	Winchester Downs	Winchester Downs - 15	-	-	ML + TF	629039	7546882	204	stock	23.4	0.2	9.67	2063	25.4	7.5	-178.4	28	2.4	0	1	11.3	yes
10/11/2017	Winchester Downs	Winchester Downs - White Tank	White Tank	-	ML + TF	629347	7542483	212	Stock	53	0.48	17.133	1721	26.1	6.66	174.5	32.9	0	0	0	18.8	yes
10/11/2017	Winchester Downs	Winchester Downs - Lemon Tree	Lemon Tree	-	ML + TF	630655	7551954	195	stock	-	0.51	-	-	-	-	-	-	-	-	-	-	yes
29/09/2017	Wynette	Wynette - Bore 3	Bore 3	-	ML + TF	634785	7550009	187	stock	94	0.6	15.91	6677	26.79	7.44	43.5	28.3	0.6	0	0	19.8	yes
29/09/2017	Wynette	Wynette - Bore 2	Bore 2	-	ML + TF	634788	7550024	191	stock	19.85	0.61	15.97	2903	30.9	6.69	124	27.13	0	0	1	11.9	yes
29/09/2017	Wynette	Wynette - Bore 1	Bore 1	-	ML + TF	634791	7550019	189	stock	-	0.5	-	-	-	-	-	-	-	-	-	-	yes

Appendix B:

Bore Census Bore Cards

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 13040180**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	13040180
Easting (GDA94):	667825	**GPS Elevation:**	147
Northing:	7516351		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**28**	**Year Drilled:**	1970
Casing Stick Up (SU):	**0**	**Drilled By**	**IWSC**
Casing Material	**Steel**	**Internal Diameter**	200
Initial Water Quality Measurement (Driller Log)	6000 µS/cm		
Construction Summary (Driller Log)	**PVC Slotted 0-28.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**monitoring**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**16.24**	**Date / Time of Measurement:**	8:20:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**20.3**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**199**	**Temp**	**26**	**pH**	**7.54**	**ORP**	**-75.3**	**DO (%)** **20.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Bottom of well felt silty

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 13040180**

Photograph 2 **Carfax - 13040180**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040180

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-04	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**	IR	**LONGITUDE**	148-37-51	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	667824	**MAP-NO**	8653
D/O FILE NO.	520/001(69)	**LOT**		**NORTHING**	7516333	**MAP NAME**	BOMBANDY
R/O FILE NO.	81-01045	**PLAN**		**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	RD RSV ADJ P9	**ACCURACY**		**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.45106271	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	B1S1
GIS LNG	148.63092451	**COUNTY**				**BORE LINE**	BOM-BOMBANDY LINE
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	07/12/1970			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	ERNST L				
ROLES	IN	**DRILL COMPANY**	IWSC				
	SM	**METHOD OF CONST.**	CABLE TOOL				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	07/12/1970	1	Polyvinyl Chloride	3.100	WT	60	0.00	28.50
A	07/12/1970	2	Perforated or Slotted Casing		AP	60		28.50

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.30	TOP SOIL
3	0.30	3.04	CLAYEY SAND
5	3.04	4.87	CLAYBOUND SAND
7	4.87	9.44	CLAY
9	9.44	11.58	SANDY CLAY
11	11.58	14.32	CLAY
13	14.32	18.28	SAND

BORE REPORT

REG NUMBER 13040180

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
15	18.28	21.79	CLAYEY SAND
17	21.79	24.53	SANDY CLAY
19	24.53	24.68	SAND
21	24.68	30.78	CLAYEY SAND
23	30.78	32.00	DECOMPOSED ROCK

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00	30.80	ISAAC RIVER ALLUVIUM

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	24.00	30.00	SAND	07/12/1970	-17.20	N	6000 US/CM		Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	13/07/1971	145.08	SVY	STD	R	
X	13/07/1971	144.98	SVY	STD	N	

WATER ANALYSIS PART1

BORE REPORT

REG NUMBER 13040180

PIPE	DATE	RD ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH
A	17/05/1971	1 GCL	048750	31.00	BA	GB	6000	7.5		3659.30	3430.06	390	370	0.1	26.3	
A	25/07/1989	1 GCL	130767	31.00	PU	GB	4050	8.4	5	2653.00	2271.69	143	652		30.6	10.17
A	03/10/1990	1 GCL	136449		PU	GB	3980	8.5	3	2755.53	2364.23	123	673	0.1	34.7	10.99
A	15/07/1999	1 GCL	201500		PU	GB	5290	9.0	2	3598.61	3169.70	197	833	0.1	37.5	12.71

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	17/05/1971	1	1195.0		26.0	79.0		451.0			1710.0	0.30		198.0				
A	25/07/1989	1	840.0	4.3	11.0	28.0	0.05	760.0	0.05	17.0	980.0	0.10	2.5	10.0				
A	03/10/1990	1	886.0	4.1	5.7	26.5	0.00	776.1	0.00	22.0	1032.0	0.16	2.9	0.0				
A	15/07/1999	1	1209.5	5.3	3.9	45.5	0.01	848.1	0.00	82.3	1316.3	0.02	0.0	87.4	0.00	0.00	0.20	0.00

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	07/12/1970	-17.30	R		NR	A	13/07/1971	-17.05	R		NR	A	28/09/1971	-17.00	R		NR
A	17/11/1971	-17.05	R		NR	A	11/12/1974	-16.90	R		NR	A	16/04/1975	-16.68	R		NR
A	02/07/1975	-16.65	R		NR	A	07/10/1975	-16.67	R		NR	A	25/11/1975	-15.03	R		NR
A	06/04/1976	-14.01	R		NR	A	07/07/1976	-14.43	R		NR	A	21/09/1976	-16.40	R		NR
A	16/11/1976	-16.42	R		NR	A	23/02/1977	-16.40	R		NR	A	14/04/1977	-16.30	R		NR
A	28/06/1977	-16.34	R		NR	A	06/09/1977	-16.32	R		NR	A	06/12/1977	-16.25	R		NR
A	07/03/1978	-16.18	R		NR	A	27/06/1978	-16.10	R		NR	A	05/09/1978	-16.13	R		NR
A	01/12/1978	-16.37	R		NR	A	03/04/1979	-15.92	R		NR	A	02/08/1979	-15.90	R		NR
A	13/11/1979	-15.95	R		NR	A	11/03/1980	-15.41	R		NR	A	03/06/1980	-15.40	R		NR
A	09/09/1980	-15.45	R		NR	A	03/12/1980	-15.58	R		NR	A	24/02/1981	-15.32	R		NR
A	28/04/1981	-15.38	R		NR	A	28/07/1981	-15.32	R		NR	A	30/09/1981	-15.52	R		NR
A	01/12/1981	-15.50	R		NR	A	01/09/1982	-15.90	R		NR	A	10/08/1983	-12.65	R		NR
A	14/03/1984	-16.00	R		NR	A	04/09/1984	-16.00	R		NR	A	13/02/1985	-16.15	R		NR
A	12/09/1985	-15.70	R		NR	A	03/03/1986	-15.68	R		NR	A	09/07/1986	-15.70	R		NR
A	13/08/1987	-16.40	R		NR	A	25/07/1989	-15.76	R		NR	A	07/12/1989	-15.77	R		NR
A	04/10/1990	-15.75	R		NR	A	27/03/1991	-15.26	R		NR	A	14/08/1991	-15.28	R		NR
A	28/09/1994	-15.75	R		NR	A	27/03/1996	-16.00	R		NR	A	10/07/1996	-16.07	R		NR

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PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	01/10/1996	-16.06	R		NR	A	15/01/1997	-16.21	R		NR	A	28/05/1997	-16.25	R		NR
A	08/08/1997	-16.31	R		NR	A	12/11/1997	-16.39	R		NR	A	01/04/1998	-16.50	R		NR
A	20/07/1998	-16.58	R		NR	A	16/12/1998	-16.45	R		NR	A	15/07/1999	-16.49	R		NR
A	30/11/1999	-16.55	R		NR	A	28/03/2000	-16.65	R		NR	A	28/06/2000	-16.63	R		NR
A	20/02/2001	-16.65	R		NR	A	09/05/2001	-16.67	R		NR	A	20/07/2001	-16.76	R		NR
A	07/11/2001	-16.82	R		ACT	A	21/08/2002	-17.01	R		ACT	A	14/01/2003	-17.27	R		ACT
A	22/07/2003	-17.30	R		ACT	A	23/09/2003	-17.34	R		ACT	A	20/02/2004	-17.43	R		ACT
A	29/03/2004	-17.53	R		ACT	A	21/11/2005	-17.97	R		ACT	A	02/03/2006	-18.07	R		ACT
A	12/05/2006	-18.14	R		ACT	A	22/08/2006	-18.11	R		ACT	A	17/12/2006	-18.26	R		ACT
A	03/04/2007	-18.28	R		NR	A	26/07/2007	-18.27	R		NR	A	09/10/2007	-18.24	R		ACT
A	17/12/2007	-18.26	R		ACT	A	03/04/2008	-17.85	R		ACT	A	08/08/2008	-17.70	R		ACT
A	28/10/2008	-18.11	R		NR	A	17/12/2008	-17.66	R		ACT	A	01/04/2009	-17.60	R		ACT
A	11/06/2009	-17.61	R		ACT	A	01/12/2009	-17.65	R		ACT	A	31/05/2010	-17.57	R		ACT
A	12/05/2011	-16.10	R		ACT	A	25/10/2011	-16.49	R		ACT	A	16/01/2013	-16.61	R		ACT
A	09/04/2013	-16.50	R		ACT	A	01/08/2013	-16.43	R		ACT	A	19/11/2013	-16.42	R		ACT
A	05/02/2014	-15.34	R		NR	A	21/05/2014	-16.37	R		ACT	A	16/09/2014	-16.41	R		ACT
A	13/01/2015	-16.39	R		NR	A	14/04/2015	-16.38	R		ACT	A	08/07/2015	-16.43	R		ACT
A	22/09/2015	-16.44	R		ACT	A	12/01/2016	-16.48	R		ACT	A	24/05/2016	-16.44	R		ACT
A	02/08/2016	-16.34	R		ACT	A	08/11/2016	-16.34	R		ACT	A	07/02/2017	-16.33	R		ACT
A	06/06/2017	-16.22	R		ACT	A	12/09/2017	-16.26	R		ACT						

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	09/07/1986		710							PU	GB
A	08/10/1986		700							PU	GB
A	25/07/1989		3110							PU	GB
A	04/10/1990		4320							PU	GB
A	14/08/1991		4400							PU	GB

BORE REPORT

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PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	10/07/1996		3800							PU	
A	08/08/1997		7400							PU	
A	20/07/1998		7000							PU	
A	15/07/1999		5260	8.8	27.1					PG	GB
A	07/11/2001		6700	7.9	24.5					PG	GB
A	21/08/2002		6250	7.9	20.8					PG	GB
A	23/09/2003		6850	8.4	28.0					PG	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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**** End of Report. Produced:** 14/11/2017 07:46:20 PM ******

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - Unknown Bore 1**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	Unknown Bore 1	**Ref No/GW Number:**	-
Easting (GDA94):	670295	**GPS Elevation:**	145
Northing:	7516420		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**17.8**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.3**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	140
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**poor**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	60000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**13.765**	**Date / Time of Measurement:**	11:20:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.3**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**343**	**Temp**	**27.5**	**pH**	**6.01**	**ORP**	**-76**	**DO (%)**	**19.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Near to powerline

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - Unknown Bore 1**

Photograph 2 **Carfax - Unknown Bore 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - Unknown Bore 2**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	Unknown Bore 2	**Ref No/GW Number:**	-
Easting (GDA94):	670294	**GPS Elevation:**	135
Northing:	7516425		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**1.35**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	153
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**poor**	**Pump Type**	likely piston (downhole)
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	60000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	11:35:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.1**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

pump rods deployed down bore

GROUNDWATER BORE REPORT CARD

Additional Notes

Threaded steel casing; potentially drill rod. Not sample due to pump rods deployed/broken down bore

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**phone call**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - Unknown Bore 2**

Photograph 2 **Carfax - Unknown Bore 2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90075**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	Bridge Bore	**Ref No/GW Number:**	90075
Easting (GDA94):	674591	**GPS Elevation:**	144
Northing:	7517833		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1992
Casing Stick Up (SU):	**0.29**	**Drilled By**	**McCarthy Drilling**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-29.0** **Slotted 17.0-29.0** **Open hole 29.0-35.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**steel manifold to 3" Poly**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:30:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90075**

Photograph 2 **Carfax - 90075**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90075

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-26-05	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-41-46	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	674554	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7518068	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.434825706	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	BRIDGE BORE
GIS LNG	148.696091677	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/01/1992			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	MCCARTHY				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1992	1	Plastic Casing			127	0.00	29.00
A	01/01/1992	2	Perforated or Slotted Casing			127	17.00	29.00
A	01/01/1992	3	Open Hole				29.00	35.00
A	01/01/1992	4	Gravel Pack					

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	6.00	SANDY LOAM
2	6.00	6.50	SAND
3	6.50	11.00	SANDSTONE
4	11.00	11.50	SANDY CLAY
5	11.50	35.00	SANDSTONE

BORE REPORT

REG NUMBER 90075

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	11.50	35.00	SDST SSTO	01/01/1993	-17.06	N	GOOD	0.63	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
X	22/07/1993	-17.07	N		NR												

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 90075

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 103082**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	2nd Bridge Bore	**Ref No/GW Number:**	103082
Easting (GDA94):	674586	**GPS Elevation:**	148
Northing:	7517730		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1997
Casing Stick Up (SU):	**1.2**	**Drilled By**	**McCarthy Drilling**
Casing Material	**PVC**	**Internal Diameter**	141 (OD)
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Plastic Casing 0-30.0** **Slotted casing 20.0-27.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" steel to 2" poly.** **No sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	60000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:52:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 103082**

Photograph 2 **Carfax - 103082**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 103082

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-26-13	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-41-45	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	674522	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7517822	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.437047938	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	2ND BUDGE BORE
GIS LNG	148.695813873	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	08/10/1997			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	MCCARTHY DM				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	08/10/1997	1	Plastic Casing	5.900	WT	141	0.00	30.00
A	08/10/1997	2	Perforated or Slotted Casing		AP	141	20.00	27.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOOPSOIL
2	0.50	9.50	CLAY (DARK BROWN)
3	9.50	16.00	BASALT (BROWN WEATHERED)
4	16.00	21.00	BASALT (GREY)
5	21.00	26.00	JOINTED ROCK
6	26.00	30.00	SANDSTONE

STRATIGRAPHY DETAILS

BORE REPORT

REG NUMBER 103082

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	21.00	26.00	SDST SSTO	08/10/1997	-18.00	N		0.40	Y	FR	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 103082

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 103515**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	-	**Ref No/GW Number:**	103515
Easting (GDA94):	674298	**GPS Elevation:**	143
Northing:	7517580		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1999
Casing Stick Up (SU):	**0.39**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	141 (OD)
Initial Water Quality Measurement (Driller Log)	1100 µS/cm		
Construction Summary (Driller Log)	**Plastic Casing 0-43.90** **Slotted casing 19.2-43.9**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" steel to 2" poly.** **No sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	1:01:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 103515**

Photograph 2 **Carfax - 103515**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 103515

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-26-22	**MAP-SCALE**	104
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-41-39	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	674342	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7517545	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.439465577	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	
GIS LNG	148.694107581	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	17/10/1999			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	RIDDELL W				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY RIG				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	17/10/1999	1	Plastic Casing	5.900	WT	141	0.00	43.90
A	17/10/1999	2	Perforated or Slotted Casing		AP	141	19.20	43.90

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.90	TOP SOIL
2	1.90	13.10	CLAY
3	13.10	17.00	WEATHERED ROCK
4	17.00	22.40	WEATHERED SANDSTONE
5	22.40	31.00	SANDSTONE
6	31.00	33.20	VERY HARD BAND SID
7	33.20	37.60	SANDSTONE

BORE REPORT

REG NUMBER 103515

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
8	37.60	38.90	SHALE AND COKED COAL
9	38.90	43.90	SANDSTONE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	19.20	43.89	SDST	17/10/1999	-18.29	N	1100 US/CM	1.30	Y	PS	BLENHEIM FORMATION

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 103515

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90074/1**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	3 Mile - 1	**Ref No/GW Number:**	90074
Easting (GDA94):	671886	**GPS Elevation:**	157
Northing:	7511445		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.46**	**Drilled By**	**-**
Casing Material	**Unknown**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**unknown**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**Bore encased in concrete filled 44 gal drum**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**dam**	**Approximate Volume**	100000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	3:25:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes*	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90074/1**

Photograph 2 **Carfax - 90074/1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90074/2**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	3 Mile - 2	**Ref No/GW Number:**	90074
Easting (GDA94):	671877	**GPS Elevation:**	157
Northing:	7511442		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.29**	**Drilled By**	**-**
Casing Material	**Unknown**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**solar**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" riser to 1" poly**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**dam**	**Approximate Volume**	100000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	3:30:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes*	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90074/2**

Photograph 2 **Carfax - 90074/2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90074/3**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	3 Mile - 3	**Ref No/GW Number:**	90074
Easting (GDA94):	671883	**GPS Elevation:**	153
Northing:	7511437		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1963
Casing Stick Up (SU):	**0.35**	**Drilled By**	**Fallinsky A**
Casing Material	**steel**	**Internal Diameter**	120
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**Steel casing 0-44.8** **Perforated casing 26.5-44.8**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**unknown**	**Pump Type**	likely piston (downhole)
Power Source	**windmill**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**windmill - not connected**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**dam**	**Approximate Volume**	100000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	3:41:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

3 bores present at site. From drillers construction log this is likely the original bore.

Windmill not connected/functional

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90074/3**

Photograph 2 **Carfax - 90074/3**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90074

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-30-09	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-04	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	671554	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7510596	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.5026042	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	3 MILE BORE
GIS LNG	148.66775819	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/01/1963			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	FALLINSKY A				
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1963	1	Steel Casing			152	0.00	19.50
A	01/01/1963	2	Steel Casing			127	0.00	44.80
A	01/01/1963	3	Perforated or Slotted Casing			127	26.50	44.80

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.76	SOIL
2	0.76	2.74	BLACK CLAY
3	2.74	5.18	DRY SANDY CLAYS
4	5.18	12.80	BROWN SANDY CLAY - HARD
5	12.80	15.54	SOFT SANDY CLAY - MOIST
6	15.54	17.07	DRY SAND WITH BELTS OF CLAY

BORE REPORT

REG NUMBER 90074

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	17.07	26.52	BROWN SANDY CLAY WITH ROCK BANDS
8	26.52	40.23	MUDSTONE (JOINTED AT 40M)
9	40.23	46.33	JOINTED MUDSTONE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	40.23	46.33	SDST SSTO	01/01/1963	-18.30	N	GOOD	0.45	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

PIPE	DATE	PIPE	DATE	N/R	RMK

BORE REPORT

REG NUMBER 90074

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
X	22/07/1993	-18.28	N		NR												

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90440**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	Spelt Paddock Bore	**Ref No/GW Number:**	90440
Easting (GDA94):	674723	**GPS Elevation:**	156
Northing:	7515024		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1995
Casing Stick Up (SU):	**0.35**	**Drilled By**	**McCarthy Drilling**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Plastic casing 0-39.0** **Perforated 21.0-36.0** **Open hole 39.0-42.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" Steel manifold to 2" Poly. No sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	float actuated pressure switch
Storage Type	**tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	5:10:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

-

GROUNDWATER BORE REPORT CARD

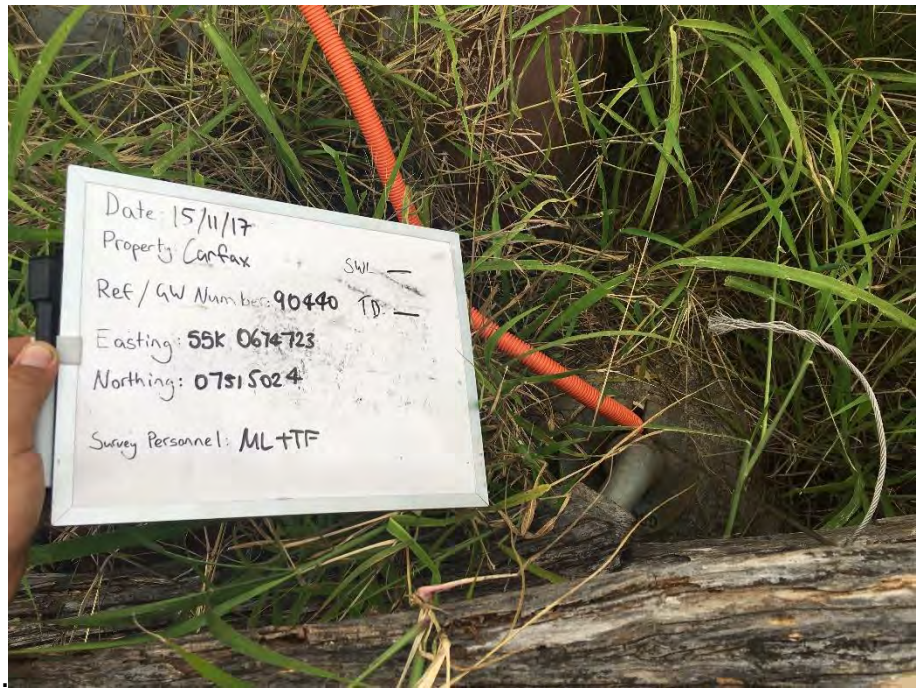
Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90440**



Photograph 2 **Carfax - 90440**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90440

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-17	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-41-43	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	674443	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7515854	**MAP NAME**	BOMBANDY
R/O FILE NO.	50-0030	**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	L1 RP884523	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.4548259	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	SPELL PADDOCK BORE
GIS LNG	148.695258253	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	10/11/1995			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	MCCARTHY D				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	10/11/1995	1	Plastic Casing	5.900	WT	141	0.00	39.00
A	10/11/1995	2	Perforated or Slotted Casing		AP	141	21.00	36.00
A	10/11/1995	3	Open Hole				39.00	42.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	14.00	SAND WITH MINOR CLAY BANDS
2	14.00	21.00	CLAY BROWN
3	21.00	37.00	JOINTED ROCK WATER
4	37.00	42.00	SANDSTONE

STRATIGRAPHY DETAILS

DNR	1	0.00	BLACKWATER GROUP

BORE REPORT

REG NUMBER 90440

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	21.00	36.00	SDST	10/11/1995	-18.30	N		1.00	Y	FR	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**15/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Carfax - 90076**

PART A: PROPERTY DETAILS

Property Name:	Carfax		
Local Bore Name:	House Bore	**Ref No/GW Number:**	90076
Easting (GDA94):	672641	**GPS Elevation:**	144
Northing:	7515517		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1968
Casing Stick Up (SU):	**0.515**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**Steel casing 0-39.6** **Perforated 21.0-39.6**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" Steel manifold to 2" Poly. No sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock and domestic**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	4:40:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

manual control switch

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	phone call	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Carfax - 90076**

Photograph 2 **Carfax - 90076**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90076

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-30	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-31	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672380	**MAP-NO**	8653
D/O FILE NO.	50-0030	**LOT**	1	**NORTHING**	7515478	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	RP884523	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.458437083	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	HOUSE BORE
GIS LNG	148.675258423	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	19/09/1968			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	19/09/1968	1	Steel Casing			152	0.00	29.60
A	19/09/1968	2	Steel Casing			127	0.00	39.60
A	19/09/1968	3	Perforated or Slotted Casing			127	21.00	39.60

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.61	TOPSOIL
2	0.61	6.71	HARD SANDY CLAY
3	6.71	8.84	SANDY CLAY (FALLING IN)
4	8.84	13.41	SANDY CLAY MEDIUM HARD
5	13.41	14.02	CONGLOMERATE
6	14.02	16.46	SANDY CLAY

BORE REPORT

REG NUMBER 90076

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	16.46	17.07	SANDSTONE *
8	17.07	30.18	BANDS OF CLAY AND SILT
9	30.18	30.48	BAND OF GRAVEL
10	30.48	39.62	BANDS OF CLAY AND SILT

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	16.46	17.07	SDST SSTO	01/01/1993	-10.80	N	GOOD	1.00	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

BORE REPORT

REG NUMBER 90076

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
X	22/07/1993	-10.76	N		NR												

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle Camp Gully**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Cattle Camp Gully	**Ref No/GW Number:**	-
Easting (GDA94):	671137	**GPS Elevation:**	154
Northing:	7536973		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**89.8**	**Year Drilled:**	~1930
Casing Stick Up (SU):	**0.4**	**Drilled By**	**B.G Wilson**
Casing Material	**Steel**	**Internal Diameter**	135
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Steel Casing 0-260ft** **Open Hole 260ft-315ft**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Fair**	**Pump Type**	piston (not deployed)
Power Source	**motor**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**7.31**	**Date / Time of Measurement:**	2:00:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**1**	**CO ppm:**	**1**	**O_2 %:**	**19.3**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**900**	**Temp**	**26.82**	**pH**	**7.7**	**ORP**	**-132.3**	**DO (%)**	**19.3**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle Camp Gully**

Photograph 2 **Cattle Camp Gully**

Bore details.

Cattle Camp Gully Bore put down by B. G. Wilson at 12 shillings per ft. £194-17-6 324 ft. deep, good fresh water.

Remarks. Soil to 3ft., Rotten sand stone to 60 ft. First water 60 ft. Clay & Slippery Rock to 195 ft. Seams of coal between 195 & 200 ft. Black shale to 214 ft. Sandstone to 276 ft ~~Second stream~~ Black shale to 324 ft. Second stream about 290 ft, 3rd stream about 315 ft.

Total depth 324 ft.

Water rises to within 18 ft of surface pumps down to 110 ft & holds & holds pumping 540 gals per hr. w/- 8 gal sand pumps. Bore cased with 6 inch casing to 260 ft. 260 ft 6" casing at 7/- per ft. = £91-0-0

Equipping bore w/- 4" casing & wooden pump rods.

88992
Prot Bore

x6

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161578**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Powerline	**Ref No/GW Number:**	161578
Easting (GDA94):	672586	**GPS Elevation:**	191
Northing:	7535520		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**114**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.58**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	potable		
Construction Summary (Driller Log)	**PVC 0-142.0** **PVC Slotted 96.0-142.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**47.435**	**Date / Time of Measurement:**	1:20:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.6**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**2,208**	**Temp**	**28.97**	**pH**	**7.05**	**ORP**	**-238.90**	**DO (%)**	**21.50**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161578**

Photograph 2 **Cattle camp - 161578**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161578

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-16-38	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-34	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672691	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7535518	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.27733206	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.67613184	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**				**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	20/01/2017	1	Polyvinyl Chloride	7.650	WT	140	0.00	142.00
A	20/01/2017	2	Perforated or Slotted Casing	3.000	AP	140	96.00	142.00
X	20/01/2017	3	Grout			184	0.00	6.50
X	20/01/2017	4	Cuttings or other fill between casing and ho			184	6.50	90.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.00	RED LOAMY CLAY
2	3.00	3.50	HARD YELLOW ROCK
3	3.50	30.00	RED AND YELLOW BAKED CLAY
4	30.00	46.00	BASALT: FRESH, BLUE
5	46.00	54.00	WHITE CLAY ROCK

BORE REPORT

REG NUMBER 161578

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	54.00	62.00	YELLOW CLAY ROCK
7	62.00	66.00	GREY SHALE: SILTY
8	66.00	98.00	RED, WHITE AND YELLOW CLAY BANDS
9	98.00	132.00	SANDSTONE
10	132.00	156.00	GREY SHALE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	98.00	132.00	SDST	20/01/2017	-50.00	N	POTABLE	0.85	Y	PS	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	20/01/2017	1	161578	98.00	132.00		PUM		AIR	96.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	20/01/2017	1	120	-50.00			46.00	0.85						96.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

BORE REPORT

REG NUMBER 161578

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	20/01/2017		1446	7.1						PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 111719**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Bore Behind Dam	**Ref No/GW Number:**	111719
Easting (GDA94):	673489	**GPS Elevation:**	149
Northing:	7537157		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2002
Casing Stick Up (SU):	**0.45**	**Drilled By**	**McCarthy Drilling**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-66.0** **Slotted 52.0-60.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow gauge and power meter
Headworks	**Steel taps with 2" HDPE output**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:52:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

Sample tap ceased

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 111719**

Photograph 2 **Cattle camp - 111719**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 111719

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-43	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-58	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	673385	**MAP-NO**	8653
D/O FILE NO.	515/030/2723	**LOT**	4	**NORTHING**	7537221	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.26188327	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	MAHOOD
GIS LNG	148.682681595	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	21/05/2002			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	MCCARTHY D				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	21/05/2002	1	Polyvinyl Chloride	5.900	WT	140	0.00	66.00
A	21/05/2002	2	Perforated or Slotted Casing				52.00	60.00
A	21/05/2002	3	Gravel Pack	12.000	GR	165	0.00	66.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOP SOIL
2	0.50	2.50	CLAY
3	2.50	20.00	WEATHERED ROCK
4	20.00	24.00	WEATHERED ROCK
5	24.00	31.00	WEATHERED BASALT
6	31.00	49.00	SANDSTONE WEATHERED

BORE REPORT

REG NUMBER 111719

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	49.00	58.00	BROKEN BASALT *
8	58.00	66.00	SANDSTONE (SOFT)

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	54.00	60.00	BSLT			N	BRACKISH	1.39	Y	FR	TERTIARY - UNDEFINED

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 111719

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 88992**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Mandle Brot Bore	**Ref No/GW Number:**	88992
Easting (GDA94):	672888	**GPS Elevation:**	156
Northing:	7537124		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1993
Casing Stick Up (SU):	**0.42**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	980 µS/cm		
Construction Summary (Driller Log)	**PVC 0-35.0** **PVC Slotted 35.0-59.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Fair**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	flow gauge
Headworks	**Steel taps with 2" HDPE output**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:35:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 88992**

Photograph 2 **Cattle camp - 88992**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 88992

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-42	**MAP-SCALE**	103
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-36	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672757	**MAP-NO**	8653
D/O FILE NO.	515/030/2723	**LOT**	4	**NORTHING**	7537240	**MAP NAME**	BOMBANDY
R/O FILE NO.	30-2723	**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P4	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.261769741	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	
GIS LNG	148.676582533	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	09/08/1993			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WEST K				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	09/08/1993	1	Polyvinyl Chloride	5.900	WT	141	0.00	59.00
A	09/08/1993	2	Perforated or Slotted Casing	3.000	AP	141	35.00	59.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	TOP
2	1.00	11.50	SANDSTONE
3	11.50	13.00	CLAY LAYERS
4	13.00	24.00	WEATHERED BASALT
5	24.00	30.00	FRESH BASALT
6	30.00	59.00	FRESH BASALT AND CLAY BANDS
7	59.00	62.00	CLAY

BORE REPORT

REG NUMBER 88992

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00		BLACKWATER GROUP

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	39.00	59.00	BSLT	09/08/1993	-31.00	N	980 US/CM	0.75	Y	VS	BASALT

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

BORE REPORT

REG NUMBER 88992

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161572**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	House Bore	**Ref No/GW Number:**	161572
Easting (GDA94):	672572	**GPS Elevation:**	178
Northing:	7538233		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**184.65**	**Year Drilled:**	2016
Casing Stick Up (SU):	**0.28**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-77.0** **PVC Slotted 77.0-161.0** **PVC 161.0-173.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**37.715**	**Date / Time of Measurement:**	11:42:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**2**	**O_2 %:**	**19.5**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**631**	**Temp**	**27.9**	**pH**	**8.2**	**ORP**	**47.3**	**DO (%)** **49.3**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161572**

Photograph 2 **Cattle camp - 161572**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161572

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-10	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-29	**MAP-SERIES**	
DATE LOG RECD	03-FEB-17	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672567	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7538236	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.25279986	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.67463656	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	21/12/2016			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	FARNES, DYLAN				
ROLES	WS	**DRILL COMPANY**	DEPCO DRILLING PTY LTD				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	21/12/2016	1	Polyvinyl Chloride	7.650	WT	140	0.00	77.00
A	21/12/2016	2	Perforated or Slotted Casing	4.000	AP	140	77.00	161.00
A	21/12/2016	3	Polyvinyl Chloride	7.650	WT	140	161.00	173.00
X	21/12/2016	4	Grout			197	0.00	54.00
X	21/12/2016	5	Centraliser				0.00	173.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	SILTY SAND: RED
2	2.00	24.00	MUDSTONE: RED
3	24.00	50.00	WEATHERED BASALT: BLUE
4	50.00	78.00	SHALE: BLUE

BORE REPORT

REG NUMBER 161572

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	78.00	174.00	SANDSTONE: FINE, BLUE, WITH BANDS OF SHALE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	78.00	174.00	SDST SHLE	21/12/2016	-42.00	N	POTABLE	0.50	Y	PS	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	21/12/2016	1	161572	78.00	174.00		PUM		AIR	64.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	21/12/2016	1	60	-42.00			22.00	0.50						64.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

BORE REPORT

REG NUMBER 161572

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161573**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	House Supply	**Ref No/GW Number:**	161573
Easting (GDA94):	672562	**GPS Elevation:**	175
Northing:	7538229		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**57.8**	**Year Drilled:**	2016
Casing Stick Up (SU):	**0.33**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	potable		
Construction Summary (Driller Log)	**PVC 0-46.0** **PVC 46.0-53.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**37**	**Date / Time of Measurement:**	11:15:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**2**	**O_2 %:**	**19.5**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**710**	**Temp**	**28.72**	**pH**	**6.84**	**ORP**	**98.6**	**DO (%)** **28.5**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161573**

Photograph 2 **Cattle camp - 161573**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161573

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-10	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-28	**MAP-SERIES**	
DATE LOG RECD	03-FEB-17	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672546	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7538227	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.25288323	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.67443381	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	21/12/2016			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WHITE, LEE				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	21/12/2016	1	Polyvinyl Chloride	7.650	WT	140	0.00	53.00
A	21/12/2016	2	Perforated or Slotted Casing	3.000	AP	140	46.00	53.00
X	21/12/2016	3	Grout			184	0.00	6.00
X	21/12/2016	4	Cuttings or other fill between casing and ho			184	6.00	40.00
X	21/12/2016	5	Centraliser				6.00	48.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	RED SANDY CLAY
2	1.00	1.50	HARD YELLOW ROCK
3	1.50	18.00	RED CLAY, ROCK, WEATHERED
4	18.00	30.00	RED AND YELLOW CLAY, ROCK, WEATHERED

BORE REPORT

REG NUMBER 161573

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	30.00	35.00	BLUE BASALT
6	35.00	36.00	GREY AND YELLOW SHALE
7	36.00	45.00	WEATHERED BASALT
8	45.00	54.00	WEATHERED BASALT, FRACTURED
9	54.00	60.00	YELLOW MUDSTONE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	45.00	54.00	BSLT			N	POTABLE	0.60	Y	FR	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	21/12/2016	1	161573	45.00	54.00		PUM		AIR	50.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	21/12/2016	1	120	-38.00			12.00	0.60						50.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

BORE REPORT

REG NUMBER 161573

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	21/12/2016		693	7.8						PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161 575**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	Rosewood	**Ref No/GW Number:**	161 575
Easting (GDA94):	672394	**GPS Elevation:**	198
Northing:	7543106		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**83.5**	**Year Drilled:**	2017
Casing Stick Up (SU):	**0.36**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	320ppm		
Construction Summary (Driller Log)	**PVC 0-60.0** **PVC Slotted 60.0-84.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**28.07**	**Date / Time of Measurement:**	10:15:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**6**	**O_2 %:**	**18.2**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**499**	**Temp**	**27.98**	**pH**	**6.71**	**ORP**	**103**	**DO (%)** **23.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161 575**

Photograph 2 **Cattle camp - 161 575**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161575

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-12-31	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-21	**MAP-SERIES**	
DATE LOG RECD	03-FEB-17	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672392	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7543123	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.20868556	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.67241516	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	16/01/2017			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WHITE, LEE				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	16/01/2017	1	Polyvinyl Chloride	7.650	WT	140	0.00	84.00
A	16/01/2017	2	Perforated or Slotted Casing	3.000	AP	140	60.00	84.00
X	16/01/2017	3	Grout			184	0.00	6.00
X	16/01/2017	4	Cuttings or other fill between casing and ho			184	6.00	56.00
X	16/01/2017	5	Centraliser				6.00	54.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.00	RED SANDY CLAY
2	3.00	6.00	RED CLAY AND IRONSTONE
3	6.00	48.00	RED AND WHITE LAYERED CLAY BANDS
4	48.00	60.00	YELLOW CLAY

BORE REPORT

REG NUMBER 161575

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	60.00	78.00	WHITE AND GREY FRACTURED ROCK, TRACES OF SAND
6	78.00	84.00	SHALE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	60.00	78.00	XXXX	16/01/2017	-30.00	N	320 PPM	1.50	Y	FR	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	16/01/2017	1	161575	60.00	78.00		PUM		AIR	60.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	16/01/2017	1	120	-30.00			30.00	0.75						60.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

BORE REPORT

REG NUMBER 161575

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	16/01/2017		499	7.2						PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 161574**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	KP	**Ref No/GW Number:**	161574
Easting (GDA94):	673374	**GPS Elevation:**	203
Northing:	7543006		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**121.9**	**Year Drilled:**	2017
Casing Stick Up (SU):	**0.5**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-120.0** **PVC Slotted 90.0-120.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**25.75**	**Date / Time of Measurement:**	9:30:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**18**	**O_2 %:**	**17.9**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**889**	**Temp**	**27.63**	**pH**	**7.39**	**ORP**	**-195.3**	**DO (%)** **22.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 161574**

Photograph 2 **Cattle camp - 161574**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161574

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-12-35	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-55	**MAP-SERIES**	
DATE LOG RECD	03-FEB-17	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	673376	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7543002	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL109	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.2096799	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.68197106	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	14/01/2017			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WHITE, LEE				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	14/01/2017	1	Polyvinyl Chloride	7.650	WT	140	0.00	120.00
A	14/01/2017	2	Perforated or Slotted Casing	3.000	AP	140	90.00	120.00
X	14/01/2017	3	Grout			184	0.00	9.00
X	14/01/2017	4	Cuttings or other fill between casing and ho			184	9.00	86.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	RED LOAMY CLAY
2	1.00	8.00	RED WEATHERED SILTSTONE
3	8.00	12.00	RED CLAY
4	12.00	78.00	RED, WHITE AND YELLOW LAYERED CLAY
5	78.00	89.00	SHALE: GREY

BORE REPORT

REG NUMBER 161574

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	89.00	114.00	SANDSTONE
7	114.00	120.00	SHALE: 2M COAL

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	96.00		SDST	14/01/2017	-30.00	N	POTABLE	1.10	Y	PS	BACK CREEK GROUP

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	14/01/2017	1	161574				PUM			90.00				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	14/01/2017	1	120	-30.00				1.10						90.00		

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

BORE REPORT

REG NUMBER 161574

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	14/01/2017		811	7.1						PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**30/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Cattle camp - 13040286**

PART A: PROPERTY DETAILS

Property Name:	Cattle camp		
Local Bore Name:	-	**Ref No/GW Number:**	13040286
Easting (GDA94):	659986	**GPS Elevation:**	165
Northing:	7536977		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2004
Casing Stick Up (SU):	**0.41**	**Drilled By**	**NRM**
Casing Material	**Unknown**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	5100 µS/cm		
Construction Summary (Driller Log)	**PVC 0-94.3** **PVC Slotted 94.3-100.3** **PVC 100.3-106.3**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**Unknown**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	N/A
Headworks	**N/A**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	2:30:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

*Measurement obtained from DNR online output. Data provided in MBGL

GROUNDWATER BORE REPORT CARD

Additional Notes

Data Available online

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**no**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Cattle camp - 13040286**

Photograph 2 **Cattle camp - 13040286**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040286

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-15-56	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-33-10	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	659983	**MAP-NO**	
D/O FILE NO.		**LOT**		**NORTHING**	7536966	**MAP NAME**	
R/O FILE NO.		**PLAN**		**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	FITZROY DEVELOPMENT ROAD 2	**ACCURACY**	GPS	**PRES EQUIPMENT**	NE
				GPS ACC	25		
GIS LAT	-22.265556	**PARISH NAME**	4116-RYTON			**ORIGINAL BORE NO**	NAP ISAAC RIVER SITE 5
GIS LNG	148.552778	**COUNTY**	RYTON			**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	05/09/2004			**DATA OWNER**	NAP
STATUS	Existing	**DRILLERS NAME**	W MCLEAN				
ROLES	IN	**DRILL COMPANY**	NRM				
	SM	**METHOD OF CONST.**	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	07/09/2004	1	Polyvinyl Chloride	3.300	WT	60	0.00	94.30
A	07/09/2004	2	Perforated or Slotted Casing	1.000	AP	60	94.30	100.30
A	07/09/2004	3	Polyvinyl Chloride	3.300	WT	60	100.30	106.30
X	07/09/2004	4	Grout				0.00	6.00
X	07/09/2004	5	Cuttings or other fill between casing and ho				6.00	60.00
X	07/09/2004	6	Bentonite Seal				60.00	61.00
X	07/09/2004	7	Gravel Pack	10.000	GR		61.00	107.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	ROAD AGGREGATE
2	1.00	4.00	PALE BROWN CLAYEY F SAND

BORE REPORT

REG NUMBER 13040286

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	4.00	6.00	PALE BROWN CLAYEY F-VC SAND
4	6.00	7.00	RED BROWN CLAYEY F-M SAND
5	7.00	10.00	PALE GREY SANDY CLAY
6	10.00	13.00	PALE GREY CLAYEY VF-F SAND
7	13.00	15.00	PALE BROWN CLAYEY VF-VC SAND & GRAVEL
8	15.00	16.00	RUST BROWN CLAYEY VF-F SAND
9	16.00	18.00	PALE GREY SANDY CLAY,
10			RUST BROWN MOTTLING
11	18.00	29.00	GREY SANDY CLAY, RUST BROWN MOTTLING
12	29.00	34.00	GREY CLAY, RED BROWN MOTTLING
13	34.00	36.00	PALE GREY SANDY CLAY,
14			RED BROWN MOTTLING
15	36.00	38.00	PALE GREY CLAYSTONE
16	38.00	44.00	PALE GREY CLAYSTONE WITH DARK RUST
17			RED FERRICRETE BANDS & MOTTLING
18	44.00	50.00	OFF WHITE SILTY CLAYSTONE
19	50.00	56.00	OFF WHITE CLAYEY VF-F SANDSTONE; DAMP
20	56.00	63.00	PALE BROWN CLAYSTONE,
21			RUST BROWN MOTTLING
22	63.00	70.00	YELLOW BROWN CLAYEY VF SANDSTONE
23	70.00	79.00	BROWN SHALE
24	79.00	94.00	DARK BROWN SHALE & SILTSTONE
25	94.00	101.00	GREY SILTSTONE & VF-M SANDSTONE
26	101.00	107.00	DARK BROWN SHALE & GREY SILTSTONE

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
NAP	1	0.00	16.00	QUATERNARY - UNDEFINED
NAP	2	16.00	56.00	DUARINGA FORMATION
NAP	3	56.00	107.00	BLACKWATER GROUP

BORE REPORT

REG NUMBER 13040286

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	50.00	56.00	SDST			N			N	PS	DUARINGA FORMATION
2	94.00	100.00	SSTO			N			Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	14/07/2006	171.85	SVY	AHD	R	DERM SURVEYORS
A	27/10/2015	171.92	SVY	AHD	R	ANSWERSG
X	04/10/2006	171.50	SVY	AHD	N	DERM SURVEYORS

WATER ANALYSIS PART1

PIPE	DATE	RD	ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH
A	08/09/2004	1	DNR	050142	94.00	AI	GB	5100	7.2		2878.42	2766.59	633	183	0.3	15.0	

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	08/09/2004	1	865.0	14.9	89.9	99.0		220.0		< 1.0	1490.0	< 0.02	0.7	97.4				

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	07/04/2005	-44.80	R		NR	A	09/10/2005	-44.41	R		ACT	A	09/01/2006	-44.39	R		ACT

BORE REPORT

REG NUMBER 13040286

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	24/05/2006	-44.26	R		NR	A	18/12/2006	-44.52	R		ACT	A	09/10/2007	-44.43	R		ACT
A	27/10/2008	-44.63	R		NR	A	30/07/2009	-44.41	R		ACT	A	31/05/2010	-44.29	R		ACT
A	10/05/2011	-43.95	R		ACT	A	13/10/2011	-44.11	R		ACT	A	25/10/2011	-44.11	R		ACT
A	12/04/2012	-44.13	R		ACT	A	26/06/2012	-44.11	R		ACT	A	29/10/2012	-44.21	R		ACT
A	16/01/2013	-44.26	R		ACT	A	09/04/2013	-44.12	R		ACT	A	01/08/2013	-44.21	R		ACT
A	19/11/2013	-44.20	R		ACT	A	04/02/2014	-44.14	R		NR	A	21/05/2014	-44.14	R		ACT
A	16/09/2014	-44.14	R		ACT	A	13/01/2015	-44.04	R		NR	A	14/04/2015	-44.04	R		ACT
A	07/07/2015	-44.06	R		ACT	A	27/10/2015	-44.13	R		ACT	A	12/01/2016	-44.15	R	B	ACT
A	24/05/2016	-44.42	R		ACT	A	02/08/2016	-44.20	R		ACT	A	08/11/2016	-44.24	R		ACT
A	07/02/2017	-44.12	R		ACT	A	06/06/2017	-43.93	R		ACT	A	11/09/2017	-44.13	R		ACT
A	13/11/2017	-44.12	R		ACT												

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	08/09/2004		5110		24.9					AI	GB
A	24/05/2006		8650		21.5					PU	GB
A	12/01/2016	100.00	7860	9.0	27.9					AI	GB

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Deverill - 141677**

PART A: PROPERTY DETAILS

Property Name:	Deverill		
Local Bore Name:	-	**Ref No/GW Number:**	141677
Easting (GDA94):	642164	**GPS Elevation:**	191
Northing:	7548178		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**10.05**	**Year Drilled:**	2009
Casing Stick Up (SU):	**0.45**	**Drilled By**	**Q.D.S**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	potable		
Construction Summary (Driller Log)	**PVC 0-24.0** **Slotted 12.0-24.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**good**	**Pump Type**	no
Power Source	**near to mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**Dry**	**Date / Time of Measurement:**	5:30:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**18.4**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Field Measurements don't correlate with drillers logs

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Deverill - 141677**

Photograph 2 **Deverill - 141677**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 141677

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-09-57	**MAP-SCALE**	254
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-22-39	**MAP-SERIES**	
DATE LOG RECD	03-FEB-10	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	642041	**MAP-NO**	
D/O FILE NO.		**LOT**	18	**NORTHING**	7548177	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP113322	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.165801	**PARISH NAME**	2618-KERLONG			**ORIGINAL BORE NO**	
GIS LNG	148.3776006	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	13/12/2009			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	EVETTS, COREY				
ROLES		**DRILL COMPANY**	Q. D. S.				
		METHOD OF CONST.	ROTARY MUD				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	13/12/2009	1	Polyvinyl Chloride	5.900	WT	127	0.00	24.00
A	13/12/2009	2	Perforated or Slotted Casing				12.00	24.00
A	13/12/2009	3	Gravel Pack	5.000	GR		6.00	24.00
X	13/12/2009	4	Grout			200	0.00	6.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	6.00	SANDY LOAM
2	6.00	10.00	CLAY
3	10.00	13.00	SAND
4	13.00	20.00	CLAY WITH GRAVEL BANDS
5	20.00	24.00	CLAY, WHITE

BORE REPORT

REG NUMBER 141677

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	13.00	20.00	CLAY GRAV			N	POTABLE	0.38	N	SC	NEW CHUM FORMATION

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

ALK (mEq)	METH	SOURCE

BORE REPORT

REG NUMBER 141677

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	13/12/2009	24.00	779							PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/092017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Iffley - 136090**

PART A: PROPERTY DETAILS

Property Name:	Iffley		
Local Bore Name:	Homestead Bore	**Ref No/GW Number:**	136090
Easting (GDA94):	647486	**GPS Elevation:**	183
Northing:	7540034		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**22.68**	**Year Drilled:**	2002
Casing Stick Up (SU):	**0.28**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	690 (no units)		
Construction Summary (Driller Log)	**PVC 0-90.0** **Screen 84.0-90.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**2" HDPE outlet off steel manifold**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	float actuated pressure switch
Storage Type	**Tank**	**Approximate Volume**	60000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**12.71**	**Date / Time of Measurement:**	4:30:00 PM
Pumping History	Pumping at time of inspection		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**20**	
Sample Collection Point	**tank inlet**	**Sample Method**	**Bucket**		**Purge Volume**	**unknown**			
Electrical Conductivity (µS/cm)	**2187**	**Temp**	**26.37**	**pH**	**6.62**	**ORP**	**83.7**	**DO (%)**	**55.4**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

SWL measurements taken from adjacent disused bore. Pumping bore was operational at time of measurement. Drillers construction log doesn't match site observations

SUPPORTING INFORMATION	Drillers Log	Yes	Meeting With Land Representative	Yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Iffley - 136090**

Photograph 2 **Iffley - 136090**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 136090

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-14-17	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-25-55	**MAP-SERIES**	
DATE LOG RECD	04-FEB-03	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	647570	**MAP-NO**	
D/O FILE NO.		**LOT**	1	**NORTHING**	7540125	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL159	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	20		
GIS LAT	-22.2380556	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	
GIS LNG	148.4319444	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	15/12/2002			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	RIDDELL, WAYNE EDWARD				
ROLES	WS	**DRILL COMPANY**	DEPCO DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	15/12/2002	1	Polyvinyl Chloride	5.900	WT	140	0.00	90.00
A	15/12/2002	2	Screen			140	84.00	90.00
A	15/12/2002	3	Gravel Pack				0.00	41.76

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.74	SANDY TOPSOIL
2	2.74	6.10	CLAY
3	6.10	18.29	SAND
4	18.29	24.38	CLAY
5	24.38	27.43	COARSE SAND
6	27.43	41.76	RED AND GREY CLAY

BORE REPORT

REG NUMBER 136090

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	24.38	27.43	SAND	15/12/2002	-1.83	N	690	0.44	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 136090

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - Powerline bore**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	Powerline bore	**Ref No/GW Number:**	-
Easting (GDA94):	641899	**GPS Elevation:**	190
Northing:	7519646		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.34**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**3" steel manifold onto 2" HDPE with sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	8:05:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:		**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:** **-**
Sample Collection Point	**Sample Tap**	**Sample Method**		**Bucket**		**Purge Volume**		**20**
Electrical Conductivity (µS/cm)	**1443**	**Temp**	**26.4**	**pH**	**7.28**	**ORP**	**120.8**	**DO (%)** **54.6**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - Powerline bore**

Photograph 2 **Lake Vermont - Powerline bore**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - Yard Bore 1**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	Yard Bore 1	**Ref No/GW Number:**	-
Easting (GDA94):	642611	**GPS Elevation:**	185
Northing:	7519351		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**96**	**Year Drilled:**	~1930
Casing Stick Up (SU):	**0.34**	**Drilled By**	**-**
Casing Material	**steel**	**Internal Diameter**	120
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**poor**	**Pump Type**	-
Power Source	**mains**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**2" HDPE (not connected)**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	50000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**21.385**	**Date / Time of Measurement:**	8:42:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**20.4**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**1512**	**Temp**	**25.6**	**pH**	**7.49**	**ORP**	**187.2**	**DO (%)** **58.9**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore no longer in use due to heavy corrosion in casing. Land owner noted that water is known to have a high sulphur content

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - Yard Bore 1**

Photograph 2 **Lake Vermont - Yard Bore 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - Yard Bore 2**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	Yard Bore 2	**Ref No/GW Number:**	-
Easting (GDA94):	642617	**GPS Elevation:**	190
Northing:	7519347		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	**0.04**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**3" steel manifold onto 2" HDPE**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	50000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	9:00:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

Tank overflow returns to Yard Bore #1

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - Yard Bore 2**

Photograph 2 **Lake Vermont - Yard Bore 2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 132627**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	Green Tank	**Ref No/GW Number:**	132627
Easting (GDA94):	649621	**GPS Elevation:**	170
Northing:	7525089		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2007
Casing Stick Up (SU):	-	**Drilled By**	**Depco**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-70** **Slotted 35.0-40.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**unknown**	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	**tank**	**Approximate Volume**	30000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	10:10:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

Unable to locate, likely buried

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158481 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158481
Easting (GDA94):	643243	**GPS Elevation:**	185
Northing:	7522128		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.8**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 94.0** **VWP 2 - 74.0** **VWP 3 - 56.0** **VWP 4 - 38.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	4:20:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 6025 / Temp 27.1

VWP Black - HZ 7093 / Temp 25.6

VWP Yellow - HZ 7062 - Temp 26.2

VWP Blue - HZ 6323 / Temp 27.9

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158481 (VWP)**

Photograph 2 **Lake Vermont - 158481 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158481

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-09	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-23-26	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	643132	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7521949	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.40259288	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2226
GIS LNG	148.3905162	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	11/07/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	11/07/2013	1	Vibrating Wire Piezometer					94.00
B	11/07/2013	2	Vibrating Wire Piezometer					74.00
C	11/07/2013	3	Vibrating Wire Piezometer					56.00
D	11/07/2013	4	Vibrating Wire Piezometer					38.00
D	11/07/2013	5	Grout			125	0.00	102.00
X	11/07/2013	6	Polyvinyl Chloride	5.900	WT	140	0.00	37.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	20.00	LOAM
3	20.00	35.00	SAND AND GRAVEL

BORE REPORT

REG NUMBER 158481

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
4	35.00	37.00	CLAY
5	37.00	91.00	SANDSTONE
6	91.00	97.00	COAL
7	97.00	102.00	NO DATA

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	38.00	97.00	CLAY			N			Y	UC	TERTIARY - UNDEFINED
2	56.00		SDST			N			Y	PS	RANGAL COAL MEASURES
3	74.00		SDST			N			Y	PS	RANGAL COAL MEASURES
4	94.00		COAL			N			Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
D	05/06/2013	178.84	SVY	AHD	R	

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 158481

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158485**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158485
Easting (GDA94):	643243	**GPS Elevation:**	181
Northing:	7522125		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**22.95**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.78**	**Drilled By**	**Hodge Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-22.0** **Perforated 16.0-22.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.257**	**Date / Time of Measurement:**	4:07:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**21**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**560**	**Temp**	**28.9**	**pH**	**7.19**	**ORP**	**-12.1**	**DO (%)** **25.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158485**

Photograph 2 **Lake Vermont - 158485**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158485

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-10	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-23-26	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	643132	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7521943	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.40264472	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2371
GIS LNG	148.390523	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	28/06/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	28/06/2013	1	Polyvinyl Chloride			50	0.00	22.00
A	28/06/2013	2	Perforated or Slotted Casing			50	16.00	22.00
A	28/06/2013	3	Gravel Pack	3.000	GR		14.00	22.00
A	28/06/2013	4	Grout			165	0.00	14.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	6.00	SAND
3	6.00	8.00	LOAM
4	8.00	10.00	SAND
5	10.00	12.00	CLAY

BORE REPORT

REG NUMBER 158485

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	12.00	14.00	LOAM
7	14.00	22.00	CLAY (DRY)

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	16.00	22.00	CLAY						Y	UC	QUATERNARY - UNDEFINED

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	30/04/2013	178.92	SVY	AHD	R	

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 158485

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165122 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165122
Easting (GDA94):	644182	**GPS Elevation:**	181
Northing:	7520541		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.7**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 83.0** **VWP 2 - 71.0** **VWP 3 - 61.0** **VWP 4 - 40.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	4:22:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 7650 / Temp 21.2

VWP Black - HZ 8804 / Temp 25.0

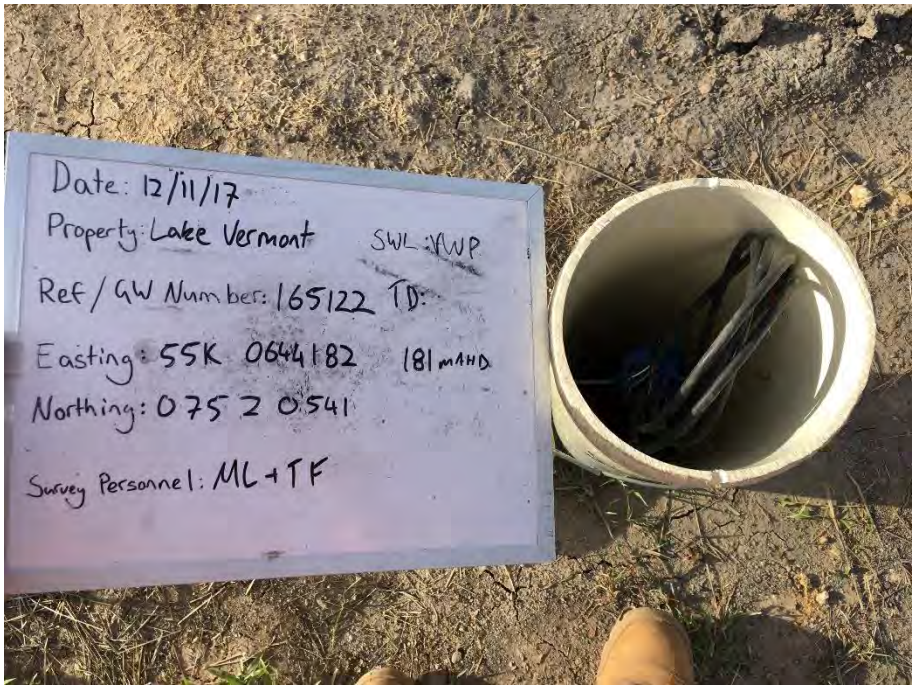
VWP Yellow - HZ 7320 - Temp 27.3

VWP Blue - HZ 7229 / Temp 26.5

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165122 (VWP)**



Photograph 2 **Lake Vermont - 165122 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165122

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-25-01	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-23-59	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	644067	**MAP-NO**	
D/O FILE NO.		**LOT**	2	**NORTHING**	7520357	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.4168878601	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2183
GIS LNG	148.3997413428	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	06/05/2013			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	06/05/2013	1	Vibrating Wire Piezometer					83.00
B	06/05/2013	2	Vibrating Wire Piezometer					71.00
C	06/05/2013	3	Vibrating Wire Piezometer					61.00
D	06/05/2013	4	Vibrating Wire Piezometer					40.00
D	06/05/2013	5	Polyvinyl Chloride			100	0.00	91.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL, BROWN
2	1.00	2.00	CLAY, BROWN
3	2.00	6.00	SAND, BROWN, GRADING TO GREY AT BASE
4	6.00	8.00	CLAY

BORE REPORT

REG NUMBER 165122

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	8.00	9.00	LATERITE, ORANGE-RED
6	9.00	15.00	CLAY, SANDY, REDDISH CREAM
7	15.00	20.00	CLAY, SANDY, GREY
8	20.00	23.00	CLAY, BROWNISH ORANGE. BASE OF TERTIARY 23 MBGL
9	23.00	28.00	SILTSTONE, BROWNISH ORANGE
10	28.00	36.00	SANDSTONE, VERY FINE GRAINED, BROWNISH GREY, BASE OF REWAN AT 36 MBGL
11	36.00	39.00	MUDSTONE, DARK BROWNISH GREY
12	39.00	43.50	SANDSTONE, FINE GRAINED, MEDIUM GREY
13	43.50	44.00	COAL, BLACK
14	44.00	56.40	SANDSTONE, GREY, VERY FINE TO FINE GRAINED. BASE OF WEATHERING AT 47 MBGL
15	56.40	56.80	SILTSTONE, BROWNISH GREY
16	56.80	58.50	CARBONACEOUS MUDSTONE, DARK BLACKISH GREY
17	58.50	59.50	SILTSTONE, BLACKISH GREY, CARBONACEOUS
18	59.50	62.50	COAL, BLACK, LEICHHARDT SEAM
19	62.50	73.50	SILTSTONE, BLACKISH GREY, ABUNDANT SANDSTONE BANDS TOWARDS BASE
20	73.50	80.00	SANDSTONE, SILTY, GREY
21	80.00	86.50	COAL, VERMONT SEAM
22	86.50	87.50	MUDSTONE, DARK GREY
23	87.50	91.00	SANDSTONE, GREY, VERY FINE GRAINED TO MEDIUM GRAINED TOWARDS BASE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	40.00		SDST			N			Y	PS	RANGAL COAL MEASURES
2	61.00		COAL			N			Y	PS	RANGAL COAL MEASURES
3	71.00		SSTO			N			Y	PS	RANGAL COAL MEASURES
4	83.00		COAL			N			Y	PS	RANGAL COAL MEASURES

BORE REPORT

REG NUMBER 165122

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
D	06/05/2013	185.16	EST	AHD	R	BOWEN COAL PTY LTD

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158011**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158011
Easting (GDA94):	640150	**GPS Elevation:**	194
Northing:	7514275		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**33.18**	**Year Drilled:**	2012
Casing Stick Up (SU):	**0.79**	**Drilled By**	**Pioneer Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	Brackish		
Construction Summary (Driller Log)	**PVC 0-32.0** **Slotted 24.5-30.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**18.3**	**Date / Time of Measurement:**	12:48:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**2**	**CO ppm:**	**0**	**O_2 %:**	**21.4**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**6340**	**Temp**	**25.9**	**pH**	**7.03**	**ORP**	**-205**	**DO (%)**	**35.5**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Rotten egg odour

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158011**

Photograph 2 **Lake Vermont - 158011**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158011

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-28-26	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-21-40	**MAP-SERIES**	
DATE LOG RECD	20-JUL-12	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	640035	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7514095	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.47377903	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	MW36
GIS LNG	148.3611312	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	06/07/2012			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	NEIVANDT, ROSS				
ROLES		**DRILL COMPANY**	PIONEER DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	06/07/2012	1	Polyvinyl Chloride	6.000	WT	140	0.00	24.00
A	06/07/2012	2	Polyvinyl Chloride	5.000	WT	60	0.00	32.00
A	06/07/2012	3	Perforated or Slotted Casing	0.400	AP		24.50	30.50
X	06/07/2012	4	Grout			190	0.00	24.00
X	06/07/2012	5	Grout			130	0.00	23.00
X	06/07/2012	6	Bentonite Seal			130	23.00	24.00
X	06/07/2012	7	Gravel Pack			120	24.00	32.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	BLACK SOIL, CRACKING CLAY
2	2.00	6.00	CLAY: YELLOWISH BROWN, SILTY

BORE REPORT

REG NUMBER 158011

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	6.00	12.00	SILT: YELLOW BROWN, CLAYEY
4	12.00	22.00	GRAVLE: CLAYEY, SANDY, BANDED CLAYS, GREYISH YELLOWY BROWN
5	22.00	28.00	SILTSTONE: SANDY, GREY, MEDIUM HARD *
6	28.00	32.00	SANDSTONE:GREY, MEDIUM TO COARSE *

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	26.00	32.00	SSTO SDST			N	BRACKISH	0.09	Y	PS	FAIR HILL FORMATION

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

BORE REPORT

REG NUMBER 158011

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	06/07/2012		7320	7.3						AI	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165325**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165325
Easting (GDA94):	640412	**GPS Elevation:**	188
Northing:	7516077		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**18.58**	**Year Drilled:**	2016
Casing Stick Up (SU):	**0.87**	**Drilled By**	**Borat Longyear**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-18.0** **Slotted 12.0-18.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**17.203**	**Date / Time of Measurement:**	1:56:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**13.4**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**1439**	**Temp**	**27.9**	**pH**	**6.96**	**ORP**	**33.2**	**DO (%)**	**27.4**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Concrete plinth damaged

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165325**

Photograph 2 **Lake Vermont - 165325**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165325

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-27	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-21-49	**MAP-SERIES**	
DATE LOG RECD	27-JUN-16	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	640296	**MAP-NO**	
D/O FILE NO.		**LOT**	1	**NORTHING**	7515897	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.45748204	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	PIEZO 3 (169240)
GIS LNG	148.36350795	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	12/05/2016			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	ALMOND, MICHAEL				
ROLES	MM	**DRILL COMPANY**	BOART LONGYEAR				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	12/05/2016	1	Polyvinyl Chloride	5.000	WT	60	0.00	12.00
A	12/05/2016	2	Perforated or Slotted Casing	1.000	AP	60	12.00	18.00
X	12/05/2016	3	Grout			124	0.00	9.00
X	12/05/2016	4	Bentonite Seal			124	9.00	11.00
X	12/05/2016	5	Gravel Pack	3.000	GR	124	11.00	18.50
X	12/05/2016	6	Centraliser				10.00	18.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.00	BROWN CLAY
2	3.00	5.00	BROWN SANDY CLAY
3	5.00	18.50	BROWN CLAY

BORE REPORT

REG NUMBER 165325

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	12.00	18.00	CLAY			N			N	PS	QUATERNARY - UNDEFINED

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 165325

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158010**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158010
Easting (GDA94):	642638	**GPS Elevation:**	186
Northing:	7520120		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**35.2**	**Year Drilled:**	2012
Casing Stick Up (SU):	**0.9**	**Drilled By**	**Pioneer Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	potable		
Construction Summary (Driller Log)	**PVC 0-34.5** **Slotted 27.0-33.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**17.915**	**Date / Time of Measurement:**	3:27:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**21.4**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**1236**	**Temp**	**27.1**	**pH**	**6.95**	**ORP**	**9.1**	**DO (%)** **31.1**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

MW35 written on inside of cap

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158010**

Photograph 2 **Lake Vermont - 158010**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158010

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-25-15	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-23-05	**MAP-SERIES**	
DATE LOG RECD	20-JUL-12	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	642528	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7519939	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.42079367	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	MW35
GIS LNG	148.3848372	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	08/07/2012			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	NEIVANDT, ROSS				
ROLES	MM	**DRILL COMPANY**	PIONEER DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	08/07/2012	1	Polyvinyl Chloride	6.000	WT	140	0.00	12.00
A	08/07/2012	2	Polyvinyl Chloride	5.000	WT	60	0.00	34.50
A	08/07/2012	3	Perforated or Slotted Casing	0.400	AP		27.00	33.00
X	08/07/2012	4	Grout			190	0.00	12.00
X	08/07/2012	5	Grout			120	0.00	24.00
X	08/07/2012	6	Bentonite Seal			120	24.00	26.00
X	08/07/2012	7	Gravel Pack			120	26.00	34.50

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.50	BLACK SOIL, CLAY, STIFF
2	1.50	6.00	CLAY: YELLOWY BROWN, SILTY, STIFF

BORE REPORT

REG NUMBER 158010

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	6.00	8.50	CLAY: YELLOWY BROWN, SANDY
4	8.50	11.00	SAND: REDDISH BROWN, CLAYEY, WEAK
5	11.00	12.50	GRAVELLY COBBLE, COLLUVIAL, DRY
6	12.50	14.00	CLAYSTONE: GREY, WEAK
7	14.00	15.70	CLAYSTONE: YELLOWY BROWN, WEAK
8	15.70	16.00	CLAY: GREY
9	16.00	24.50	CLAY: YELLOWY BROWN, SILTY
10	24.50	27.00	CLAY: REDDISH BROWN, SILTY, MOIST, PLASTIC
11	27.00	31.50	SHALE: REDDISH DARK GREY, WEATHERED, WET *
12	31.50	34.50	SILTSTONE: GREY, FRESH *

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	30.00	33.00	SHLE			N	POTABLE	0.09	Y	PS	FAIR HILL FORMATION
			SSTO								

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 158010

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	08/07/2012		1240	8.1						AI	GB

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - River Bore**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	River Bore	**Ref No/GW Number:**	-
Easting (GDA94):	654027	**GPS Elevation:**	166
Northing:	7526947		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**39**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.55**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.614**	**Date / Time of Measurement:**	10:00:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**616**	**Temp**	**26.1**	**pH**	**6.5**	**ORP**	**43**	**DO (%)** **37**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore unused since installation. Structure erected ready to house bore equipment

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - River Bore**

Photograph 2 **Lake Vermont - River Bore**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158480 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158480
Easting (GDA94):	649913	**GPS Elevation:**	166
Northing:	7522233		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2013
Casing Stick Up (SU):	-	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 94.0** **VWP 2 - 74.0** **VWP 3 - 56.0** **VWP 4 - 38.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 7007 / Temp 26.3

VWP Black - HZ 7509 / Temp 26.0

VWP Yellow - HZ 7208 - Temp 27.9

VWP Blue - HZ 7207 / Temp 27.3

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158480 (VWP)**

Photograph 2 **Lake Vermont - 158480 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158480

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-04	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-27-19	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	649801	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7522051	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.40110024	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV1235C
GIS LNG	148.4552793	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	09/07/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	09/07/2013	1	Vibrating Wire Piezometer					94.00
B	09/07/2013	2	Vibrating Wire Piezometer					74.00
C	09/07/2013	3	Vibrating Wire Piezometer					56.00
D	09/07/2013	4	Vibrating Wire Piezometer					38.00
X	09/07/2013	5	Grout				0.00	94.00
X	09/07/2013	6	Polyvinyl Chloride	5.900	WT	125	0.00	57.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	18.00	CLAY
3	18.00	38.00	SAND AND GRAVEL

BORE REPORT

REG NUMBER 158480

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
4	38.00	45.00	LOAM
5	45.00	57.00	CLAY
6	57.00	74.00	SANDSTONE
7	74.00	80.00	COAL
8	80.00	94.00	SANDSTONE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	38.00		SAND	09/07/2013	-99.99	N			Y	UC	TERTIARY - UNDEFINED
			GRAV								
2	56.00		CLAY	09/07/2013	-99.99	N			Y	UC	TERTIARY - UNDEFINED
3	74.00		COAL	09/07/2013	-99.99	N			Y	PS	RANGAL COAL MEASURES
4	94.00		SDST	09/07/2013	-99.99	N			Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	29/05/2013	170.81	EST	AHD	R	

WATER ANALYSIS PART1

BORE REPORT

REG NUMBER 158480

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - Unknown 1**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	
Easting (GDA94):	650783	**GPS Elevation:**	160
Northing:	7522929		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**131**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.16**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**exploration**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**30.965**	**Date / Time of Measurement:**	1:28:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.8**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**16610**	**Temp**	**27.9**	**pH**	**6.56**	**ORP**	**49.9**	**DO (%)**	**30.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Likely exploration hole. Looks to have been recently drilled

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - Unknown 1**

Photograph 2 **Lake Vermont - Unknown 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158484**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158484
Easting (GDA94):	648152	**GPS Elevation:**	163
Northing:	7524058		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**19.45**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.85**	**Drilled By**	**Hodge Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-19.0** **Slotted 13.0-19.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal steel monument - no cap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**18.116**	**Date / Time of Measurement:**	3:00:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**13.5**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**1401**	**Temp**	**26.8**	**pH**	**7.18**	**ORP**	**112.8**	**DO (%)** **62.8**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Plinth damaged

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158484**

Photograph 2 **Lake Vermont - 158484**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158484

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-05	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-26-17	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	648038	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7523875	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.38477405	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2370
GIS LNG	148.4379885	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	27/06/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	27/06/2013	1	Polyvinyl Chloride			50	0.00	19.00
A	27/06/2013	2	Perforated or Slotted Casing			50	13.00	19.00
A	27/06/2013	3	Gravel Pack	3.000	GR		12.00	19.00
A	27/06/2013	4	Grout			165	0.00	12.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	3.00	SAND
3	3.00	11.00	LOAM
4	11.00	14.00	CLAY
5	14.00	19.00	SAND

BORE REPORT

REG NUMBER 158484

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.00	19.00	SAND						Y	UC	QUATERNARY - UNDEFINED

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	29/04/2013	168.30	SVY	AHD	R	

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 158484

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165124 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165124
Easting (GDA94):	648156	**GPS Elevation:**	163
Northing:	7524044		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.49**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 78.0** **VWP 2 - 67.50** **VWP 3 - 50.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**No**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:		**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**VWP Cable**	**Sample Method**		**VWP Reader**		**Purge Volume**		**-**	
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)**	**-**

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 7049 / Temp 27.3

VWP Yellow - HZ 7725 - Temp 26.4

VWP Blue - HZ 6606 / Temp 26.8

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165124 (VWP)**

Photograph 2 **Lake Vermont - 165124 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165124

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-06	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-26-17	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	648038	**MAP-NO**	
D/O FILE NO.		**LOT**	H	**NORTHING**	7523864	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.3848740787	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2375W
GIS LNG	148.4379948207	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	27/05/2013			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	27/05/2013	1	Vibrating Wire Piezometer					78.00
B	27/05/2013	2	Vibrating Wire Piezometer					67.50
C	27/05/2013	3	Vibrating Wire Piezometer					50.00
C	27/05/2013	4	Polyvinyl Chloride			100	0.00	82.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	7.00	SAND, LIGHT BROWN, FINE TO MEDIUM GRAINED
2	7.00	8.00	SAND, LIGHT BROWN, CONTAINS GRANULAR CONCRETIONS
3	8.00	10.80	CLAY, LIGHT BROWN
4	10.80	15.00	SANDY CLAY, LIGHT BROWN
5	15.00	20.00	SAND, LIGHT BROWN, COARSEMING TO GRAVEL AT BASE. BASE TERTIARY AT 20 MBGL

BORE REPORT

REG NUMBER 165124

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	20.00	22.50	SILTSTONE, LIGHT PINKISH-BROWN
7	22.50	60.00	SANDSTONE, LIGHT BROWISH GREY, VERY FINE GRAINED GRADING TO MEDIUM TOWARDS BASE
8	60.00	64.50	SILTSTONE, MEDIUM BROWNISH GREY, ALTERNATING BANDS OF VERY FINE SANDSTONE
9	64.50	69.00	COAL, VERMONT SEAM, BASE OF WEATHERING 68.7M
10	69.00	71.00	SILTSTONE, MEDIUM GREY
11	71.00	82.00	SANDSTONE, LIGHT GREY, VERY FINE GRAINED

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	50.00		SDST			N			Y	PS	RANGAL COAL MEASURES
2	67.50		COAL			N			Y	PS	RANGAL COAL MEASURES
3	78.00		SDST			N			Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
C	27/05/2013	168.36	EST	AHD	R	BOWEN COAL PTY LTD

WATER ANALYSIS PART1

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165124

PIPE	DATE	RD	ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH
D	28/05/2013	1	ALS	13721				10600			7559.98	7559.98	2305	1	0.5	17.9	

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
D	28/05/2013	1	1970.0	8.0	275.0	393.0	0.52		< 0.05		4660.0			253.0	< 0.01	< 0.01	0.38	< 0.01

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165123 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165123
Easting (GDA94):	647629	**GPS Elevation:**	164
Northing:	7526188		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.74**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 125.0** **VWP 2 - 108.0** **VWP 3 - 93.50** **VWP 4 - 73.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	N/A
Headworks	**No**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 6004 / Temp 25.6

VWP Black - HZ 6270 / Temp 26.2

VWP Yellow - HZ 7334 - Temp 27.0

VWP Blue - HZ 7163 / Temp 28.1

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165123 (VWP)**

Photograph 2 **Lake Vermont - 165123 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165123

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-21-56	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-25-58	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	647515	**MAP-NO**	
D/O FILE NO.		**LOT**	2	**NORTHING**	7526007	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.3655688112	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2372R
GIS LNG	148.432719338	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	20/08/2013			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	20/08/2013	1	Vibrating Wire Piezometer					125.00
B	20/08/2013	2	Vibrating Wire Piezometer					108.00
C	20/08/2013	3	Vibrating Wire Piezometer					93.50
D	20/08/2013	4	Vibrating Wire Piezometer					73.00
D	20/08/2013	5	Polyvinyl Chloride			100	0.00	136.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL, BROWN, CLAYEY
2	1.00	3.00	CLAYEY SAND, ORANGE-BROWN
3	3.00	6.00	CLAY, REDDISH GREY, LATERITIC IN PLACES
4	6.00	8.00	SAND, BROWN

BORE REPORT

REG NUMBER 165123

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	8.00	10.00	CLAYEY SAND, CREAM BROWN, COARSE GRAINED
6	10.00	11.00	SAND, BROWN
7	11.00	22.00	SANDY CLAY, BROWN, BASE OF TERTIARY AT 22 M BGL
8	22.00	26.00	SANDSTONE, VERY FINE GRAINED, ORANGE WHITE
9	26.00	28.00	CLAY, CREAMY WHITE, SANDY IN PLACES
10	28.00	46.00	SANDSTONE, BROWNISH GREY, FINE GRAINED
11	46.00	48.00	MUDSTONE, DARK BROWNISH-GREY, COALY. BASE OF WEATHERING AT 48 MBGL
12	48.00	49.00	SILTSTONE, MEDIUM GREY, SANDY IN PLACES
13	49.00	50.00	CARBONACEOUS MUDSTONE, DARK GREY
14	50.00	52.00	MUDSTONE, DARK GREY
15	52.00	54.00	SANDSTONE, GREY
16	54.00	55.00	COAL, BLACK
17	55.00	57.00	SILTSTONE, MEDIUM GREY, SANDY IN PLACES
18	57.00	76.00	SANDSTONE, BROWNISH GREY, VERY FINE RAINED BECOMING LIGHT WHITISH GREY, FINE TO MEDIUM GRAINED TOWARDS BASE
19	76.00	78.00	SILTSTONE, MEDIUM GREY, MUDSTONE BANDS
20	78.00	93.00	SANDSTONE, MEDUIM GREY, VERY FINE TO FINE RAINED, WITH ALTERNATING BANDS OF SILTSTONE
21	93.00	94.00	COAL, VERMONT UPPER SEAM
22	94.00	95.00	SANDSTONE, GREY, VERY FINE TO FINE GRAINED
23	95.00	97.00	CARBONACEOUS MUDSTONE, DARK GREY, MUDSTONE BANDS, COALY IN PLACES
24	97.00	102.00	SILTSTONE, MEDIUM GREY
25	102.00	119.00	SANDSTONE, LIGHT GREY, VERY FINE TO FINE GRAINED, SIDERITIC IN PLACES BETWEEN 105 AND 109M
26	119.00	122.50	SILTSTONE, MEDIUM GREY
27	122.50	129.00	COAL, VERMONT LOWER SEAM
28	129.00	136.00	SILTSTONE, MEDIUM GREY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME

BORE REPORT

REG NUMBER 165123

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	73.00		SDST			N			Y	PS	RANGAL COAL MEASURES
2	93.50		COAL			N			Y	PS	RANGAL COAL MEASURES
3	108.00		SDST			N			Y	PS	RANGAL COAL MEASURES
4	125.00		COAL			N			Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
D	20/08/2013	166.91	EST	AHD	R	BOWEN BASIN COAL PTY LTD

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 165123

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158483**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158483
Easting (GDA94):	645638	**GPS Elevation:**	171
Northing:	7522932		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**20.71**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.74**	**Drilled By**	**Hodge Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-20.0** **Slotted 14.0-20.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal steel monument - no cap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**DRY**	**Date / Time of Measurement:**	4:49:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**16.1**	
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**			
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)**	**-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158483**

Photograph 2 **Lake Vermont - 158483**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158483

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-43	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-24-49	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	645525	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7522751	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.39514335	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2369
GIS LNG	148.4136916	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	25/06/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	25/06/2013	1	Polyvinyl Chloride			50	0.00	20.00
A	25/06/2013	2	Perforated or Slotted Casing			50	14.00	20.00
A	25/06/2013	3	Gravel Pack	3.000	GR		12.00	20.00
A	25/06/2013	4	Grout			165	0.00	12.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	TOPSOIL
2	1.00	4.00	CLAY
3	4.00	10.00	LOAM
4	10.00	15.00	RED CLAY
5	15.00	20.00	CLAY (DRY)

BORE REPORT

REG NUMBER 158483

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.00	20.00	CLAY						Y	UC	QUATERNARY - UNDEFINED

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	28/04/2013	173.40	SVY	AHD	R	

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 158483

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158482(VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158482
Easting (GDA94):	645638	**GPS Elevation:**	174
Northing:	7522933		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.8**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 137.0** **VWP 2 - 116.0** **VWP 3 - 86.0** **VWP 4 - 65.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**No**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 6552 / Temp 26.6

VWP Black - HZ 7247 / Temp 27.8

VWP Yellow - HZ 5563 - Temp no response

VWP Blue - HZ 6959 / Temp 28.5

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158482(VWP)**

Photograph 2 **Lake Vermont - 158482(VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158482

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-42	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-24-49	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	645525	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7522752	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.39513789	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2218
GIS LNG	148.4136909	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	16/07/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	16/07/2013	1	Vibrating Wire Piezometer					137.00
B	16/07/2013	2	Vibrating Wire Piezometer					116.00
C	16/07/2013	3	Vibrating Wire Piezometer					86.00
D	16/07/2013	4	Vibrating Wire Piezometer					65.00
D	16/07/2013	5	Polyvinyl Chloride	5.900	WT	140	0.00	36.00
D	16/07/2013	6	Grout			140	0.00	137.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	10.00	CLAY
3	10.00	20.00	LOAM

BORE REPORT

REG NUMBER 158482

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
4	20.00	34.00	SAND AND GRAVEL
5	34.00	36.00	CLAY
6	36.00	85.00	SANDSTONE
7	85.00	88.00	COAL
8	88.00	135.00	SANDSTONE
9	135.00	140.00	COAL
10	140.00	147.00	SANDSTONE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	65.00		SDST						Y	PS	RANGAL COAL MEASURES
2	86.00		COAL						Y	PS	RANGAL COAL MEASURES
3	116.00		SDST						Y	PS	RANGAL COAL MEASURES
4	137.00		COAL						Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	06/06/2013	173.29	SVY	AHD	R	

BORE REPORT

REG NUMBER 158482

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - Unknown 1**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	Yard Bore Large	**Ref No/GW Number:**	-
Easting (GDA94):	656849	**GPS Elevation:**	149
Northing:	7515959		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**74**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.27**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**11.705**	**Date / Time of Measurement:**	8:05:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**2**	**O_2 %:**	**19.8**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**1324**	**Temp**	**26.6**	**pH**	**6.95**	**ORP**	**99.2**	**DO (%)**	**46**

COMMENTS

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore drilled by McCarther Coal during exploration. Hole left open as water quality was not to be 'good'. Never Used

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - Unknown 1**

Photograph 2 **Leichardt - Unknown 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - Unknown 2**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	Yard Bore Small	**Ref No/GW Number:**	-
Easting (GDA94):	656850	**GPS Elevation:**	149
Northing:	7515962		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**178**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.13**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	102
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**11.26**	**Date / Time of Measurement:**	8:44:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**140**	**Temp**	**26.2**	**pH**	**6.85**	**ORP**	**106.8**	**DO (%)** **37.1**

COMMENTS

Casing to 60m

GROUNDWATER BORE REPORT CARD

Additional Notes

Info from Cap, 'Bore ID BB1333'. Strong rotten egg odour. Low EC, possiably heavily stratified

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - Unknown 2**

Photograph 2 **Leichardt - Unknown 2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 136091/1**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	136091
Easting (GDA94):	650061	**GPS Elevation:**	174
Northing:	7508592		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**77**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.18**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	141
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**mains**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**45.087**	**Date / Time of Measurement:**	10:04:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**20.2**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**1662**	**Temp**	**27.3**	**pH**	**6.79**	**ORP**	**-84.9**	**DO (%)**	**30.6**

COMMENTS

GROUNDWATER BORE REPORT CARD

Additional Notes

*Multiple bores present. No filed measurements directly correlate to bore report

SUPPORTING INFORMATION	**Drillers Log**	**yes***	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 136091/1**

Photograph 2 **Leichardt - 136091/1**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 136091

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-31-21	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-27-34	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	650099	**MAP-NO**	
D/O FILE NO.	520/001/0105	**LOT**	7	**NORTHING**	7508605	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS53	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	20		
GIS LAT	-22.5225036	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	
GIS LNG	148.4594489	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	16/12/2002			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	MCCARTHY, DAVID IAN FREDERICK				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	16/12/2002	1	Polyvinyl Chloride		WT		0.00	66.00
A	16/12/2002	2	Perforated or Slotted Casing	6.000	AP		58.00	62.00
A	16/12/2002	3						

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOPSOIL
2	0.50	11.00	DARK BROWN CLAY
3	11.00	18.00	RED CLAY
4	18.00	25.00	LIGHT BROWN CLAY
5	25.00	42.00	BROWN SILTSTONE
6	42.00	45.00	GREY BROWN SILTSTONE

BORE REPORT

REG NUMBER 136091

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	45.00	51.00	GREY SILTSTONE
8	51.00	55.00	CARBINACIOUS SILTSTONE
9	55.00	69.00	LIGHT GREY SILTSTONE
10	69.00	70.00	GREY SILTSTONE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	60.50		SSTO	17/02/2002	-99.99	N		0.40	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 136091

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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**** End of Report. Produced:** 13/11/2017 08:10:42 PM ******

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 136091/2**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	136091
Easting (GDA94):	650091	**GPS Elevation:**	171
Northing:	7508608		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.32**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow gauge
Headworks	**2" OD HDPE**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	10:15:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

*Multiple bores present. No filed measurements directly correlate to bore report

SUPPORTING INFORMATION	**Drillers Log**	**yes***	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 136091/2**

Photograph 2 **Leichardt - 136091/2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 136091/3**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	136091
Easting (GDA94):	650116	**GPS Elevation:**	186
Northing:	7508649		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**85**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.47**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	127
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**mains**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**46.65**	**Date / Time of Measurement:**	10:30:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.1**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**4750**	**Temp**	**27.6**	**pH**	**6.85**	**ORP**	**-119.4**	**DO (%)**	**30.1**

COMMENTS

GROUNDWATER BORE REPORT CARD

Additional Notes

*Multiple bores present. No filed measurements directly correlate to bore report

SUPPORTING INFORMATION	**Drillers Log**	**yes***	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 136091/3**

Photograph 2 **Leichardt - 136091/3**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 136091/4**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	136091
Easting (GDA94):	650106	**GPS Elevation:**	168
Northing:	7508653		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**56**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.34**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	115
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Poor**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**No**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**45.407**	**Date / Time of Measurement:**	10:40:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.4**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**4419**	**Temp**	**27.2**	**pH**	**7.06**	**ORP**	**58.4**	**DO (%)**	**15.6**

COMMENTS

GROUNDWATER BORE REPORT CARD

Additional Notes

*Multiple bores present. No filed measurements directly correlate to bore report

SUPPORTING INFORMATION	**Drillers Log**	**yes***	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 136091/4**

Photograph 2 **Leichardt - 136091/4**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - 132631**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Iffley	**Ref No/GW Number:**	132631
Easting (GDA94):	635452	**GPS Elevation:**	200
Northing:	7528174		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	***328**	**Year Drilled:**	2007
Casing Stick Up (SU):	**0.59**	**Drilled By**	**Phoenix Drilling**
Casing Material	**Unknown**	**Internal Diameter**	unknown
Initial Water Quality Measurement (Driller Log)	7290 µS/cm		
Construction Summary (Driller Log)	**Steel Casing 0-328.0** **Screened 316.0-325.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**needs maintenance**	**Pump Type**	Belt driven rotary pump
Power Source	**Diesel Motor**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow gauge
Headworks	**3" Steel into 3" HDPE**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	10:55:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -	**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -		**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -	**ORP** -	**DO (%)** -

COMMENTS

Pump deployed. TD from landowner

GROUNDWATER BORE REPORT CARD

Additional Notes

Max bore output 15,000 GPH. SWL ~40mbGL according to land owner

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - 132631**

Photograph 2 **Meadowbrook - 132631**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 132631

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-20-49	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-18-55	**MAP-SERIES**	
DATE LOG RECD	26-NOV-07	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	635440	**MAP-NO**	8553
D/O FILE NO.	520/001/100	**LOT**	10	**NORTHING**	7528179	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.		**PLAN**	CNS93	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	5		
GIS LAT	-22.3469444	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	
GIS LNG	148.3152778	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	18/01/2007			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	HARRIS, JOHN CLARKE				
ROLES	WS	**DRILL COMPANY**	PHOENIX DRILLING CAPALLA SHED				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	18/01/2007	1	Steel Casing	4.800	WT	223	0.00	48.00
A	18/01/2007	2	Steel Casing	6.400		168	0.00	328.00
A	18/01/2007	3	Perforated or Slotted Casing				316.00	325.00
A	18/01/2007	4	Gravel Pack				298.00	328.00
A	18/01/2007	5	Cuttings or other fill between casing and ho				295.00	298.00
A	18/01/2007	6	Grout				0.00	48.00
A	18/01/2007	7	Grout				0.00	295.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	TOP SANDY SOIL
2	1.00	16.00	YELLOW SANDY CLAY

BORE REPORT

REG NUMBER 132631

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	16.00	20.00	M/C SAND AND GRAVEL CLAYED
4	20.00	45.00	CLAY AND MUDSTONE
5	45.00	48.00	FINE GREY SANDSTONE
6	48.00	316.00	INTERBADED FINE GREY SANDSTONE/MUDSTONE AND SHALE
7	316.00	321.00	SLIGHTLY FRACTURED FINE GREY SANDSTONE
8	321.00	321.30	LARGE FRACTURE IN GREY SANDSTONE
9	321.30	328.00	FINE GREY SANDSTONE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	321.00	328.00	SDST	18/01/2007	-31.00	N	7290 US/CM	15.00	Y	FR	BACK CREEK GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

BORE REPORT

REG NUMBER 132631

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - Bullock Paddock**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Bullock Paddock	**Ref No/GW Number:**	-
Easting (GDA94):	636052	**GPS Elevation:**	185
Northing:	7528117		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**50.2**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.3**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**21.625**	**Date / Time of Measurement:**	11:40:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**1**	**CO ppm:**	**0**	**O_2 %:**	**20.2**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2.00**			
Electrical Conductivity (µS/cm)	**6212**	**Temp**	**28.5**	**pH**	**7.39**	**ORP**	**-320**	**DO (%)**	**1.4**

COMMENTS

Land owner recalls bore was ~90m depth but dip line unable to pass 50.2mbTOC

GROUNDWATER BORE REPORT CARD

Additional Notes

Strong rotten egg odour

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - Bullock Paddock**

Photograph 2 **Meadowbrook - Bullock Paddock**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - Swamp Bore**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Swamp Bore	**Ref No/GW Number:**	-
Easting (GDA94):	645595	**GPS Elevation:**	171
Northing:	7528661		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**85**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.25**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**17.523**	**Date / Time of Measurement:**	1:05:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**1**	**CO ppm:**	**0**	**O_2 %:**	**20.1**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2.00**			
Electrical Conductivity (µS/cm)	**1078**	**Temp**	**27.7**	**pH**	**7**	**ORP**	**-62**	**DO (%)**	**34**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims output to be 1500 GPH

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - Swamp Bore**

Photograph 2 **Meadowbrook - Swamp Bore**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - 122458/1**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Rolfies #1	**Ref No/GW Number:**	122458
Easting (GDA94):	644973	**GPS Elevation:**	172
Northing:	7526776		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**52.2**	**Year Drilled:**	2006
Casing Stick Up (SU):	**0.72**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	COND 4000		
Construction Summary (Driller Log)	**PVC 0-50.5** **Slotted 38.5-50.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**22.335**	**Date / Time of Measurement:**	2:15:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**26**	**CO ppm:**	**0**	**O_2 %:**	**19.7**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2.00**			
Electrical Conductivity (µS/cm)	**5098**	**Temp**	**28.2**	**pH**	**7.29**	**ORP**	**-290**	**DO (%)**	**30.7**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims output to be 2000 GPH. Rotten egg odour

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - 122458/1**

Photograph 2 **Meadowbrook - 122458/1**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 122458

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-21-32	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-24-29	**MAP-SERIES**	M
DATE LOG RECD	07-APR-06	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	644983	**MAP-NO**	8553
D/O FILE NO.	520/001/100	**LOT**	10	**NORTHING**	7526770	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.		**PLAN**	CNS93	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	30		
GIS LAT	-22.3588889	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	
GIS LNG	148.4080556	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	21/03/2006			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	BOURNE, KEVIN JOHN				
ROLES	WS	**DRILL COMPANY**	DEPCO DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
X	21/03/2005	1	Polyvinyl Chloride	5.900	WT	141	0.00	50.50
X	21/03/2005	2	Perforated or Slotted Casing	4.000	AP	141	38.50	50.50
X	21/03/2005	3	Gravel Pack	5.000	GR	177	31.00	50.50
X	21/03/2005	4	Cuttings or other fill between casing and ho			177	7.00	31.00
X	21/03/2005	5	Grout			177	0.00	7.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	5.00	WEATHERING
2	5.00	6.50	SAND AND GRAVEL
3	6.50	14.00	WEATHERED SHALES
4	14.00	17.00	WEATHERED SANDSTONE

BORE REPORT

REG NUMBER 122458

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	17.00	35.00	WEATHERED SHALE
6	35.00	50.50	FRACTURED SHALE *

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	35.00	50.50	SHLE	21/03/2005	-26.00	N	COND 4000	1.88	Y	FR	BACK CREEK GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 122458

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - 122458/2**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Rolfies #2	**Ref No/GW Number:**	122458
Easting (GDA94):	644971	**GPS Elevation:**	174
Northing:	7526779		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**103**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.15**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**21.74**	**Date / Time of Measurement:**	2:30:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**1**	**CO ppm:**	**1**	**O_2 %:**	**18.8**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2.00**			
Electrical Conductivity (µS/cm)	**8666**	**Temp**	**28.2**	**pH**	**7.32**	**ORP**	**-267.7**	**DO (%)**	**2.5**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Exploration hole

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - 122458/2**

Photograph 2 **Meadowbrook - 122458/2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - Black Tank**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Black Tank	**Ref No/GW Number:**	-
Easting (GDA94):	642742	**GPS Elevation:**	173
Northing:	7521198		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.385**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**poor**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" HDPE pump output line**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	3:33:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.2**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed. TD from landowner

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims output to be 1000 GPH

Shelter and headworks damaged in storm ~7 years ago

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**Yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - Black Tank**

Photograph 2 **Meadowbrook - Black Tank**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - Power Bore**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Power Bore	**Ref No/GW Number:**	-
Easting (GDA94):	641260	**GPS Elevation:**	186
Northing:	7520977		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	**0.46**	**Drilled By**	**-**
Casing Material	**Unknown**	**Internal Diameter**	unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**3" HDPE pump outlet line**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**16.5**	**Date / Time of Measurement:**	3:50:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:		**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:** **19.9**
Sample Collection Point	**pump output line**	**Sample Method**	**-**			**Purge Volume**	**-**	
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed, dip measured through poly. TD from landowner

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims output to be 1000 GPH

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - Power Bore**

Photograph 2 **Meadowbrook - Power Bore**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - Bore 8**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	5 Mile Bore	**Ref No/GW Number:**	-
Easting (GDA94):	640186	**GPS Elevation:**	188
Northing:	7547990		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.1**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No details Available**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	Flow meter
Headworks	**Steel taps with 32mm HDPE output**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	25000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	9:15:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - Bore 8**

Photograph 2 **Olive Downs - Bore 8**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - Bore 7**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	Saltwater Bore	**Ref No/GW Number:**	-
Easting (GDA94):	637518	**GPS Elevation:**	192
Northing:	7552628		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**16.75**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.39**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	120
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No details Available**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Poor**	**Pump Type**	no
Power Source	**Powerline**	**Bore Capped**	**No**	**Bore Equipped With Meter**	Flow meter
Headworks	**Steel taps with 2" HDPE output**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**15.695**	**Date / Time of Measurement:**	10:05:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**20.2**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**994**	**Temp**	**25.3**	**pH**	**6.75**	**ORP**	**-109.9**	**DO (%)**	**24**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore not in use. No pump present. Casing heavily corroded

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - Bore 7**

Photograph 2 **Olive Downs - Bore 7**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - 162472**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	-	**Ref No/GW Number:**	162472
Easting (GDA94):	635533	**GPS Elevation:**	193
Northing:	7554547		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**91.2**	**Year Drilled:**	2009
Casing Stick Up (SU):	**0.9**	**Drilled By**	**Pioneer Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-81.0** **Slotted 81.0-90.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**poor**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**50mm Standpipe Piezometer**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**23.33**	**Date / Time of Measurement:**	11:25:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**20.7**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Standpipe damaged, bailer couldn't pass

GROUNDWATER BORE REPORT CARD

Additional Notes

Monument damaged, supported by starposts

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - 162472**

Photograph 2 **Olive Downs - 162472**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 162472

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-06-31	**MAP-SCALE**	
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-18-50	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	635531	**MAP-NO**	
D/O FILE NO.		**LOT**	3	**NORTHING**	7554554	**MAP NAME**	
R/O FILE NO.		**PLAN**	GV90	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.10872204	**PARISH NAME**	2420-ILSINGTON			**ORIGINAL BORE NO**	PZ4
GIS LNG	148.31394053	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	27/03/2009			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	MM	**DRILL COMPANY**	PIONEER DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	27/03/2009	1	Polyvinyl Chloride				0.00	81.00
A	27/03/2009	2	Perforated or Slotted Casing	1.000	AP		81.00	90.00
X	27/03/2009	3	Grout			114	0.00	73.00
X	27/03/2009	4	Bentonite Seal			114	73.00	75.00
X	27/03/2009	5	Gravel Pack			114	75.00	90.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	TOPSOIL: SILTY CLAY, BROWN, TRACE GRAVEL, ORGANIC MATTER PRESENT
2	2.00	4.00	SILTY CLAY: BROWN/ORANGE-BROWN, TRACE FINE SAND AND GRAVEL
3	4.00	7.00	SANDY CLAY: GREY-BROWN, MINOR FINE SAND AND GRAVEL
4	7.00	15.00	CLAYSTONE: GREY-BROWN, TRACE MEDIUM TO FINE GRAVEL, WELL CEMENTED

BORE REPORT

REG NUMBER 162472

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	15.00	27.00	SILTSTONE: BROWN/GREY BROWN, INTERBEDDED WITH FINE SANDSTONE, MODERATELY SOFT, IRON STAINING PRESENT
6	27.00	44.00	SILTSTONE: GREY-BROWN, MINOR FINE SANDSTONE, IRON STAINING, MODERATELY HARD, NON CARBONACEOUS
7	44.00	49.00	SILTSTONE: GREY, MINOR MUDSTONE AND FINE SANDSTONE, NON CARBONACEOUS, MODERATELY HARD
8	49.00	50.00	SANDSTONE: GREY, INTERBEDDED WITH SILTSTONE AND MUDSTONE, MODERATELY HARD
9	50.00	51.00	SILTSTONE: GREY, ONLY MINOR SANDSTONE, MODERATELY HARD
10	51.00	62.00	MUDSTONE: GREY, MINOR SILTSTONE, TRACE FINE SANDSTONE, INTERBEDDED WITH TUFF LAYER WHICH IS MOSTLY WEATHERED TO BROWN CLAY, MODERATELY HARD
11	62.00	72.00	SANDSTONE: GREY, INTERBEDDED WITH SOME SILTSTONE, TRACE MUDSTONE, TUFF LAYER PRESENT, MODERATELY HARD, NON CARBONACEOUS
12	72.00	82.00	MUDSTONE: GREY, MINOR SILTSTONE, TUFF LAYER STILL PRESENT, MODERATELY HARD
13	82.00	89.00	SILTSTONE: GREY, MINOR MUDSTONE, TUFF LAYER STILL PRESENT
14	89.00	90.00	SANDSTONE: BLUE-GREY, MINOR SILTSTONE AND MUDSTONE, NON CARBONACEOUS, TUFF LAYER PRESENT, QUARTZ PRESENT, MODERATELY HARD

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	81.00	90.00	SSTO SDST			N			Y	PS	

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

BORE REPORT

REG NUMBER 162472

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	27/03/2009	193.94	SVY	AHD	R	

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	06/05/2009	-23.96	R		ACT	A	10/06/2009	-23.87	R		ACT	A	08/07/2009	-23.92	R		ACT
A	19/08/2009	-23.95	R		ACT	A	14/09/2009	-23.94	R		ACT	A	15/10/2009	-23.94	R		ACT
A	17/11/2009	-23.94	R		ACT	A	16/12/2009	-23.95	R		ACT	A	12/01/2010	-23.96	R		ACT
A	18/03/2010	-23.91	R		ACT	A	22/04/2010	-23.91	R		ACT	A	16/02/2011	-23.73	R		ACT
A	14/04/2011	-23.77	R		ACT	A	03/06/2011	-23.78	R		ACT	A	30/06/2011	-23.70	R		ACT
A	21/07/2011	-23.72	R		ACT	A	17/08/2011	-23.71	R		ACT	A	07/09/2011	-23.74	R		ACT
A	25/10/2011	-23.22	R		ACT	A	11/11/2011	-23.77	R		ACT	A	23/08/2012	-24.03	R		ACT
A	20/09/2012	-23.66	R		ACT	A	23/10/2012	-23.68	R		ACT	A	21/11/2012	-23.68	R		ACT
A	19/12/2012	-23.68	R		ACT	A	16/01/2013	-23.69	R		ACT	A	21/02/2013	-23.63	R		ACT
A	13/03/2013	-23.64	R		ACT	A	18/04/2013	-23.60	R		ACT	A	09/05/2013	-23.65	R		ACT
A	18/06/2013	-23.60	R		ACT	A	08/07/2013	-23.63	R		ACT	A	07/08/2013	-23.66	R		ACT
A	02/09/2013	-23.64	R		ACT	A	03/10/2013	-23.65	R		ACT	A	04/11/2013	-23.63	R		ACT
A	05/12/2013	-23.64	R		ACT	A	06/01/2014	-23.65	R		ACT	A	06/03/2014	-23.64	R		ACT
A	07/04/2014	-23.64	R		ACT	A	05/05/2014	-23.66	R		ACT	A	05/06/2014	-23.00	R		ACT
A	03/07/2014	-23.70	R		ACT	A	19/08/2014	-23.66	R		ACT	A	17/09/2014	-23.68	R		ACT
A	23/10/2014	-23.70	R		ACT	A	20/11/2014	-23.72	R		ACT	A	30/12/2014	-23.72	R		ACT
A	24/02/2015	-23.70	R		ACT	A	25/03/2015	-23.69	R		ACT	A	14/04/2015	-23.72	R		ACT
A	27/05/2015	-23.73	R		ACT	A	29/06/2015	-23.74	R		ACT	A	22/07/2015	-23.75	R		ACT
A	11/08/2015	-23.74	R		ACT	A	03/09/2015	-23.75	R		ACT	A	21/10/2015	-23.77	R		ACT
A	24/11/2015	-23.77	R		ACT	A	23/02/2016	-23.70	R		ACT	A	12/04/2016	-23.69	R		ACT
A	24/08/2016	-23.63	R		ACT	A	16/11/2016	-23.83	R		ACT	A	06/02/2017	-23.50	R		ACT
A	05/06/2017	-23.40	R		ACT												

BORE REPORT

REG NUMBER 162472

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - Bore 9**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	House Bore	**Ref No/GW Number:**	162439
Easting (GDA94):	633886	**GPS Elevation:**	189
Northing:	7553064		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.19**	**Drilled By**	**-**
Casing Material	**Unknown**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No details Available**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**good**	**Pump Type**	screw
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2' Steel outlet** **Samples hose and 32mm H.D.**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:22:00 PM
Pumping History	Pumping at time of inspection		

PART F: WATER QUALITY

Well Head Gas Screening:		**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:** **-**
Sample Collection Point	**Sample Tap**	**Sample Method**		**Bucket**		**Purge Volume**		**20**
Electrical Conductivity (µS/cm)	**935.8**	**Temp**	**32**	**pH**	**7.01**	**ORP**	**39.1**	**DO (%)** **24.5**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes					
SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - Bore 9**

Photograph 2 **Olive Downs - Bore 9**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - 162439**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	MB8	**Ref No/GW Number:**	-
Easting (GDA94):	631866	**GPS Elevation:**	196
Northing:	7553657		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**12.578**	**Year Drilled:**	2015
Casing Stick Up (SU):	**0.7**	**Drilled By**	**Barnes Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-11.90** **Slotted 8.9-11.9**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**12.517**	**Date / Time of Measurement:**	1:00:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**10.7**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

insufficient volume for grab sample

GROUNDWATER BORE REPORT CARD

Additional Notes

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	Yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - 162439**

Photograph 2 **Olive Downs - 162439**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 162439

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-07-02	**MAP-SCALE**	
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-16-43	**MAP-SERIES**	
DATE LOG RECD	27-JUL-15	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	631867	**MAP-NO**	
D/O FILE NO.		**LOT**	3	**NORTHING**	7553655	**MAP NAME**	
R/O FILE NO.		**PLAN**	GV90	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.1171238	**PARISH NAME**	2420-ILSINGTON			**ORIGINAL BORE NO**	MB08
GIS LNG	148.27849899	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	16/07/2015			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WESTON, CLAY DEAN				
ROLES	MM	**DRILL COMPANY**	BARNES DRILLING				
		METHOD OF CONST.	ROTARY MUD				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	16/07/2015	1	Polyvinyl Chloride	5.000	WT	60	0.00	8.90
A	16/07/2015	2	Perforated or Slotted Casing	0.400	AP	60	8.90	11.90
X	16/07/2015	3	Grout			171	0.00	5.50
X	16/07/2015	4	Cuttings or other fill between casing and ho			171	5.50	7.60
X	16/07/2015	5	Bentonite Seal			171	7.60	8.40
X	16/07/2015	6	Gravel Pack			171	8.40	11.90
X	16/07/2015	7	Bentonite Seal			171	11.90	13.00
X	16/07/2015	8	Gravel Pack			171	13.00	20.50

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	SOIL: MEDIUM REDDIISH BROWN, VERY SOFT SOIL (X1), EXTREMELY WEATHERED

BORE REPORT

REG NUMBER 162439

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
2	2.00	7.00	CLAY: MEDIUM REDDISH BROWN, VERY SOFT SOIL (X1), EXTREMELY WEATHERED
3	7.00	9.00	SANDY CLAY: MEDIUM REDDISH BROWN, FIRM SOIL (X3), EXTREMELY WEATHERED
4	9.00	12.00	SAND: MEDIUM ORANGY BROWN, VERY SOFT SOIL (X1), EXTREMELY WEATHERED
5	12.00	17.00	CLAY: LIGHT ORANGY GREY, SOFT SOIL (X2), EXTREMELY WEATHERED
6	17.00	20.50	SILTSTONE: LIGHT ORANGY GREY, EXTREMELY LOW STRENGTH ROCK (H1), DISTINCTLY WEATHERED

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	8.90	11.90	SAND			N			N	WZ	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

BORE REPORT

REG NUMBER 162439

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97181**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Pisscutter	**Ref No/GW Number:**	97181
Easting (GDA94):	656325	**GPS Elevation:**	167
Northing:	7523641		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**19.77**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.8**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-19.51** **Screen 17.37-18.29**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow meter
Headworks	**2" Steel manifold to 2" Poly. Bore standpipe encased in concrete**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**12.69**	**Date / Time of Measurement:**	4:10:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.9**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**298**	**Temp**	**26.31**	**pH**	**6.93**	**ORP**	**90.1**	**DO (%)** **30.96**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Two wells, one open and one with pump deployed. Sample taken from open bore. Land owner claims max yield of 1500 GPH

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97181**

Photograph 2 **Willunga - 97181**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97181

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-22-58	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-10	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	656434	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7523988	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.383010352	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	CUTTER BORE
GIS LNG	148.519511432	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	22/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	22/06/1996	1	Polyvinyl Chloride	5.900	WT	140	0.00	17.37
A	22/06/1996	2	Screen	0.750	AP	140	17.37	18.29
A	22/06/1996	3	Polyvinyl Chloride	5.900	WT	140	18.29	19.51
A	22/06/1996	4	Gravel Pack	10.000	GR		0.00	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	10.67	LOAM
2	10.67	14.33	SILTY LOAM
3	14.33	17.07	FINE TO COARSE SAND
4	17.07	18.29	DIRTY FINE TO COARSE SAND
5	18.29	20.42	YELLOW CLAY

BORE REPORT

REG NUMBER 97181

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.33	18.29	SAND	22/06/1996	-13.41	N	GOOD	12.00	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 97181

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97185**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Bottom Bore	**Ref No/GW Number:**	97185
Easting (GDA94):	659239	**GPS Elevation:**	164
Northing:	7519220		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**19.53**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.73**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-18.9** **Screened 16.76-17.68**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow meter
Headworks	**3" Steel manifold to 3" HDPE. Standpipe concrete encased**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.25**	**Date / Time of Measurement:**	11:50:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**20.1**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**442.8**	**Temp**	**26.23**	**pH**	**7.12**	**ORP**	**-95.6**	**DO (%)** **24.4**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims max yield of 1200 GPH

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97185**

Photograph 2 **Willunga - 97185**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97185

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-25-09	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-32-38	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	658897	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7519944	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.41930535	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	BOTTOM BORE
GIS LNG	148.54383265	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	12/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	12/06/1996	1	Polyvinyl Chloride	5.900	WT	140	0.00	16.76
A	12/06/1996	2	Screen	0.750	AP	140	16.76	17.68
A	12/06/1996	3	Polyvinyl Chloride	5.900	WT	140	17.68	18.90
A	12/06/1996	4	Gravel Pack	10.000	GR	140	0.00	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.61	SANDY LOAM
2	0.61	6.10	LOAM
3	6.10	7.32	VERY FINE SAND
4	7.32	9.75	SILTY CLAY
5	9.75	10.67	BROWN CLAY

BORE REPORT

REG NUMBER 97185

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	10.67	12.80	BROWN & RED CLAY
7	12.80	14.63	BLUE & BROWN CLAY
8	17.68	17.68	FINE TO VERY COARSE SAND
9	17.68	20.42	WHITE CLAY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.63	17.68	SAND	12/06/1996	-14.33	N	GOOD	2.53	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 97185

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97184**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Leichardt Bore	**Ref No/GW Number:**	97184
Easting (GDA94):	659014	**GPS Elevation:**	163
Northing:	7519480		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**20.63**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.78**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-18.59** **Screened 16.46-17.37**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	power meter
Headworks	**3" Steel manifold to 3" HDPE. Standpipe concrete encased**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.615**	**Date / Time of Measurement:**	12:25:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.6**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**598.5**	**Temp**	**25.68**	**pH**	**6.79**	**ORP**	**45.9**	**DO (%)**	**32.51**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Two wells, one open and one with pump deployed. Sample taken from open bore.

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97184**

Photograph 2 **Willunga - 97184**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97184

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-53	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-32-31	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	658710	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7520443	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.414815254	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	LEICHARDT BORE
GIS LNG	148.541961757	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	25/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	25/06/1996	1	Polyvinyl Chloride	5.900	WT	140	0.00	16.46
A	25/06/1996	2	Screen	0.750	AP	140	16.46	17.37
A	25/06/1996	3	Polyvinyl Chloride	5.900	WT	140	17.37	18.59
A	25/06/1996	4	Gravel Pack	10.000			0.00	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	5.18	LOAM
2	5.18	8.23	LOAMY CLAY
3	8.23	10.67	BROWN CLAY
4	10.67	12.19	SILTY CLAY
5	12.19	13.41	WHITE CLAY

BORE REPORT

REG NUMBER 97184

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	13.41	15.24	FINE TO COARSE SAND
7	15.24	18.29	FINE TO VERY COARSE SAND
8	18.29	20.42	YELLOW & GRAY CLAY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	13.41	18.29	SAND	25/06/1996	-13.79	N	GOOD	2.60	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 97184

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97182**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Blue Pump 5"	**Ref No/GW Number:**	97182
Easting (GDA94):	657944	**GPS Elevation:**	165
Northing:	7521843		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**20.92**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.65**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-19.35** **Screened 17.37-18.29**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	no
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**Standpipe concrete encased**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**13.13**	**Date / Time of Measurement:**	1:07:00 PM
Pumping History	adjacent pump operating		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.9**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**472.5**	**Temp**	**26.26**	**pH**	**7.24**	**ORP**	**-142.1**	**DO (%)**	**26.53**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

adjacent pump operating at time of measurements

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97182**

Photograph 2 **Willunga - 97182**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97182

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-48	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-36	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	657151	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7522448	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.396854844	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	5 BLUE PUMP
GIS LNG	148.526620689	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	14/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	14/06/1996	1	Polyvinyl Chloride	5.900	WT	140	0.00	17.37
A	14/06/1996	2	Screen	0.750	AP	140	17.37	18.29
A	14/06/1996	3	Polyvinyl Chloride	5.900	WT	140	18.29	19.35
A	14/06/1996	4	Gravel Pack	10.000	GR		0.00	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	9.14	LOAM
2	9.14	12.19	DRY FINE TO MEDIUM SAND
3	12.19	12.80	CLAY
4	12.80	14.02	FINE SAND
5	14.02	15.24	DIRTY FINE TO MEDIUM SAND

BORE REPORT

REG NUMBER 97182

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	15.24	16.46	CLAYBOUND SAND
7	16.46	18.29	FINE TO COARSE WHITE SAND
8	18.29	20.42	CLAY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.02	18.29	SAND	14/06/1996	-14.78	N	GOOD	0.51	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 97182

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97183**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Blue Pump 8"	**Ref No/GW Number:**	97183
Easting (GDA94):	657950	**GPS Elevation:**	165
Northing:	7521838		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.7**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	~220 (OD)
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-18.29** **Screened 17.68-18.29**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow meter
Headworks	**3" Steel manifold to 3" HDPE. Standpipe concrete encased**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	1:15:00 PM
Pumping History	Pumping at time of inspection		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.2**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

pumping at time of inspection

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97183**

Photograph 2 **Willunga - 97183**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97183

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-54	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-45	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	657419	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7522279	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.39835155	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	8 BLUE PUMP
GIS LNG	148.529239859	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	15/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/06/1996	3	Gravel Pack	10.000	GR		0.00	18.29
A	15/06/1996	1	Polyvinyl Chloride	10.000	WT	220	0.00	17.68
A	15/06/1996	2	Screen	1.100	AP	220	17.68	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	9.14	LOAM
2	9.14	12.19	FINE TO MEDIUM DRY SAND
3	12.19	12.80	CLAY
4	12.80	14.02	FINE SAND
5	14.02	15.24	DIRTY FINE TO MEDIUM SAND
6	15.24	16.46	CLAYBOUND SAND

BORE REPORT

REG NUMBER 97183

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	16.46	18.29	WHITE FINE TO COARSE SAND
8	18.29	20.42	CLAY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.02	18.29	SAND	15/06/1996	-14.78	N	GOOD	0.51	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 97183

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - White Tank**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	White Tank	**Ref No/GW Number:**	-
Easting (GDA94):	629347	**GPS Elevation:**	212
Northing:	7542483		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**53**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.48**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	127
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	35000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**17.133**	**Date / Time of Measurement:**	9:17:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**18.8**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**1721**	**Temp**	**26.1**	**pH**	**6.66**	**ORP**	**174.5**	**DO (%)** **32.9**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

No pump deployed. Near to watering trough

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - White Tank**

Photograph 2 **Winchester Downs - White Tank**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 141382**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	-	**Ref No/GW Number:**	141382
Easting (GDA94):	628494	**GPS Elevation:**	205
Northing:	7542693		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**51.3**	**Year Drilled:**	2008
Casing Stick Up (SU):	**0.5**	**Drilled By**	**IESA**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-51.5** **Screened 48.5-51.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.929**	**Date / Time of Measurement:**	10:55:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**18.3**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**2281**	**Temp**	**27**	**pH**	**5.98**	**ORP**	**-176.8**	**DO (%)**	**35.7**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

No logger deployed. Monument cap broken at hinge

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 141382**

Photograph 2 **Winchester Downs - 141382**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 141382

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-12-59	**MAP-SCALE**	254
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-14-48	**MAP-SERIES**	
DATE LOG RECD	01-MAY-08	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	628490	**MAP-NO**	SF55-11
D/O FILE NO.	520/000/0072	**LOT**	5	**NORTHING**	7542693	**MAP NAME**	CLERMONT
R/O FILE NO.		**PLAN**	CNS90	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.21638819	**PARISH NAME**	5065-WINCHESTER			**ORIGINAL BORE NO**	MB5
GIS LNG	148.24663621	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	09/04/2008			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	MCLEAN, WAYNE ROBERT				
ROLES	SM	**DRILL COMPANY**	IESA				
		METHOD OF CONST.	ROTARY AIR - HAMMER				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	09/04/2008	1	Polyvinyl Chloride	5.500	WT	60	0.00	48.50
A	09/04/2008	2	Centraliser				3.00	48.00
A	09/04/2008	3	Screen	0.500	AP		48.50	51.50
A	09/04/2008	4	Gravel Pack	7.000	GR	164	18.00	52.00
A	09/04/2008	5	Bentonite Seal			164	17.00	18.00
A	09/04/2008	6	Grout			164	0.00	17.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.70	"TOP SOIL CLAY BROWN"
2	0.70	3.00	CLAY, SILTY, ORANGE
3	3.00	11.00	CLAY, SILTY, OCHRE; SOME SILCRETE

BORE REPORT

REG NUMBER 141382

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
4	11.00	12.00	SHALE, LIGHT OCHRE
5	12.00	13.00	SHALE, SILTY, VERY FINE, SOFT; SOME IRON STAINING
6	13.00	16.00	SHALE, LIGHT OCHRE; SOME SILCRETE
7	16.00	33.00	SHALE, "SANDY/SILTY", LIGHT GREY; TRACE WATER 25 M
8	33.00	37.00	CARBONACEOUS MATERIAL, DARK GREY BLACK
9	37.00	40.00	SHALE, DARK GREY
10	40.00	52.00	"SHALE HARD/SOFT BANDS GREY"

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	25.00		SHLE	09/04/2008	-18.36	N		0.02	Y	PS	

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	09/04/2008	209.33	SVY	AHD	R	
X	09/04/2008	208.83	SVY	AHD	N	

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 141382

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	09/04/2008	-18.36	N		NR	A	19/04/2008	-15.95	R		ACT	A	11/06/2008	-15.46	R		ACT
A	13/10/2011	-15.12	R		ACT	A	10/11/2011	-15.09	R		ACT	A	11/01/2012	-15.04	R		ACT
A	12/06/2012	-14.87	R		ACT	A	09/08/2012	-15.08	R		ACT	A	11/09/2012	-14.86	R		ACT
A	10/10/2012	-14.81	R		ACT	A	05/11/2012	-14.80	R		ACT	A	05/12/2012	-14.78	R		ACT
A	08/01/2013	-14.34	R		ACT	A	11/02/2013	-14.75	R		ACT	A	18/03/2013	-14.33	R		ACT
A	08/04/2013	-14.35	R		ACT	A	08/05/2013	-14.29	R		ACT	A	11/06/2013	-14.40	R		ACT
A	08/07/2013	-14.15	R		ACT	A	06/08/2013	-14.40	R		ACT	A	09/09/2013	-14.40	R		ACT
A	08/10/2013	-14.33	R		ACT	A	06/11/2013	-14.27	R		ACT	A	04/12/2013	-14.31	R		ACT
A	07/01/2014	-14.32	R		ACT												

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	09/04/2008		6120	7.7						PU	GB
A	13/10/2011		3918	7.2			0.16			PU	GB
A	10/11/2011		3918	7.2			0.16			PU	GB
A	12/12/2011		3565	7.3			0.23			PU	GB
A	11/01/2012		4207	7.6	28.9		1.56			PU	GB
A	12/06/2012		4078	7.0	26.8		0.52			PU	GB
A	09/08/2012		3948	8.4	26.5		2.64			PU	GB
A	11/09/2012		4324	7.5	26.8		0.28			PU	GB
A	10/10/2012		4126	7.9	27.7		1.06			PU	GB
A	05/11/2012		5029	7.2	27.7					PU	GB
A	05/12/2012		4080	7.8	27.5					PU	GB
A	08/01/2013		4807	7.1	28.3		4.87			PU	GB
A	11/02/2013		3678	7.4	28.2					PU	GB

BORE REPORT

REG NUMBER 141382

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	18/03/2013		4126	7.8	26.9		1.00			PU	GB
A	08/04/2013		5365	7.6	26.4					PU	GB
A	08/05/2013		4733	7.2	26.3		1.67			PU	GB
A	11/06/2013		5210	7.8	26.0		3.64			PU	GB
A	08/07/2013		4637	7.0	26.5		5.26			PU	GB
A	06/08/2013		4631	7.4	27.3					PU	GB
A	09/09/2013		5476	7.3	26.4					PU	GB
A	08/10/2013		5702	6.2	29.3		0.25			PU	GB
A	06/11/2013			6.3	27.3		0.36			PU	GB
A	04/12/2013		5785	6.9	29.4		1.98			PU	GB
A	07/01/2014		5330	7.4	28.2					PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 14**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	-	**Ref No/GW Number:**	-
Easting (GDA94):	628742	**GPS Elevation:**	202
Northing:	7546690		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**14.4**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.27**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	144
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Poor**	**Pump Type**	no
Power Source	**windmill**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	ruptured

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**3.59**	**Date / Time of Measurement:**	12:53:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.4**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**3003**	**Temp**	**25.3**	**pH**	**7.17**	**ORP**	**-135**	**DO (%)**	**34.5**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Windmill blades on ground

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 14**

Photograph 2 **Winchester Downs - 14**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 162460**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	Number One	**Ref No/GW Number:**	162460
Easting (GDA94):	627204	**GPS Elevation:**	215
Northing:	7546953		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**11.23**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.36**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**no**	**Bore Equipped With Meter**	Flow meter
Headworks	**2" HDPE outlet off steel manifold**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	20000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**dry**	**Date / Time of Measurement:**	1:40:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**2**	**O_2 %:**	**10.5**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Insufficient water to take sample. Appears to be a duplicate bore as adjacent bore appears to have a similar construction.

Submersible pump deployed down adjacent bore. Windmill positioned over bore

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 162460**

Photograph 2 **Winchester Downs - 162460**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 162460

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-10-41	**MAP-SCALE**	
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-14-02	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	627200	**MAP-NO**	
D/O FILE NO.		**LOT**	8	**NORTHING**	7546952	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP277384	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.17801525	**PARISH NAME**	5065-WINCHESTER			**ORIGINAL BORE NO**	NO. 1 BORE
GIS LNG	148.23378644	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**				**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1900	1	Polyvinyl Chloride			140		

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	30.00	NO DETAILS. DEPTH APPROX.

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

BORE REPORT

REG NUMBER 162460

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	09/02/2006	217.90	GPS	AHD	R	ISAAC PLAINS BORE CENSUS

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	09/02/2006	-14.78	R		ACT												

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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**** End of Report. Produced:** 29/01/2018 08:02:59 PM ******

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 15**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	-	**Ref No/GW Number:**	-
Easting (GDA94):	629039	**GPS Elevation:**	204
Northing:	7546882		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**23.4**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.2**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	135
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Poor**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**9.67**	**Date / Time of Measurement:**	2:44:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**2.4**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**11.3**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**2063**	**Temp**	**25.4**	**pH**	**7.5**	**ORP**	**-178.4**	**DO (%)**	**28**

COMMENTS

methane present at 2.4%

GROUNDWATER BORE REPORT CARD

Additional Notes

Appears to previously have had piston pump installed

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 15**

Photograph 2 **Winchester Downs - 15**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - Lemon Tree**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	Lemon Tree	**Ref No/GW Number:**	-
Easting (GDA94):	630655	**GPS Elevation:**	195
Northing:	7551954		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	**0.51**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	Flow meter
Headworks	**2" Steel manifold to 2" Poly**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	4:18:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - Lemon Tree**

Photograph 2 **Winchester Downs - Lemon Tree**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Wynette - Bore 1**

PART A: PROPERTY DETAILS

Property Name:	Wynette		
Local Bore Name:	Bore 1	**Ref No/GW Number:**	-
Easting (GDA94):	634791	**GPS Elevation:**	189
Northing:	7550019		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.5**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**3" Steel with sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	-
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	2:40:00 PM
Pumping History	Bore hasn't been successfully pumped for +15 years		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

No sample or gas measurements taken due to headworks

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Wynette - Bore 1**

Photograph 2 **Wynette - Bore 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Wynette - Bore 2**

PART A: PROPERTY DETAILS

Property Name:	Wynette		
Local Bore Name:	Bore 2	**Ref No/GW Number:**	-
Easting (GDA94):	634788	**GPS Elevation:**	191
Northing:	7550024		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**19.85**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.61**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock/monitoring**	**Pumping Regime**	-
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**15.97**	**Date / Time of Measurement:**	2:10:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**11.9**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**2903**	**Temp**	**30.9**	**pH**	**6.69**	**ORP**	**124**	**DO (%)** **27.13**

COMMENTS

Water level logger present in bore

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore was drilled when Bore 1 became dry 15 years ago. Bore doesn't yield sufficient volumes to warrant the permanent deployment of a pump

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Wynette - Bore 2**

Photograph 2 **Wynette - Bore 2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Wynette - Bore 3**

PART A: PROPERTY DETAILS

Property Name:	Wynette		
Local Bore Name:	Bore 3	**Ref No/GW Number:**	-
Easting (GDA94):	634785	**GPS Elevation:**	187
Northing:	7550009		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**94**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.6**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	-
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**15.91**	**Date / Time of Measurement:**	1:40:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0.6**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.8**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**6677**	**Temp**	**26.79**	**pH**	**7.44**	**ORP**	**43.5**	**DO (%)**	**28.3**

COMMENTS

methane present at 0.6%. Likely penetrating coal measures

GROUNDWATER BORE REPORT CARD

Additional Notes

Drilled at same time as bore 2 but to an increased depth looking for an alternate aquifer

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Wynette - Bore 3**

Photograph 2 **Wynette - Bore 3**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Iffley - 2488**

PART A: PROPERTY DETAILS

Property Name:	Iffley		
Local Bore Name:	-	**Ref No/GW Number:**	2488
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Iffley - 2488**

Photograph 2 **Iffley - 2488**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/092017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Iffley - 136090**

PART A: PROPERTY DETAILS

Property Name:	Iffley		
Local Bore Name:	Homestead Bore	**Ref No/GW Number:**	136090
Easting (GDA94):	647486	**GPS Elevation:**	183
Northing:	7540034		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**22.68**	**Year Drilled:**	2002
Casing Stick Up (SU):	**0.28**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	690 (no units)		
Construction Summary (Driller Log)	**PVC 0-90.0** **Screen 84.0-90.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**2" HDPE outlet off steel manifold**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	float actuated pressure switch
Storage Type	**Tank**	**Approximate Volume**	60000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**12.71**	**Date / Time of Measurement:**	4:30:00 PM
Pumping History	Pumping at time of inspection		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**20**	
Sample Collection Point	**tank inlet**	**Sample Method**	**Bucket**		**Purge Volume**	**unknown**			
Electrical Conductivity (µS/cm)	**2187**	**Temp**	**26.37**	**pH**	**6.62**	**ORP**	**83.7**	**DO (%)**	**55.4**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

SWL measurements taken from adjacent disused bore. Pumping bore was operational at time of measurement. Drillers construction log doesn't match site observations

SUPPORTING INFORMATION	Drillers Log	Yes	Meeting With Land Representative	Yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Iffley - 136090**

Photograph 2 **Iffley - 136090**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 136090

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-14-17	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-25-55	**MAP-SERIES**	
DATE LOG RECD	04-FEB-03	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	647570	**MAP-NO**	
D/O FILE NO.		**LOT**	1	**NORTHING**	7540125	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL159	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	20		
GIS LAT	-22.2380556	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	
GIS LNG	148.4319444	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	15/12/2002			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	RIDDELL, WAYNE EDWARD				
ROLES	WS	**DRILL COMPANY**	DEPCO DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	15/12/2002	1	Polyvinyl Chloride	5.900	WT	140	0.00	90.00
A	15/12/2002	2	Screen			140	84.00	90.00
A	15/12/2002	3	Gravel Pack				0.00	41.76

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.74	SANDY TOPSOIL
2	2.74	6.10	CLAY
3	6.10	18.29	SAND
4	18.29	24.38	CLAY
5	24.38	27.43	COARSE SAND
6	27.43	41.76	RED AND GREY CLAY

BORE REPORT

REG NUMBER 136090

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	24.38	27.43	SAND	15/12/2002	-1.83	N	690	0.44	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 136090

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Iffley - 44164**

PART A: PROPERTY DETAILS

Property Name:	Iffley		
Local Bore Name:	-	**Ref No/GW Number:**	44164
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1974
Casing Stick Up (SU):	-	**Drilled By**	**Alexander R**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Steel Casing 0-27.4** **Screen 27.4-28.1**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	4:22:00 PM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	no

PHOTOGRAPHIC RECORD

Photograph 1 **Iffley - 44164**

Photograph 2 **Iffley - 44164**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 44164

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-13-49	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-26-08	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	647938	**MAP-NO**	8553
D/O FILE NO.	515/030/0039	**LOT**	1	**NORTHING**	7540971	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.	30-0039	**PLAN**	KL159	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L41529B	**ORIGINAL DESCRIPTION**	P1V	**ACCURACY**	SKET	**PRES EQUIPMENT**	HS
				GPS ACC			
GIS LAT	-22.230380544	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	
GIS LNG	148.435442014	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	23/02/1974			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	ALEXANDER R				
ROLES	WS	**DRILL COMPANY**	ALEXANDER R				
		METHOD OF CONST.	CABLE TOOL				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	23/02/1974	1	Steel Casing	7.140	WT	152	0.00	27.40
A	23/02/1974	2	Screen	2.032	AP	141	27.40	28.10

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	26.00	ALLUVIUM

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1			FITZROY RIVER ALLUVIUM

AQUIFER DETAILS

BORE REPORT

REG NUMBER 44164

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	27.10	28.10	SAND	23/02/1974	-13.10	N		4.50	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	23/02/1974	1	44164	27.40	28.10	0.30	PUM	CQ	MONO					

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	23/02/1974	1	1440	-13.11	105	2.50	12.40	4.54	1440			2.90	24.90		18	

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
X	23/02/1974	-13.10	N		NR												

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 44164

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Iffley - 44161**

PART A: PROPERTY DETAILS

Property Name:	Iffley		
Local Bore Name:	-	**Ref No/GW Number:**	44161
Easting (GDA94):	0	**GPS Elevation:**	170
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1973
Casing Stick Up (SU):	**0.08**	**Drilled By**	**Alexander R**
Casing Material	**Steel**	**Internal Diameter**	140
Initial Water Quality Measurement (Driller Log)	3700 (no units)		
Construction Summary (Driller Log)	**Steel Casing 0-23.2**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**-**	**Condition**	**Abandoned - Not Useable**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**no**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	4:50:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore located - decommissioned

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Iffley - 44161**

Photograph 2 **Iffley - 44161**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 44161

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-14-11	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-25-53	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	647509	**MAP-NO**	8553
D/O FILE NO.	515/030/0039	**LOT**	1	**NORTHING**	7540289	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.	30-0039	**PLAN**	KL159	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L41529B	**ORIGINAL DESCRIPTION**	P1V	**ACCURACY**	SKET	**PRES EQUIPMENT**	TE
				GPS ACC			
GIS LAT	-22.236577981	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	IRRIGATION BORE
GIS LNG	148.431340859	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	18/12/1973			**DATA OWNER**	
STATUS	Abandoned but Still Usable	**DRILLERS NAME**	ALEXANDER R				
ROLES	WS	**DRILL COMPANY**	ALEXANDER R				
		METHOD OF CONST.	CABLE TOOL				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	18/12/1973	1	Steel Casing	4.760	WT	203	0.00	23.20
A	18/12/1973	2	Screen	0.080	AP	167	23.40	25.90

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	25.00	ALLUVIUM

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00	23.90	ISAAC RIVER ALLUVIUM

AQUIFER DETAILS

BORE REPORT

REG NUMBER 44161

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	23.50	25.90	GRAV SAND	18/12/1973	-11.90	N	COND 3700	8.80	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	18/12/1973	1	44161	23.40	25.90	0.30	PUM	CQ	TURBINE	24.40				

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	18/12/1973	1	1440	-11.89	120	0.20	9.10	8.84	1440			9.09	23.10	24.40	189	

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
X	04/10/2006	168.39	EST	AHD	N	9 SECOND DEM

WATER ANALYSIS PART1

PIPE	DATE	RD	ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH
A	03/04/1995	1	DPI	954572		PU		27300	7.0		18123.30	17630.25	5155	795	0.5	30.2	

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	03/04/1995	1	4982.0	11.9	543.0	923.0		970.0			9688.0	0.50	0.9	1004.0				

WATER LEVEL DETAILS

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 44161

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
X	18/12/1973	-11.80	N		NR												

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Iffley - 6022**

PART A: PROPERTY DETAILS

Property Name:	Iffley		
Local Bore Name:	-	**Ref No/GW Number:**	6022
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Iffley - 6022**

Photograph 2 **Iffley - 6022**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Iffley - 44162**

PART A: PROPERTY DETAILS

Property Name:	Iffley		
Local Bore Name:	-	**Ref No/GW Number:**	44162
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	**Alexander R**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Test Hole - 76.2 TD**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	no

PHOTOGRAPHIC RECORD

Photograph 1 **Iffley - 44162**

Photograph 2 **Iffley - 44162**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 44162

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-10-17	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-27-45	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	650787	**MAP-NO**	8553
D/O FILE NO.	515/030/0039	**LOT**	11	**NORTHING**	7547451	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.	30-0039	**PLAN**	KL135	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L41529B	**ORIGINAL DESCRIPTION**	P11	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.171613015	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	
GIS LNG	148.46246916	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**				**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	R ALEXANDER				
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	76.20	NO STRATA DETAILS AVAILABLE
2			TEST HOLE ONLY DRILLER R ALEXANDER

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 44162

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Iffley - 44163**

PART A: PROPERTY DETAILS

Property Name:	Iffley		
Local Bore Name:	-	**Ref No/GW Number:**	44163
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	**Alexander R**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Test Hole - 76.2 TD**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	no

PHOTOGRAPHIC RECORD

Photograph 1 **Iffley - 44163**

Photograph 2 **Iffley - 44163**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 44163

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-10-10	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-29-10	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	653229	**MAP-NO**	8553
D/O FILE NO.	515/030/0039	**LOT**	11	**NORTHING**	7547658	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.	30-0039	**PLAN**	KL135	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L41529B	**ORIGINAL DESCRIPTION**	P11	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.169525136	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	
GIS LNG	148.486131587	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**				**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	R ALEXANDER				
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	76.20	NO STRATA DETAILS AVAILABLE
2			TEST HOLE ONLY DRILLER R ALEXANDER

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 44163

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Iffley - 5764**

PART A: PROPERTY DETAILS

Property Name:	Iffley		
Local Bore Name:	-	**Ref No/GW Number:**	5764
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Iffley - 5764**

Photograph 2 **Iffley - 5764**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - Powerline bore**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	Powerline bore	**Ref No/GW Number:**	-
Easting (GDA94):	641899	**GPS Elevation:**	190
Northing:	7519646		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.34**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**3" steel manifold onto 2" HDPE with sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	8:05:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:		**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:** **-**
Sample Collection Point	**Sample Tap**	**Sample Method**		**Bucket**		**Purge Volume**		**20**
Electrical Conductivity (µS/cm)	**1443**	**Temp**	**26.4**	**pH**	**7.28**	**ORP**	**120.8**	**DO (%)** **54.6**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - Powerline bore**

Photograph 2 **Lake Vermont - Powerline bore**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - Yard Bore 1**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	Yard Bore 1	**Ref No/GW Number:**	-
Easting (GDA94):	642611	**GPS Elevation:**	185
Northing:	7519351		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**96**	**Year Drilled:**	~1930
Casing Stick Up (SU):	**0.34**	**Drilled By**	**-**
Casing Material	**steel**	**Internal Diameter**	120
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**poor**	**Pump Type**	-
Power Source	**mains**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**2" HDPE (not connected)**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	50000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**21.385**	**Date / Time of Measurement:**	8:42:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**20.4**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**1512**	**Temp**	**25.6**	**pH**	**7.49**	**ORP**	**187.2**	**DO (%)** **58.9**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore no longer in use due to heavy corrosion in casing. Land owner noted that water is known to have a high sulphur content

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - Yard Bore 1**

Photograph 2 **Lake Vermont - Yard Bore 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - Yard Bore 2**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	Yard Bore 2	**Ref No/GW Number:**	-
Easting (GDA94):	642617	**GPS Elevation:**	190
Northing:	7519347		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	**0.04**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**3" steel manifold onto 2" HDPE**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	50000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	9:00:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

Tank overflow returns to Yard Bore #1

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - Yard Bore 2**

Photograph 2 **Lake Vermont - Yard Bore 2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 132627**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	Green Tank	**Ref No/GW Number:**	132627
Easting (GDA94):	649621	**GPS Elevation:**	170
Northing:	7525089		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2007
Casing Stick Up (SU):	-	**Drilled By**	**Depco**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-70** **Slotted 35.0-40.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**unknown**	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	**tank**	**Approximate Volume**	30000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	10:10:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

Unable to locate, likely buried

GROUNDWATER BORE REPORT CARD

Additional Notes

Anecdotally bore was capped near to ground surface and has likely been trampled or buried

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 132627**

Photograph 2 **Lake Vermont - 132627**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 132627

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-22-27	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-27-10	**MAP-SERIES**	
DATE LOG RECD	25-MAY-07	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	649564	**MAP-NO**	8553
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7525028	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	5		
GIS LAT	-22.3742321	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	
GIS LNG	148.4527022	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	29/04/2007			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	C SHARP				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	29/04/2007	1	Polyvinyl Chloride			175	0.00	6.00
A	29/04/2007	2	Polyvinyl Chloride			125	0.00	70.00
A	29/04/2007	3	Perforated or Slotted Casing				35.00	40.00
A	29/04/2007	4	Gravel Pack				35.00	70.00
A	29/04/2007	5	Bentonite Seal				34.00	35.00
A	29/04/2007	6	Cuttings or other fill between casing and ho				10.00	34.00
A	29/04/2007	7	Grout				0.00	10.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	SAND
2	2.00	10.00	CLAY

BORE REPORT

REG NUMBER 132627

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	10.00	20.00	WEATHERED WRANGLES
4	20.00	35.00	SANDSTONE
5	35.00	40.00	COAL
6	40.00	70.00	SANDSTONE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	35.00	70.00	COAL	29/04/2007	-30.00	N		0.95	Y	FR	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 132627

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 132628**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	132628
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2007
Casing Stick Up (SU):	-	**Drilled By**	**Depco**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-120.0** **PVC Slotted 85.0-95.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 132628**

Photograph 2 **Lake Vermont - 132628**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 132628

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-22-59	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-26-23	**MAP-SERIES**	
DATE LOG RECD	25-MAY-07	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	648220	**MAP-NO**	8553
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7524052	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	5		
GIS LAT	-22.3831633	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	
GIS LNG	148.439742	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	28/04/2007			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	C SHARP				
ROLES	WS	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	28/04/2007	1	Polyvinyl Chloride			175	0.00	6.00
A	28/04/2007	2	Polyvinyl Chloride			125	0.00	120.00
A	28/04/2007	3	Perforated or Slotted Casing				85.00	95.00
A	28/04/2007	4	Gravel Pack				84.00	120.00
A	28/04/2007	5	Cuttings or other fill between casing and ho				10.00	84.00
A	28/04/2007	6	Grout				0.00	10.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.00	SAND
2	3.00	80.00	CLAY AND WEATHERED WRANGLES
3	80.00	85.00	SANDSTONE

BORE REPORT

REG NUMBER 132628

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
4	85.00	95.00	COAL
5	95.00	120.00	SANDSTONE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	85.00	120.00	COAL	28/04/2007	-77.00	N		0.76	Y	FR	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 132628

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158481 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158481
Easting (GDA94):	643243	**GPS Elevation:**	185
Northing:	7522128		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.8**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 94.0** **VWP 2 - 74.0** **VWP 3 - 56.0** **VWP 4 - 38.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	4:20:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 6025 / Temp 27.1

VWP Black - HZ 7093 / Temp 25.6

VWP Yellow - HZ 7062 - Temp 26.2

VWP Blue - HZ 6323 / Temp 27.9

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158481 (VWP)**

Photograph 2 **Lake Vermont - 158481 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158481

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-09	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-23-26	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	643132	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7521949	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.40259288	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2226
GIS LNG	148.3905162	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	11/07/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	11/07/2013	1	Vibrating Wire Piezometer					94.00
B	11/07/2013	2	Vibrating Wire Piezometer					74.00
C	11/07/2013	3	Vibrating Wire Piezometer					56.00
D	11/07/2013	4	Vibrating Wire Piezometer					38.00
D	11/07/2013	5	Grout			125	0.00	102.00
X	11/07/2013	6	Polyvinyl Chloride	5.900	WT	140	0.00	37.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	20.00	LOAM
3	20.00	35.00	SAND AND GRAVEL

BORE REPORT

REG NUMBER 158481

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
4	35.00	37.00	CLAY
5	37.00	91.00	SANDSTONE
6	91.00	97.00	COAL
7	97.00	102.00	NO DATA

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	38.00	97.00	CLAY			N			Y	UC	TERTIARY - UNDEFINED
2	56.00		SDST			N			Y	PS	RANGAL COAL MEASURES
3	74.00		SDST			N			Y	PS	RANGAL COAL MEASURES
4	94.00		COAL			N			Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
D	05/06/2013	178.84	SVY	AHD	R	

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 158481

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158485**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158485
Easting (GDA94):	643243	**GPS Elevation:**	181
Northing:	7522125		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**22.95**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.78**	**Drilled By**	**Hodge Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-22.0** **Perforated 16.0-22.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.257**	**Date / Time of Measurement:**	4:07:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**21**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**560**	**Temp**	**28.9**	**pH**	**7.19**	**ORP**	**-12.1**	**DO (%)** **25.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158485**

Photograph 2 **Lake Vermont - 158485**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158485

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-10	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-23-26	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	643132	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7521943	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.40264472	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2371
GIS LNG	148.390523	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	28/06/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	28/06/2013	1	Polyvinyl Chloride			50	0.00	22.00
A	28/06/2013	2	Perforated or Slotted Casing			50	16.00	22.00
A	28/06/2013	3	Gravel Pack	3.000	GR		14.00	22.00
A	28/06/2013	4	Grout			165	0.00	14.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	6.00	SAND
3	6.00	8.00	LOAM
4	8.00	10.00	SAND
5	10.00	12.00	CLAY

BORE REPORT

REG NUMBER 158485

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	12.00	14.00	LOAM
7	14.00	22.00	CLAY (DRY)

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	16.00	22.00	CLAY						Y	UC	QUATERNARY - UNDEFINED

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	30/04/2013	178.92	SVY	AHD	R	

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 158485

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 100248**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	100248
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1993
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No details Available**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 100248**

Photograph 2 **Lake Vermont - 100248**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 100248

REGISTRATION DETAILS

		BASIN		**LATITUDE**	22-25-57	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-22-35	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	641645	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7518640	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	ATOP EPP364	**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.432604303	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	MGC PHILLIPS CREEK 1
GIS LNG	148.376372758	**COUNTY**				**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Artesian - Condition Unknown	**DATE DRILLED**	24/09/1993			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	PE	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

****** NO RECORDS FOUND ******

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 100248

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165122 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165122
Easting (GDA94):	644182	**GPS Elevation:**	181
Northing:	7520541		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.7**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 83.0** **VWP 2 - 71.0** **VWP 3 - 61.0** **VWP 4 - 40.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	4:22:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 7650 / Temp 21.2

VWP Black - HZ 8804 / Temp 25.0

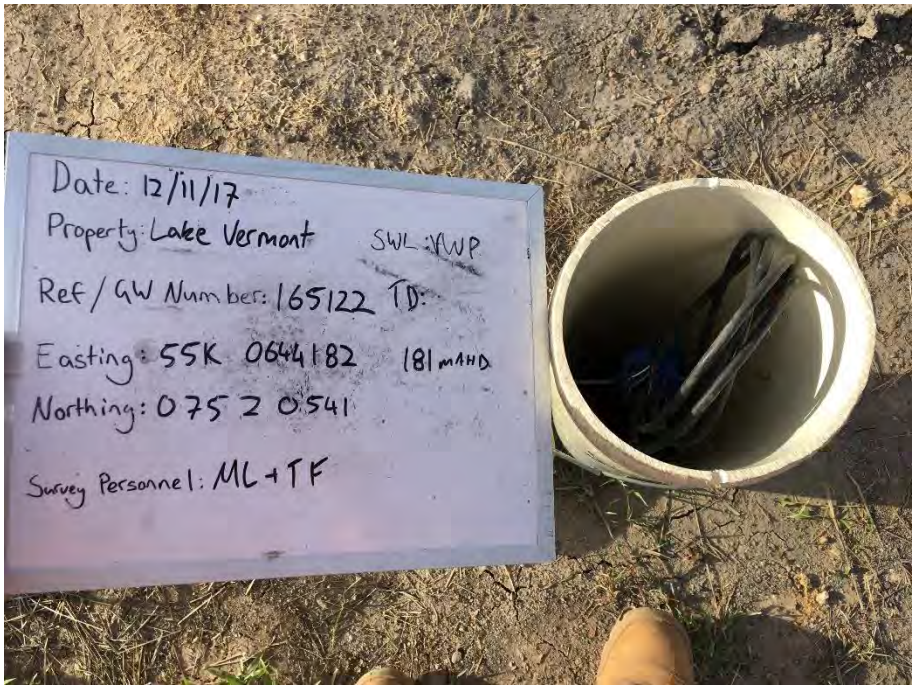
VWP Yellow - HZ 7320 - Temp 27.3

VWP Blue - HZ 7229 / Temp 26.5

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165122 (VWP)**



Photograph 2 **Lake Vermont - 165122 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165122

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-25-01	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-23-59	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	644067	**MAP-NO**	
D/O FILE NO.		**LOT**	2	**NORTHING**	7520357	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.4168878601	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2183
GIS LNG	148.3997413428	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	06/05/2013			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	06/05/2013	1	Vibrating Wire Piezometer					83.00
B	06/05/2013	2	Vibrating Wire Piezometer					71.00
C	06/05/2013	3	Vibrating Wire Piezometer					61.00
D	06/05/2013	4	Vibrating Wire Piezometer					40.00
D	06/05/2013	5	Polyvinyl Chloride			100	0.00	91.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL, BROWN
2	1.00	2.00	CLAY, BROWN
3	2.00	6.00	SAND, BROWN, GRADING TO GREY AT BASE
4	6.00	8.00	CLAY

BORE REPORT

REG NUMBER 165122

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	8.00	9.00	LATERITE, ORANGE-RED
6	9.00	15.00	CLAY, SANDY, REDDISH CREAM
7	15.00	20.00	CLAY, SANDY, GREY
8	20.00	23.00	CLAY, BROWNISH ORANGE. BASE OF TERTIARY 23 MBGL
9	23.00	28.00	SILTSTONE, BROWNISH ORANGE
10	28.00	36.00	SANDSTONE, VERY FINE GRAINED, BROWNISH GREY, BASE OF REWAN AT 36 MBGL
11	36.00	39.00	MUDSTONE, DARK BROWNISH GREY
12	39.00	43.50	SANDSTONE, FINE GRAINED, MEDIUM GREY
13	43.50	44.00	COAL, BLACK
14	44.00	56.40	SANDSTONE, GREY, VERY FINE TO FINE GRAINED. BASE OF WEATHERING AT 47 MBGL
15	56.40	56.80	SILTSTONE, BROWNISH GREY
16	56.80	58.50	CARBONACEOUS MUDSTONE, DARK BLACKISH GREY
17	58.50	59.50	SILTSTONE, BLACKISH GREY, CARBONACEOUS
18	59.50	62.50	COAL, BLACK, LEICHHARDT SEAM
19	62.50	73.50	SILTSTONE, BLACKISH GREY, ABUNDANT SANDSTONE BANDS TOWARDS BASE
20	73.50	80.00	SANDSTONE, SILTY, GREY
21	80.00	86.50	COAL, VERMONT SEAM
22	86.50	87.50	MUDSTONE, DARK GREY
23	87.50	91.00	SANDSTONE, GREY, VERY FINE GRAINED TO MEDIUM GRAINED TOWARDS BASE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	40.00		SDST			N			Y	PS	RANGAL COAL MEASURES
2	61.00		COAL			N			Y	PS	RANGAL COAL MEASURES
3	71.00		SSTO			N			Y	PS	RANGAL COAL MEASURES
4	83.00		COAL			N			Y	PS	RANGAL COAL MEASURES

BORE REPORT

REG NUMBER 165122

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
D	06/05/2013	185.16	EST	AHD	R	BOWEN COAL PTY LTD

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 90475**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	90475
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

unable to access due to railroad corridor and blasting activity

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 90475**

Photograph 2 **Lake Vermont - 90475**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158011**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158011
Easting (GDA94):	640150	**GPS Elevation:**	194
Northing:	7514275		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**33.18**	**Year Drilled:**	2012
Casing Stick Up (SU):	**0.79**	**Drilled By**	**Pioneer Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	Brackish		
Construction Summary (Driller Log)	**PVC 0-32.0** **Slotted 24.5-30.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**18.3**	**Date / Time of Measurement:**	12:48:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**2**	**CO ppm:**	**0**	**O_2 %:**	**21.4**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**6340**	**Temp**	**25.9**	**pH**	**7.03**	**ORP**	**-205**	**DO (%)**	**35.5**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Rotten egg odour

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158011**

Photograph 2 **Lake Vermont - 158011**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158011

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-28-26	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-21-40	**MAP-SERIES**	
DATE LOG RECD	20-JUL-12	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	640035	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7514095	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.47377903	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	MW36
GIS LNG	148.3611312	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	06/07/2012			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	NEIVANDT, ROSS				
ROLES		**DRILL COMPANY**	PIONEER DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	06/07/2012	1	Polyvinyl Chloride	6.000	WT	140	0.00	24.00
A	06/07/2012	2	Polyvinyl Chloride	5.000	WT	60	0.00	32.00
A	06/07/2012	3	Perforated or Slotted Casing	0.400	AP		24.50	30.50
X	06/07/2012	4	Grout			190	0.00	24.00
X	06/07/2012	5	Grout			130	0.00	23.00
X	06/07/2012	6	Bentonite Seal			130	23.00	24.00
X	06/07/2012	7	Gravel Pack			120	24.00	32.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	BLACK SOIL, CRACKING CLAY
2	2.00	6.00	CLAY: YELLOWISH BROWN, SILTY

BORE REPORT

REG NUMBER 158011

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	6.00	12.00	SILT: YELLOW BROWN, CLAYEY
4	12.00	22.00	GRAVLE: CLAYEY, SANDY, BANDED CLAYS, GREYISH YELLOWY BROWN
5	22.00	28.00	SILTSTONE: SANDY, GREY, MEDIUM HARD *
6	28.00	32.00	SANDSTONE:GREY, MEDIUM TO COARSE *

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	26.00	32.00	SSTO SDST			N	BRACKISH	0.09	Y	PS	FAIR HILL FORMATION

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

BORE REPORT

REG NUMBER 158011

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	06/07/2012		7320	7.3						AI	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165323**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165323
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2016
Casing Stick Up (SU):	-	**Drilled By**	**Borat Longyear**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-13** **Slotted 7.0-13.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

unable to access as within mine site

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165323**

Photograph 2 **Lake Vermont - 165323**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165323

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-54	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-20-15	**MAP-SERIES**	
DATE LOG RECD	27-JUN-16	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	637620	**MAP-NO**	
D/O FILE NO.		**LOT**	1	**NORTHING**	7515091	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.46497915	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	PIEZO 1 (169238)
GIS LNG	148.33757581	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	12/05/2016			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	ALMOND, MICHAEL				
ROLES	MM	**DRILL COMPANY**	BOART LONGYEAR				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	12/05/2016	1	Polyvinyl Chloride	5.000	WT	60	0.00	7.00
A	12/05/2016	2	Perforated or Slotted Casing	1.000	AP	60	7.00	13.00
X	12/05/2016	3	Grout			124	0.00	4.00
X	12/05/2016	4	Bentonite Seal			124	4.00	6.00
X	12/05/2016	5	Gravel Pack	3.000	GR	124	6.00	13.20
X	12/05/2016	6	Grout			124	13.20	15.00
X	12/05/2016	7	Centraliser				6.00	13.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	BROWN SAND
2	1.00	5.00	SAND AND GRAVEL

BORE REPORT

REG NUMBER 165323

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	5.00	9.00	SANDY CLAY
4	9.00	11.00	SAND: FINE
5	11.00	13.00	BROWN CLAY
6	13.00	15.00	GREY CLAY AND GRAVEL

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	7.00	13.00	SANC			N			N	SC	QUATERNARY - UNDEFINED
			SAND								

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

BORE REPORT

REG NUMBER 165323

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165324**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165324
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2016
Casing Stick Up (SU):	-	**Drilled By**	**Borat Longyear**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-12** **Slotted 6.0-12.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

unable to access as within mine site

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165324**

Photograph 2 **Lake Vermont - 165324**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165324

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-28-24	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-20-46	**MAP-SERIES**	
DATE LOG RECD	27-JUN-16	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	638481	**MAP-NO**	
D/O FILE NO.		**LOT**	1	**NORTHING**	7514161	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.47330889	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	PIEZO 2 (169239)
GIS LNG	148.34602355	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	12/05/2016			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	ALMOND, MICHAEL				
ROLES	MM	**DRILL COMPANY**	BOART LONGYEAR				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	12/05/2016	1	Polyvinyl Chloride	5.000	WT	60	0.00	6.00
A	12/05/2016	2	Perforated or Slotted Casing	1.000	AP	60	6.00	12.00
X	12/05/2016	3	Grout			124	0.00	3.00
X	12/05/2016	4	Bentonite Seal			124	3.00	5.00
X	12/05/2016	5	Gravel Pack	3.000	GR	124	5.00	12.20
X	12/05/2016	6	Grout			124	12.20	17.50
X	12/05/2016	7	Centraliser				5.00	12.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	BROWN CLAY
2	2.00	7.00	LIGHT BROWN CLAY

BORE REPORT

REG NUMBER 165324

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	7.00	9.00	GREY BROWN CLAY
4	9.00	12.00	LIGHT BROWN CLAY
5	12.00	15.00	GREY CLAY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	6.00	12.00	CLAY			N			N	PS	QUATERNARY - UNDEFINED

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 165324

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158013**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158013
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2012
Casing Stick Up (SU):	-	**Drilled By**	**Pioneer Drilling**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-107.0** **Slotted 99.5-105.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

unable to access due to blasting activity

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158013**

Photograph 2 **Lake Vermont - 158013**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158013

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-26-17	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-20-20	**MAP-SERIES**	
DATE LOG RECD	20-JUL-12	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	637781	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7518065	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.43810195	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	MW34
GIS LNG	148.3388871	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	09/07/2012			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	NEIVANDT, ROSS				
ROLES	MM	**DRILL COMPANY**	PIONEER DRILLLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	09/07/2012	1	Polyvinyl Chloride	6.000	WT	140	0.00	15.00
A	09/07/2012	2	Polyvinyl Chloride	5.000	WT	60	0.00	107.00
A	09/07/2012	3	Perforated or Slotted Casing	0.400	AP		99.50	105.50
X	09/07/2012	4	Grout			190	0.00	15.00
X	09/07/2012	5	Grout			140	0.00	15.00
X	09/07/2012	6	Cuttings or other fill between casing and ho				15.00	86.00
X	09/07/2012	7	Bentonite Seal				86.00	88.00
X	09/07/2012	8	Gravel Pack				88.00	107.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	CLAYEY SILTY BLACK SOIL

BORE REPORT

REG NUMBER 158013

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
2	1.00	1.70	CLAY: BROWN, STIFF
3	1.70	5.10	CLAY: YELLOW BROWN, SILTY, SANDY, IRONSTONE NODULES, SOFT
4	5.10	8.00	SILTSTONE: BROWN, SANDY, HIGHLY WEATHERED
5	8.00	11.00	CLAYSTONE: LIGHT GREY, WEAK
6	11.00	14.00	CLAYSTONE: WHITISH GREY, SILTY, BANDED
7	14.00	20.50	SANDSTONE: YELLOW BROWN, SILTY, FINE GRAINED
8	20.50	25.00	SILTSTONE: GREY, MEDIUM STRENGTH
9	25.00	29.00	SILTSTONE: GREY, MINOR CARB. BEDS
10	29.00	34.50	SILTSTONE: GREY,SANDY, MEDIUM HARD
11	34.50	37.00	SHALE: CARBONACEOUS, DARK GREY BLACK
12	37.00	56.00	SANDSTONE: MEDIUM GREY. MOIST
13	56.00	72.00	SILTSTONE: GREY HARD
14	72.00	73.50	SANDSTONE, MEDIUM GREY
15	73.50	85.50	SILTSTONE: DARK GREY, MINOR HARD BANDS *
16	85.50	86.20	COAL AND CARBONACEOUS SHALE, DRY
17	86.20	99.00	SANDSTONE: GREY, MINOR HARD BANDS *
18	99.00	107.00	SILTSTONE: GREY, SANDY, HARD BANDS *

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	75.00		SSTO			N	SALTY	0.02	N	PS	MORANBAH COAL MEASURES
2	90.00		SDST			N	SALTY	0.05	N	PS	MORANBAH COAL MEASURES
3	107.00		SSTO			N	SALTY	0.05	Y	PS	MORANBAH COAL MEASURES

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 158013

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	09/07/2012		20000	7.6						AI	GB

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165325**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165325
Easting (GDA94):	640412	**GPS Elevation:**	188
Northing:	7516077		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**18.58**	**Year Drilled:**	2016
Casing Stick Up (SU):	**0.87**	**Drilled By**	**Borat Longyear**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-18.0** **Slotted 12.0-18.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**17.203**	**Date / Time of Measurement:**	1:56:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**13.4**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**1439**	**Temp**	**27.9**	**pH**	**6.96**	**ORP**	**33.2**	**DO (%)**	**27.4**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Concrete plinth damaged

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165325**

Photograph 2 **Lake Vermont - 165325**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165325

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-27-27	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-21-49	**MAP-SERIES**	
DATE LOG RECD	27-JUN-16	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	640296	**MAP-NO**	
D/O FILE NO.		**LOT**	1	**NORTHING**	7515897	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.45748204	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	PIEZO 3 (169240)
GIS LNG	148.36350795	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	12/05/2016			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	ALMOND, MICHAEL				
ROLES	MM	**DRILL COMPANY**	BOART LONGYEAR				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	12/05/2016	1	Polyvinyl Chloride	5.000	WT	60	0.00	12.00
A	12/05/2016	2	Perforated or Slotted Casing	1.000	AP	60	12.00	18.00
X	12/05/2016	3	Grout			124	0.00	9.00
X	12/05/2016	4	Bentonite Seal			124	9.00	11.00
X	12/05/2016	5	Gravel Pack	3.000	GR	124	11.00	18.50
X	12/05/2016	6	Centraliser				10.00	18.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.00	BROWN CLAY
2	3.00	5.00	BROWN SANDY CLAY
3	5.00	18.50	BROWN CLAY

BORE REPORT

REG NUMBER 165325

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	12.00	18.00	CLAY			N			N	PS	QUATERNARY - UNDEFINED

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 165325

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 84538**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	84538
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1954
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	Hard		
Construction Summary (Driller Log)	**Steel 0-27.4** **Open hole 27.4-109.7**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 84538**

Photograph 2 **Lake Vermont - 84538**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 84538

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-26-59	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-22-25	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	641354	**MAP-NO**	8553
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7516737	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.	C4701/E616	**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L58282B	**ORIGINAL DESCRIPTION**	P4	**ACCURACY**	UNKN	**PRES EQUIPMENT**	WL
				GPS ACC			
GIS LAT	-22.449808573	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	
GIS LNG	148.373707013	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/01/1954			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1954	1	Steel Casing	4.760	WT	152	0.00	27.40
A	01/01/1954	2	Open Hole				27.40	109.70

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	109.70	NO STRATA DETAILS AVAILABLE
902			18.3 M SWL 20/12/1988
903			5.7 M3D EST. 20/12/1988
910			COND:HARD

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 84538

AQUIFER DETAILS

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**12/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158010**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158010
Easting (GDA94):	642638	**GPS Elevation:**	186
Northing:	7520120		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**35.2**	**Year Drilled:**	2012
Casing Stick Up (SU):	**0.9**	**Drilled By**	**Pioneer Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	potable		
Construction Summary (Driller Log)	**PVC 0-34.5** **Slotted 27.0-33.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**17.915**	**Date / Time of Measurement:**	3:27:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**21.4**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**1236**	**Temp**	**27.1**	**pH**	**6.95**	**ORP**	**9.1**	**DO (%)** **31.1**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

MW35 written on inside of cap

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158010**

Photograph 2 **Lake Vermont - 158010**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158010

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-25-15	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-23-05	**MAP-SERIES**	
DATE LOG RECD	20-JUL-12	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	642528	**MAP-NO**	
D/O FILE NO.		**LOT**	4	**NORTHING**	7519939	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.42079367	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	MW35
GIS LNG	148.3848372	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	08/07/2012			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	NEIVANDT, ROSS				
ROLES	MM	**DRILL COMPANY**	PIONEER DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	08/07/2012	1	Polyvinyl Chloride	6.000	WT	140	0.00	12.00
A	08/07/2012	2	Polyvinyl Chloride	5.000	WT	60	0.00	34.50
A	08/07/2012	3	Perforated or Slotted Casing	0.400	AP		27.00	33.00
X	08/07/2012	4	Grout			190	0.00	12.00
X	08/07/2012	5	Grout			120	0.00	24.00
X	08/07/2012	6	Bentonite Seal			120	24.00	26.00
X	08/07/2012	7	Gravel Pack			120	26.00	34.50

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.50	BLACK SOIL, CLAY, STIFF
2	1.50	6.00	CLAY: YELLOWY BROWN, SILTY, STIFF

BORE REPORT

REG NUMBER 158010

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	6.00	8.50	CLAY: YELLOWY BROWN, SANDY
4	8.50	11.00	SAND: REDDISH BROWN, CLAYEY, WEAK
5	11.00	12.50	GRAVELLY COBBLE, COLLUVIAL, DRY
6	12.50	14.00	CLAYSTONE: GREY, WEAK
7	14.00	15.70	CLAYSTONE: YELLOWY BROWN, WEAK
8	15.70	16.00	CLAY: GREY
9	16.00	24.50	CLAY: YELLOWY BROWN, SILTY
10	24.50	27.00	CLAY: REDDISH BROWN, SILTY, MOIST, PLASTIC
11	27.00	31.50	SHALE: REDDISH DARK GREY, WEATHERED, WET *
12	31.50	34.50	SILTSTONE: GREY, FRESH *

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	30.00	33.00	SHLE			N	POTABLE	0.09	Y	PS	FAIR HILL FORMATION
			SSTO								

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 158010

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	08/07/2012		1240	8.1						AI	GB

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - River Bore**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	River Bore	**Ref No/GW Number:**	-
Easting (GDA94):	654027	**GPS Elevation:**	166
Northing:	7526947		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**39**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.55**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.614**	**Date / Time of Measurement:**	10:00:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**616**	**Temp**	**26.1**	**pH**	**6.5**	**ORP**	**43**	**DO (%)** **37**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore unused since installation. Structure erected ready to house bore equipment

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - River Bore**

Photograph 2 **Lake Vermont - River Bore**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 43329**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	43329
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1974
Casing Stick Up (SU):	-	**Drilled By**	**Archie**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No Construction details, only strata**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Site is within 20m of drainage channel

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 43329**

Photograph 2 **Lake Vermont - 43329**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 43329

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-04	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-29-11	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	653010	**MAP-NO**	8553
D/O FILE NO.	50-1511	**LOT**	2	**NORTHING**	7521999	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.	C2802/E501	**PLAN**	RP813170	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L20784B	**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	UNKN	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.401276408	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	RIVER BORE
GIS LNG	148.486447569	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/01/1974			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	ARCHIE				
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.	CABLE TOOL				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	11.88	VERY SANDY LOAM
2	11.88	12.19	CLAY AND SAND
3	12.19	13.10	GRAVEL

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	1.00		ISAAC RIVER ALLUVIUM

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME

BORE REPORT

REG NUMBER 43329

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	12.00	13.00	GRAV SAND			N			Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158480 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158480
Easting (GDA94):	649913	**GPS Elevation:**	166
Northing:	7522233		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2013
Casing Stick Up (SU):	-	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 94.0** **VWP 2 - 74.0** **VWP 3 - 56.0** **VWP 4 - 38.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 7007 / Temp 26.3

VWP Black - HZ 7509 / Temp 26.0

VWP Yellow - HZ 7208 - Temp 27.9

VWP Blue - HZ 7207 / Temp 27.3

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158480 (VWP)**

Photograph 2 **Lake Vermont - 158480 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158480

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-04	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-27-19	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	649801	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7522051	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.40110024	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV1235C
GIS LNG	148.4552793	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	09/07/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	09/07/2013	1	Vibrating Wire Piezometer					94.00
B	09/07/2013	2	Vibrating Wire Piezometer					74.00
C	09/07/2013	3	Vibrating Wire Piezometer					56.00
D	09/07/2013	4	Vibrating Wire Piezometer					38.00
X	09/07/2013	5	Grout				0.00	94.00
X	09/07/2013	6	Polyvinyl Chloride	5.900	WT	125	0.00	57.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	18.00	CLAY
3	18.00	38.00	SAND AND GRAVEL

BORE REPORT

REG NUMBER 158480

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
4	38.00	45.00	LOAM
5	45.00	57.00	CLAY
6	57.00	74.00	SANDSTONE
7	74.00	80.00	COAL
8	80.00	94.00	SANDSTONE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	38.00		SAND	09/07/2013	-99.99	N			Y	UC	TERTIARY - UNDEFINED
			GRAV								
2	56.00		CLAY	09/07/2013	-99.99	N			Y	UC	TERTIARY - UNDEFINED
3	74.00		COAL	09/07/2013	-99.99	N			Y	PS	RANGAL COAL MEASURES
4	94.00		SDST	09/07/2013	-99.99	N			Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	29/05/2013	170.81	EST	AHD	R	

WATER ANALYSIS PART1

BORE REPORT

REG NUMBER 158480

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - Unknown 1**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	
Easting (GDA94):	650783	**GPS Elevation:**	160
Northing:	7522929		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**131**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.16**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**exploration**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**30.965**	**Date / Time of Measurement:**	1:28:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.8**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**16610**	**Temp**	**27.9**	**pH**	**6.56**	**ORP**	**49.9**	**DO (%)**	**30.6**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Likely exploration hole. Looks to have been recently drilled

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - Unknown 1**

Photograph 2 **Lake Vermont - Unknown 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 2500**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	2500
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 2500**

Photograph 2 **Lake Vermont - 2500**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158484**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158484
Easting (GDA94):	648152	**GPS Elevation:**	163
Northing:	7524058		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**19.45**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.85**	**Drilled By**	**Hodge Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-19.0** **Slotted 13.0-19.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal steel monument - no cap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**18.116**	**Date / Time of Measurement:**	3:00:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**13.5**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**1401**	**Temp**	**26.8**	**pH**	**7.18**	**ORP**	**112.8**	**DO (%)** **62.8**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Plinth damaged

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158484**

Photograph 2 **Lake Vermont - 158484**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158484

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-05	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-26-17	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	648038	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7523875	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.38477405	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2370
GIS LNG	148.4379885	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	27/06/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	27/06/2013	1	Polyvinyl Chloride			50	0.00	19.00
A	27/06/2013	2	Perforated or Slotted Casing			50	13.00	19.00
A	27/06/2013	3	Gravel Pack	3.000	GR		12.00	19.00
A	27/06/2013	4	Grout			165	0.00	12.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	3.00	SAND
3	3.00	11.00	LOAM
4	11.00	14.00	CLAY
5	14.00	19.00	SAND

BORE REPORT

REG NUMBER 158484

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.00	19.00	SAND						Y	UC	QUATERNARY - UNDEFINED

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	29/04/2013	168.30	SVY	AHD	R	

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 158484

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165124 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165124
Easting (GDA94):	648156	**GPS Elevation:**	163
Northing:	7524044		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.49**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 78.0** **VWP 2 - 67.50** **VWP 3 - 50.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**No**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:		**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**VWP Cable**	**Sample Method**		**VWP Reader**		**Purge Volume**		**-**	
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)**	**-**

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 7049 / Temp 27.3

VWP Yellow - HZ 7725 - Temp 26.4

VWP Blue - HZ 6606 / Temp 26.8

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165124 (VWP)**

Photograph 2 **Lake Vermont - 165124 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165124

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-06	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-26-17	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	648038	**MAP-NO**	
D/O FILE NO.		**LOT**	H	**NORTHING**	7523864	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.3848740787	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2375W
GIS LNG	148.4379948207	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	27/05/2013			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	27/05/2013	1	Vibrating Wire Piezometer					78.00
B	27/05/2013	2	Vibrating Wire Piezometer					67.50
C	27/05/2013	3	Vibrating Wire Piezometer					50.00
C	27/05/2013	4	Polyvinyl Chloride			100	0.00	82.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	7.00	SAND, LIGHT BROWN, FINE TO MEDIUM GRAINED
2	7.00	8.00	SAND, LIGHT BROWN, CONTAINS GRANULAR CONCRETIONS
3	8.00	10.80	CLAY, LIGHT BROWN
4	10.80	15.00	SANDY CLAY, LIGHT BROWN
5	15.00	20.00	SAND, LIGHT BROWN, COARSEMING TO GRAVEL AT BASE. BASE TERTIARY AT 20 MBGL

BORE REPORT

REG NUMBER 165124

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	20.00	22.50	SILTSTONE, LIGHT PINKISH-BROWN
7	22.50	60.00	SANDSTONE, LIGHT BROWISH GREY, VERY FINE GRAINED GRADING TO MEDIUM TOWARDS BASE
8	60.00	64.50	SILTSTONE, MEDIUM BROWNISH GREY, ALTERNATING BANDS OF VERY FINE SANDSTONE
9	64.50	69.00	COAL, VERMONT SEAM, BASE OF WEATHERING 68.7M
10	69.00	71.00	SILTSTONE, MEDIUM GREY
11	71.00	82.00	SANDSTONE, LIGHT GREY, VERY FINE GRAINED

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	50.00		SDST			N			Y	PS	RANGAL COAL MEASURES
2	67.50		COAL			N			Y	PS	RANGAL COAL MEASURES
3	78.00		SDST			N			Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
C	27/05/2013	168.36	EST	AHD	R	BOWEN COAL PTY LTD

WATER ANALYSIS PART1

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165124

PIPE	DATE	RD	ANALYST	QAN	DEPTH (m)	RMK	SRC	COND (uS/cm)	pH	Si (mg/L)	TOTAL IONS (mg/L)	TOTAL SOLIDS (mg/L)	HARD	ALK	FIG. OF MERIT	SAR	RAH
D	28/05/2013	1	ALS	13721				10600			7559.98	7559.98	2305	1	0.5	17.9	

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
D	28/05/2013	1	1970.0	8.0	275.0	393.0	0.52		< 0.05		4660.0			253.0	< 0.01	< 0.01	0.38	< 0.01

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 165123 (VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	165123
Easting (GDA94):	647629	**GPS Elevation:**	164
Northing:	7526188		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.74**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 125.0** **VWP 2 - 108.0** **VWP 3 - 93.50** **VWP 4 - 73.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	N/A
Headworks	**No**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 6004 / Temp 25.6

VWP Black - HZ 6270 / Temp 26.2

VWP Yellow - HZ 7334 - Temp 27.0

VWP Blue - HZ 7163 / Temp 28.1

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 165123 (VWP)**

Photograph 2 **Lake Vermont - 165123 (VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 165123

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-21-56	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-25-58	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	647515	**MAP-NO**	
D/O FILE NO.		**LOT**	2	**NORTHING**	7526007	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP260662	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.3655688112	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2372R
GIS LNG	148.432719338	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	20/08/2013			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	20/08/2013	1	Vibrating Wire Piezometer					125.00
B	20/08/2013	2	Vibrating Wire Piezometer					108.00
C	20/08/2013	3	Vibrating Wire Piezometer					93.50
D	20/08/2013	4	Vibrating Wire Piezometer					73.00
D	20/08/2013	5	Polyvinyl Chloride			100	0.00	136.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL, BROWN, CLAYEY
2	1.00	3.00	CLAYEY SAND, ORANGE-BROWN
3	3.00	6.00	CLAY, REDDISH GREY, LATERITIC IN PLACES
4	6.00	8.00	SAND, BROWN

BORE REPORT

REG NUMBER 165123

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	8.00	10.00	CLAYEY SAND, CREAM BROWN, COARSE GRAINED
6	10.00	11.00	SAND, BROWN
7	11.00	22.00	SANDY CLAY, BROWN, BASE OF TERTIARY AT 22 M BGL
8	22.00	26.00	SANDSTONE, VERY FINE GRAINED, ORANGE WHITE
9	26.00	28.00	CLAY, CREAMY WHITE, SANDY IN PLACES
10	28.00	46.00	SANDSTONE, BROWNISH GREY, FINE GRAINED
11	46.00	48.00	MUDSTONE, DARK BROWNISH-GREY, COALY. BASE OF WEATHERING AT 48 MBGL
12	48.00	49.00	SILTSTONE, MEDIUM GREY, SANDY IN PLACES
13	49.00	50.00	CARBONACEOUS MUDSTONE, DARK GREY
14	50.00	52.00	MUDSTONE, DARK GREY
15	52.00	54.00	SANDSTONE, GREY
16	54.00	55.00	COAL, BLACK
17	55.00	57.00	SILTSTONE, MEDIUM GREY, SANDY IN PLACES
18	57.00	76.00	SANDSTONE, BROWNISH GREY, VERY FINE RAINED BECOMING LIGHT WHITISH GREY, FINE TO MEDIUM GRAINED TOWARDS BASE
19	76.00	78.00	SILTSTONE, MEDIUM GREY, MUDSTONE BANDS
20	78.00	93.00	SANDSTONE, MEDUIM GREY, VERY FINE TO FINE RAINED, WITH ALTERNATING BANDS OF SILTSTONE
21	93.00	94.00	COAL, VERMONT UPPER SEAM
22	94.00	95.00	SANDSTONE, GREY, VERY FINE TO FINE GRAINED
23	95.00	97.00	CARBONACEOUS MUDSTONE, DARK GREY, MUDSTONE BANDS, COALY IN PLACES
24	97.00	102.00	SILTSTONE, MEDIUM GREY
25	102.00	119.00	SANDSTONE, LIGHT GREY, VERY FINE TO FINE GRAINED, SIDERITIC IN PLACES BETWEEN 105 AND 109M
26	119.00	122.50	SILTSTONE, MEDIUM GREY
27	122.50	129.00	COAL, VERMONT LOWER SEAM
28	129.00	136.00	SILTSTONE, MEDIUM GREY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME

BORE REPORT

REG NUMBER 165123

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	73.00		SDST			N			Y	PS	RANGAL COAL MEASURES
2	93.50		COAL			N			Y	PS	RANGAL COAL MEASURES
3	108.00		SDST			N			Y	PS	RANGAL COAL MEASURES
4	125.00		COAL			N			Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
D	20/08/2013	166.91	EST	AHD	R	BOWEN BASIN COAL PTY LTD

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 165123

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158483**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158483
Easting (GDA94):	645638	**GPS Elevation:**	171
Northing:	7522932		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**20.71**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.74**	**Drilled By**	**Hodge Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-20.0** **Slotted 14.0-20.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal steel monument - no cap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**DRY**	**Date / Time of Measurement:**	4:49:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**16.1**	
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**			
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)**	**-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158483**

Photograph 2 **Lake Vermont - 158483**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158483

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-43	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-24-49	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	645525	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7522751	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.39514335	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2369
GIS LNG	148.4136916	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	25/06/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	25/06/2013	1	Polyvinyl Chloride			50	0.00	20.00
A	25/06/2013	2	Perforated or Slotted Casing			50	14.00	20.00
A	25/06/2013	3	Gravel Pack	3.000	GR		12.00	20.00
A	25/06/2013	4	Grout			165	0.00	12.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	TOPSOIL
2	1.00	4.00	CLAY
3	4.00	10.00	LOAM
4	10.00	15.00	RED CLAY
5	15.00	20.00	CLAY (DRY)

BORE REPORT

REG NUMBER 158483

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.00	20.00	CLAY						Y	UC	QUATERNARY - UNDEFINED

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	28/04/2013	173.40	SVY	AHD	R	

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 158483

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**11/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Lake Vermont - 158482(VWP)**

PART A: PROPERTY DETAILS

Property Name:	Lake Vermont		
Local Bore Name:	-	**Ref No/GW Number:**	158482
Easting (GDA94):	645638	**GPS Elevation:**	174
Northing:	7522933		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	2013
Casing Stick Up (SU):	**0.8**	**Drilled By**	**Hodge Drilling**
Casing Material	**Grouted VWP**	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**VWP 1 - 137.0** **VWP 2 - 116.0** **VWP 3 - 86.0** **VWP 4 - 65.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**No**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**VWP Cable**	**Sample Method**	**VWP Reader**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

VWP - Readings taken but calibration information required to process

GROUNDWATER BORE REPORT CARD

Additional Notes

VWP Red - HZ 6552 / Temp 26.6

VWP Black - HZ 7247 / Temp 27.8

VWP Yellow - HZ 5563 - Temp no response

VWP Blue - HZ 6959 / Temp 28.5

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Lake Vermont - 158482(VWP)**

Photograph 2 **Lake Vermont - 158482(VWP)**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 158482

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-42	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-24-49	**MAP-SERIES**	
DATE LOG RECD	06-AUG-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	645525	**MAP-NO**	
D/O FILE NO.	50-0699	**LOT**	4	**NORTHING**	7522752	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS382	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.39513789	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	LV2218
GIS LNG	148.4136909	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	16/07/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	DITCHMEN, RAY				
ROLES	MM	**DRILL COMPANY**	HODGE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	16/07/2013	1	Vibrating Wire Piezometer					137.00
B	16/07/2013	2	Vibrating Wire Piezometer					116.00
C	16/07/2013	3	Vibrating Wire Piezometer					86.00
D	16/07/2013	4	Vibrating Wire Piezometer					65.00
D	16/07/2013	5	Polyvinyl Chloride	5.900	WT	140	0.00	36.00
D	16/07/2013	6	Grout			140	0.00	137.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	SOIL
2	1.00	10.00	CLAY
3	10.00	20.00	LOAM

BORE REPORT

REG NUMBER 158482

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
4	20.00	34.00	SAND AND GRAVEL
5	34.00	36.00	CLAY
6	36.00	85.00	SANDSTONE
7	85.00	88.00	COAL
8	88.00	135.00	SANDSTONE
9	135.00	140.00	COAL
10	140.00	147.00	SANDSTONE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	65.00		SDST						Y	PS	RANGAL COAL MEASURES
2	86.00		COAL						Y	PS	RANGAL COAL MEASURES
3	116.00		SDST						Y	PS	RANGAL COAL MEASURES
4	137.00		COAL						Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	06/06/2013	173.29	SVY	AHD	R	

BORE REPORT

REG NUMBER 158482

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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**** End of Report. Produced:** 30/01/2018 06:54:28 AM ******

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - Unknown 1**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	Yard Bore Large	**Ref No/GW Number:**	-
Easting (GDA94):	656849	**GPS Elevation:**	149
Northing:	7515959		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**74**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.27**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**11.705**	**Date / Time of Measurement:**	8:05:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**2**	**O_2 %:**	**19.8**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**1324**	**Temp**	**26.6**	**pH**	**6.95**	**ORP**	**99.2**	**DO (%)**	**46**

COMMENTS

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore drilled by McCarther Coal during exploration. Hole left open as water quality was not to be 'good'. Never Used

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - Unknown 1**

Photograph 2 **Leichardt - Unknown 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - Unknown 2**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	Yard Bore Small	**Ref No/GW Number:**	-
Easting (GDA94):	656850	**GPS Elevation:**	149
Northing:	7515962		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**178**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.13**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	102
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**11.26**	**Date / Time of Measurement:**	8:44:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19**
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**140**	**Temp**	**26.2**	**pH**	**6.85**	**ORP**	**106.8**	**DO (%)** **37.1**

COMMENTS

Casing to 60m

GROUNDWATER BORE REPORT CARD

Additional Notes

Info from Cap, 'Bore ID BB1333'. Strong rotten egg odour. Low EC, possiably heavily stratified

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - Unknown 2**

Photograph 2 **Leichardt - Unknown 2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 136091/1**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	136091
Easting (GDA94):	650061	**GPS Elevation:**	174
Northing:	7508592		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**77**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.18**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	141
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**mains**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**45.087**	**Date / Time of Measurement:**	10:04:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**20.2**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**1662**	**Temp**	**27.3**	**pH**	**6.79**	**ORP**	**-84.9**	**DO (%)**	**30.6**

COMMENTS

GROUNDWATER BORE REPORT CARD

Additional Notes

*Multiple bores present. No filed measurements directly correlate to bore report

SUPPORTING INFORMATION	**Drillers Log**	**yes***	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 136091/1**

Photograph 2 **Leichardt - 136091/1**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 136091

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-31-21	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-27-34	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	650099	**MAP-NO**	
D/O FILE NO.	520/001/0105	**LOT**	7	**NORTHING**	7508605	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS53	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	20		
GIS LAT	-22.5225036	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	
GIS LNG	148.4594489	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	16/12/2002			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	MCCARTHY, DAVID IAN FREDERICK				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	16/12/2002	1	Polyvinyl Chloride		WT		0.00	66.00
A	16/12/2002	2	Perforated or Slotted Casing	6.000	AP		58.00	62.00
A	16/12/2002	3						

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOPSOIL
2	0.50	11.00	DARK BROWN CLAY
3	11.00	18.00	RED CLAY
4	18.00	25.00	LIGHT BROWN CLAY
5	25.00	42.00	BROWN SILTSTONE
6	42.00	45.00	GREY BROWN SILTSTONE

BORE REPORT

REG NUMBER 136091

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	45.00	51.00	GREY SILTSTONE
8	51.00	55.00	CARBINACIOUS SILTSTONE
9	55.00	69.00	LIGHT GREY SILTSTONE
10	69.00	70.00	GREY SILTSTONE

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	60.50		SSTO	17/02/2002	-99.99	N		0.40	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 136091

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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**** End of Report. Produced:** 13/11/2017 08:10:42 PM ******

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 136091/2**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	136091
Easting (GDA94):	650091	**GPS Elevation:**	171
Northing:	7508608		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.32**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow gauge
Headworks	**2" OD HDPE**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	10:15:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

*Multiple bores present. No filed measurements directly correlate to bore report

SUPPORTING INFORMATION	**Drillers Log**	**yes***	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 136091/2**

Photograph 2 **Leichardt - 136091/2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 136091/3**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	136091
Easting (GDA94):	650116	**GPS Elevation:**	186
Northing:	7508649		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**85**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.47**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	127
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Good**	**Pump Type**	no
Power Source	**mains**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**46.65**	**Date / Time of Measurement:**	10:30:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.1**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**4750**	**Temp**	**27.6**	**pH**	**6.85**	**ORP**	**-119.4**	**DO (%)**	**30.1**

COMMENTS

GROUNDWATER BORE REPORT CARD

Additional Notes

*Multiple bores present. No filed measurements directly correlate to bore report

SUPPORTING INFORMATION	**Drillers Log**	**yes***	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 136091/3**

Photograph 2 **Leichardt - 136091/3**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 136091/4**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	136091
Easting (GDA94):	650106	**GPS Elevation:**	168
Northing:	7508653		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**56**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.34**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	115
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**No**	**Condition**	**Poor**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**No**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**45.407**	**Date / Time of Measurement:**	10:40:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.4**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**4419**	**Temp**	**27.2**	**pH**	**7.06**	**ORP**	**58.4**	**DO (%)**	**15.6**

COMMENTS

GROUNDWATER BORE REPORT CARD

Additional Notes

*Multiple bores present. No filed measurements directly correlate to bore report

SUPPORTING INFORMATION	**Drillers Log**	**yes***	**Meeting With Land Representative**	**yes**	**Photo**	Yes

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 136091/4**

Photograph 2 **Leichardt - 136091/4**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 44625**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	44625
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1973
Casing Stick Up (SU):	-	**Drilled By**	**SG & SM Shelly**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Steel Casing 0-53.3** **Open Hole 53.3-57.9**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	No

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 44625**

Photograph 2 **Leichardt - 44625**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 44625

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-30-53	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-27-46	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	650437	**MAP-NO**	8552
D/O FILE NO.	50-0714	**LOT**	7	**NORTHING**	7509443	**MAP NAME**	COTHERSTONE
R/O FILE NO.	C4631/E385	**PLAN**	CNS53	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L41648B	**ORIGINAL DESCRIPTION**	P7	**ACCURACY**		**PRES EQUIPMENT**	HS
				GPS ACC			
GIS LAT	-22.514904647	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	
GIS LNG	148.46265431	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	02/08/1973			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	SG SHELLEY				
ROLES	WS	**DRILL COMPANY**	SG & SM SHELLEY				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	02/08/1973	1	Steel Casing	4.760	WT	127	0.00	53.30
A	02/08/1973	2	Open Hole				53.30	57.90

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.61	SOIL
2	0.61	1.22	SAND-CLAYBOUND
3	1.22	7.32	ALLUVIAL
4	7.32	24.99	CLAY
5	24.99	37.49	SANDSTONE
6	37.49	37.80	HARD SHALE
7	37.80	42.37	SANDSTONE

BORE REPORT

REG NUMBER 44625

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
8	42.37	47.85	SHALE
9	47.85	49.07	WHITE SANDSTONE
10	49.07	51.82	SHALE
11	51.82	54.56	COAL
12	54.56	57.91	SHALE & SANDSTONE

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	25.00		BLACKWATER GROUP

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	51.00	54.00	COAL	02/08/1973	-36.60	N	GOOD	2.27	Y	FR	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
X	04/10/2006	170.68	EST	AHD	N	9 SECOND DEM

WATER ANALYSIS PART1

A	27/04/1993	1 GCL	148475	PU	GB	4460	7.9	33	2843.02	2543.78	1071	544	0.9	7.7	0.00

BORE REPORT

REG NUMBER 44625

WATER ANALYSIS PART 2

PIPE	DATE	RD	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	27/04/1993	1	578.4	3.6	123.0	185.9	0.00	652.8	0.00	5.4	1212.0	0.20	0.0	81.7				

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
X	02/08/1973	-36.57	N		NR												

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 90470**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	90470
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1993
Casing Stick Up (SU):	-	**Drilled By**	**McCarthy Drilling**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No Construction details, only strata**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

DNR report lists status as 'abandoned and destroyed'

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	No

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 90470**

Photograph 2 **Leichardt - 90470**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90470

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-29-10	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-12	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	656369	**MAP-NO**	8552
D/O FILE NO.	50-0714	**LOT**	7	**NORTHING**	7512572	**MAP NAME**	COTHERSTONE
R/O FILE NO.		**PLAN**	CNS53	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P7	**ACCURACY**	UNKN	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.4861123	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	TEST HOLE 1/93
GIS LNG	148.5200086	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	27/07/1993			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	D MCCARTHY				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOP SOIL
2	0.50	7.00	CLAY
3	7.00	16.00	SAND
4	16.00	36.00	SANDSTONE & MINOR SILTSTONE BANDS

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DME	1	0.00		TERTIARY SEDIMENTS

AQUIFER DETAILS

BORE REPORT

REG NUMBER 90470

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	16.00	28.00	SAND SDST	27/07/1993	-9999.00	N	SALTY		Y	PS	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 90471**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	90471
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1993
Casing Stick Up (SU):	-	**Drilled By**	**McCarthy Drilling**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No Construction details, only strata**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

DNR report lists status as 'abandoned and destroyed'

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	No

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 90471**

Photograph 2 **Leichardt - 90471**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90471

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-29-38	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-12	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	656361	**MAP-NO**	8552
D/O FILE NO.	50-0714	**LOT**	7	**NORTHING**	7511724	**MAP NAME**	COTHERSTONE
R/O FILE NO.		**PLAN**	CNS53	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P7	**ACCURACY**	UNKN	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.49377011	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	TEST HOLE 2/93
GIS LNG	148.5200086	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	28/07/1993			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	D MCCARTHY				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOP SOIL
2	0.50	5.00	CLAY
3	5.00	16.00	SANDY CLAY
4	16.00	22.00	GRAVEL
5	22.00	41.00	SANDSTONE WITH MINOR SILTSTONE BANDS
6	41.00	45.50	COAL & CARBONACEOUS SHALE
7	45.50	49.00	SILTSTONE
8	49.00	51.00	COAL & CARBONACEOUS SHALE
9	51.00	54.00	SANDSTONE

STRATIGRAPHY DETAILS

BORE REPORT

REG NUMBER 90471

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DME	1	0.00	41.00	TERTIARY SEDIMENTS
DME	2	41.00		BLACKWATER GROUP

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	33.00		SDST	28/07/1993	-9999.00	N	SALTY		Y	PS	DUARINGA FORMATION
2	41.00	45.50	COAL	28/07/1993	-9999.00	N	SALTY		Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 90471

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 90474**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	90474
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1993
Casing Stick Up (SU):	-	**Drilled By**	**McCarthy Drilling**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-48.0** **PVC Slotted 30.0-48.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	No

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 90474**

Photograph 2 **Leichardt - 90474**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90474

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-30-00	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-12	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	656354	**MAP-NO**	8552
D/O FILE NO.	50-0714	**LOT**	7	**NORTHING**	7511038	**MAP NAME**	COTHERSTONE
R/O FILE NO.		**PLAN**	CNS53	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P7	**ACCURACY**	UNKN	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.49996929	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	CASED HOLE5/93
GIS LNG	148.5200086	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	31/07/1993			**DATA OWNER**	
STATUS	Abandoned but Still Usable	**DRILLERS NAME**	D MCCARTHY				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	30/07/1993	1	Polyvinyl Chloride	5.900	WT	190	0.00	18.00
A	30/07/1993	2	Polyvinyl Chloride	5.900	WT	140	0.00	48.00
A	30/07/1993	3	Perforated or Slotted Casing			140	30.00	48.00
A	30/07/1993	4	Gravel Pack	12.000	GR		30.00	48.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	TOP SOIL
2	1.00	4.00	CLAY
3	4.00	5.00	SAND
4	5.00	8.00	CLAY
5	8.00	13.00	SAND

BORE REPORT

REG NUMBER 90474

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	13.00	31.50	SANDY CLAY
7	31.50	43.00	COARSE SANDY CLAY
8	43.00	46.00	SAND
9	46.00	54.00	SANDSTONE

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DME	1	0.00	13.00	ISAAC RIVER ALLUVIUM
DME	2	13.00	46.00	TERTIARY SEDIMENTS
DME	3	46.00		BLACKWATER GROUP

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	43.00	46.00	SAND	31/07/1993	-30.00	N	SALTY	4.30	Y	UC	DUARINGA FORMATION

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 90474

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 89493**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	89493
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1993
Casing Stick Up (SU):	-	**Drilled By**	**McCarthy Drilling**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-66.0** **Open Hole 63.0-72.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	No

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 89493**

Photograph 2 **Leichardt - 89493**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 89493

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-30-24	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-11	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	656309	**MAP-NO**	8552
D/O FILE NO.	50-0714	**LOT**	7	**NORTHING**	7510312	**MAP NAME**	COTHERSTONE
R/O FILE NO.		**PLAN**	CNS53	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P7	**ACCURACY**	UNKN	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.50653312	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	
GIS LNG	148.519644	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	23/05/1993			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	D MCCARTHY				
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	23/05/1993	1	Plastic Casing	5.000	WT	140	0.00	66.00
A	23/05/1993	2	Perforated or Slotted Casing		AP	140	51.00	63.00
A	23/05/1993	3	Gravel Pack		GR	171		
A	23/05/1993	4	Open Hole			140	63.00	72.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOPSOIL
2	0.50	5.00	CLAY
3	5.00	8.50	SAND
4	8.50	24.00	CLAY
5	24.00	39.00	SILTSTONE

BORE REPORT

REG NUMBER 89493

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION	
6	39.00	40.00	SANDSTONE	
7	40.00	51.00	SILTSTONE	
8	51.00	53.50	CARBINATIOUS SILTSTONE	*
9	53.50	63.00	CARB, COAL & ASH	*
10	63.00	72.00	SANDSTONE	
903			SUPPLY: ?	
910			QUALITY: ?	

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	51.00	63.00	COAL						N	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

BORE REPORT

REG NUMBER 89493

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 90472**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	90472
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1993
Casing Stick Up (SU):	-	**Drilled By**	**McCarthy Drilling**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No Construction details, only strata**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

DNR report lists status as 'abandoned and destroyed'

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	No

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 90472**

Photograph 2 **Leichardt - 90472**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90472

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-29-13	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-29-29	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	653417	**MAP-NO**	8552
D/O FILE NO.	50-0714	**LOT**	7	**NORTHING**	7512498	**MAP NAME**	COTHERSTONE
R/O FILE NO.		**PLAN**	CNS53	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P7	**ACCURACY**	SKET	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.487051478	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	TEST HOLE 3/93
GIS LNG	148.491325232	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	29/07/1993			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	D MCCARTHY				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOP SOIL
2	0.50	15.00	CLAY
3	15.00	27.00	SILTSTONE
4	27.00	32.50	CARBONACEOUS SHALE & COAL
5	32.50	36.00	SILTSTONE
6	36.00	36.50	CARBONACEOUS SHALE
7	36.50	46.00	SILTSTONE
8	46.00	47.00	CARBONACEOUS SHALE
9	47.00	58.50	SILTSTONE & MINOR SANDSTONE BANDS
10	58.50	59.00	CARBONACEOUS SHALE
11	59.00	63.00	SILTSTONE

BORE REPORT

REG NUMBER 90472

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
12	63.00	63.50	CARBONACEOUS SHALE
13	63.50	67.00	SANDSTONE
14	67.00	84.00	SILTSTONE & CARBONACEOUS SHALE BANDS

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DME	1	0.00	36.00	TERTIARY SEDIMENTS
DME	2	36.00		BLACKWATER GROUP

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	60.00	63.00	SSTO	29/07/1993	-9999.00	N		0.01	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 90472

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 90473**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	90473
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1993
Casing Stick Up (SU):	-	**Drilled By**	**McCarthy Drilling**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No Construction details, only strata**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

DNR report lists status as 'abandoned and destroyed'

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	No

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 90473**

Photograph 2 **Leichardt - 90473**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 90473

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-29-25	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-28-35	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	651871	**MAP-NO**	8552
D/O FILE NO.	50-0714	**LOT**	7	**NORTHING**	7512131	**MAP NAME**	COTHERSTONE
R/O FILE NO.		**PLAN**	CNS53	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P7	**ACCURACY**	SKET	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.490503887	**PARISH NAME**	969-CARFAX			**ORIGINAL BORE NO**	TEST HOLE 4/93
GIS LNG	148.476332582	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	30/07/1993			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	D MCCARTHY				
ROLES	WS	**DRILL COMPANY**	MCCARTHY DRILLING				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.50	TOP SOIL
2	0.50	10.50	CLAY
3	10.50	11.50	BASALT GRAVEL
4	11.50	21.00	CLAY
5	21.00	39.00	SILTSTONE
6	39.00	93.00	SANDSTONE
7	93.00	97.00	SILTSTONE WITH CARBONACEOUS BANDS
8	97.00	102.00	SANDSTONE

STRATIGRAPHY DETAILS

DME	1	0.00	39.00	TERTIARY SEDIMENTS

BORE REPORT

REG NUMBER 90473

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DME	2	39.00		BLACKWATER GROUP

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	39.00	75.00	SDST	30/07/1993	-9999.00	N	BRACKISH	0.01	Y	PS	BLACKWATER GROUP

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

BORE REPORT

REG NUMBER 90473

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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**** End of Report. Produced:** 13/11/2017 08:32:40 PM ******

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 5833**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	5833
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	No

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 5833**

Photograph 2 **Leichardt - 5833**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**14/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Leichardt - 2486**

PART A: PROPERTY DETAILS

Property Name:	Leichardt		
Local Bore Name:	-	**Ref No/GW Number:**	2486
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	No

PHOTOGRAPHIC RECORD

Photograph 1 **Leichardt - 2486**

Photograph 2 **Leichardt - 2486**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - 132631**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Iffley	**Ref No/GW Number:**	132631
Easting (GDA94):	635452	**GPS Elevation:**	200
Northing:	7528174		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	***328**	**Year Drilled:**	2007
Casing Stick Up (SU):	**0.59**	**Drilled By**	**Phoenix Drilling**
Casing Material	**Unknown**	**Internal Diameter**	unknown
Initial Water Quality Measurement (Driller Log)	7290 µS/cm		
Construction Summary (Driller Log)	**Steel Casing 0-328.0** **Screened 316.0-325.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**needs maintenance**	**Pump Type**	Belt driven rotary pump
Power Source	**Diesel Motor**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow gauge
Headworks	**3" Steel into 3" HDPE**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	10:55:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -	**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -		**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -	**ORP** -	**DO (%)** -

COMMENTS

Pump deployed. TD from landowner

GROUNDWATER BORE REPORT CARD

Additional Notes

Max bore output 15,000 GPH. SWL ~40mbGL according to land owner

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - 132631**

Photograph 2 **Meadowbrook - 132631**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 132631

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-20-49	**MAP-SCALE**	
OFFICE	Emerald	**SUB-AREA**		**LONGITUDE**	148-18-55	**MAP-SERIES**	
DATE LOG RECD	26-NOV-07	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	635440	**MAP-NO**	8553
D/O FILE NO.	520/001/100	**LOT**	10	**NORTHING**	7528179	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.		**PLAN**	CNS93	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	5		
GIS LAT	-22.3469444	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	
GIS LNG	148.3152778	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	18/01/2007			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	HARRIS, JOHN CLARKE				
ROLES	WS	**DRILL COMPANY**	PHOENIX DRILLING CAPALLA SHED				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	18/01/2007	1	Steel Casing	4.800	WT	223	0.00	48.00
A	18/01/2007	2	Steel Casing	6.400		168	0.00	328.00
A	18/01/2007	3	Perforated or Slotted Casing				316.00	325.00
A	18/01/2007	4	Gravel Pack				298.00	328.00
A	18/01/2007	5	Cuttings or other fill between casing and ho				295.00	298.00
A	18/01/2007	6	Grout				0.00	48.00
A	18/01/2007	7	Grout				0.00	295.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.00	TOP SANDY SOIL
2	1.00	16.00	YELLOW SANDY CLAY

BORE REPORT

REG NUMBER 132631

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
3	16.00	20.00	M/C SAND AND GRAVEL CLAYED
4	20.00	45.00	CLAY AND MUDSTONE
5	45.00	48.00	FINE GREY SANDSTONE
6	48.00	316.00	INTERBADED FINE GREY SANDSTONE/MUDSTONE AND SHALE
7	316.00	321.00	SLIGHTLY FRACTURED FINE GREY SANDSTONE
8	321.00	321.30	LARGE FRACTURE IN GREY SANDSTONE
9	321.30	328.00	FINE GREY SANDSTONE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	321.00	328.00	SDST	18/01/2007	-31.00	N	7290 US/CM	15.00	Y	FR	BACK CREEK GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

BORE REPORT

REG NUMBER 132631

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - Bullock Paddock**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Bullock Paddock	**Ref No/GW Number:**	-
Easting (GDA94):	636052	**GPS Elevation:**	185
Northing:	7528117		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**50.2**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.3**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	80000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**21.625**	**Date / Time of Measurement:**	11:40:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**1**	**CO ppm:**	**0**	**O_2 %:**	**20.2**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2.00**			
Electrical Conductivity (µS/cm)	**6212**	**Temp**	**28.5**	**pH**	**7.39**	**ORP**	**-320**	**DO (%)**	**1.4**

COMMENTS

Land owner recalls bore was ~90m depth but dip line unable to pass 50.2mbTOC

GROUNDWATER BORE REPORT CARD

Additional Notes

Strong rotten egg odour

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - Bullock Paddock**

Photograph 2 **Meadowbrook - Bullock Paddock**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - 2499**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	-	**Ref No/GW Number:**	2499
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - 2499**

Photograph 2 **Meadowbrook - 2499**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - Swamp Bore**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Swamp Bore	**Ref No/GW Number:**	-
Easting (GDA94):	645595	**GPS Elevation:**	171
Northing:	7528661		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**85**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.25**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**17.523**	**Date / Time of Measurement:**	1:05:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**1**	**CO ppm:**	**0**	**O_2 %:**	**20.1**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2.00**			
Electrical Conductivity (µS/cm)	**1078**	**Temp**	**27.7**	**pH**	**7**	**ORP**	**-62**	**DO (%)**	**34**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims output to be 1500 GPH

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - Swamp Bore**

Photograph 2 **Meadowbrook - Swamp Bore**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - 122458/1**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Rolfies #1	**Ref No/GW Number:**	122458
Easting (GDA94):	644973	**GPS Elevation:**	172
Northing:	7526776		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**52.2**	**Year Drilled:**	2006
Casing Stick Up (SU):	**0.72**	**Drilled By**	**Depco**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	COND 4000		
Construction Summary (Driller Log)	**PVC 0-50.5** **Slotted 38.5-50.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**22.335**	**Date / Time of Measurement:**	2:15:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**26**	**CO ppm:**	**0**	**O_2 %:**	**19.7**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2.00**			
Electrical Conductivity (µS/cm)	**5098**	**Temp**	**28.2**	**pH**	**7.29**	**ORP**	**-290**	**DO (%)**	**30.7**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims output to be 2000 GPH. Rotten egg odour

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - 122458/1**

Photograph 2 **Meadowbrook - 122458/1**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 122458

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-21-32	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-24-29	**MAP-SERIES**	M
DATE LOG RECD	07-APR-06	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	644983	**MAP-NO**	8553
D/O FILE NO.	520/001/100	**LOT**	10	**NORTHING**	7526770	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.		**PLAN**	CNS93	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**	GPS	**PRES EQUIPMENT**	
				GPS ACC	30		
GIS LAT	-22.3588889	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	
GIS LNG	148.4080556	**COUNTY**	CAIRNS			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	21/03/2006			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	BOURNE, KEVIN JOHN				
ROLES	WS	**DRILL COMPANY**	DEPCO DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
X	21/03/2005	1	Polyvinyl Chloride	5.900	WT	141	0.00	50.50
X	21/03/2005	2	Perforated or Slotted Casing	4.000	AP	141	38.50	50.50
X	21/03/2005	3	Gravel Pack	5.000	GR	177	31.00	50.50
X	21/03/2005	4	Cuttings or other fill between casing and ho			177	7.00	31.00
X	21/03/2005	5	Grout			177	0.00	7.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	5.00	WEATHERING
2	5.00	6.50	SAND AND GRAVEL
3	6.50	14.00	WEATHERED SHALES
4	14.00	17.00	WEATHERED SANDSTONE

BORE REPORT

REG NUMBER 122458

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	17.00	35.00	WEATHERED SHALE
6	35.00	50.50	FRACTURED SHALE *

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	35.00	50.50	SHLE	21/03/2005	-26.00	N	COND 4000	1.88	Y	FR	BACK CREEK GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 122458

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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**** End of Report. Produced:** 30/01/2018 07:07:53 AM ******

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - 122458/2**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Rolfies #2	**Ref No/GW Number:**	122458
Easting (GDA94):	644971	**GPS Elevation:**	174
Northing:	7526779		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**103**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.15**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**21.74**	**Date / Time of Measurement:**	2:30:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**1**	**CO ppm:**	**1**	**O_2 %:**	**18.8**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2.00**			
Electrical Conductivity (µS/cm)	**8666**	**Temp**	**28.2**	**pH**	**7.32**	**ORP**	**-267.7**	**DO (%)**	**2.5**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Exploration hole

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - 122458/2**

Photograph 2 **Meadowbrook - 122458/2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - Black Tank**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Black Tank	**Ref No/GW Number:**	-
Easting (GDA94):	642742	**GPS Elevation:**	173
Northing:	7521198		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.385**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**poor**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2" HDPE pump output line**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	3:33:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.2**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed. TD from landowner

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims output to be 1000 GPH

Shelter and headworks damaged in storm ~7 years ago

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**Yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - Black Tank**

Photograph 2 **Meadowbrook - Black Tank**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**18/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Meadowbrook - Power Bore**

PART A: PROPERTY DETAILS

Property Name:	Meadowbrook		
Local Bore Name:	Power Bore	**Ref No/GW Number:**	-
Easting (GDA94):	641260	**GPS Elevation:**	186
Northing:	7520977		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	**0.46**	**Drilled By**	**-**
Casing Material	**Unknown**	**Internal Diameter**	unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**3" HDPE pump outlet line**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**16.5**	**Date / Time of Measurement:**	3:50:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:		**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:** **19.9**
Sample Collection Point	**pump output line**	**Sample Method**	**-**			**Purge Volume**	**-**	
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed, dip measured through poly. TD from landowner

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims output to be 1000 GPH

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Meadowbrook - Power Bore**

Photograph 2 **Meadowbrook - Power Bore**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - Bore 8**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	5 Mile Bore	**Ref No/GW Number:**	-
Easting (GDA94):	640186	**GPS Elevation:**	188
Northing:	7547990		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.1**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No details Available**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**Good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**Yes**	**Bore Equipped With Meter**	Flow meter
Headworks	**Steel taps with 32mm HDPE output**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	25000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	9:15:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - Bore 8**

Photograph 2 **Olive Downs - Bore 8**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - Bore 7**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	Saltwater Bore	**Ref No/GW Number:**	-
Easting (GDA94):	637518	**GPS Elevation:**	192
Northing:	7552628		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**16.75**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.39**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	120
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No details Available**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Poor**	**Pump Type**	no
Power Source	**Powerline**	**Bore Capped**	**No**	**Bore Equipped With Meter**	Flow meter
Headworks	**Steel taps with 2" HDPE output**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**15.695**	**Date / Time of Measurement:**	10:05:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**20.2**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**994**	**Temp**	**25.3**	**pH**	**6.75**	**ORP**	**-109.9**	**DO (%)**	**24**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore not in use. No pump present. Casing heavily corroded

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - Bore 7**

Photograph 2 **Olive Downs - Bore 7**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - Bore 6**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	Turkeys Nest	**Ref No/GW Number:**	-
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No details Available**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Unknown**	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

Unable to access due to proximity to mine blasting exclusion zone

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - Bore 6**

Photograph 2 **Olive Downs - Bore 6**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - 162185**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	-	**Ref No/GW Number:**	162185
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2013
Casing Stick Up (SU):	-	**Drilled By**	**IESA**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Steel Casing 0-144.0** **Screened 120.0-138.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Unknown**	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

Unable to access due to proximity to mine blasting exclusion zone

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - 162185**

Photograph 2 **Olive Downs - 162185**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 162185

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-06-04	**MAP-SCALE**	
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-18-37	**MAP-SERIES**	
DATE LOG RECD	11-NOV-13	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	635149	**MAP-NO**	
D/O FILE NO.	MAC/520/000(0072	**LOT**	3	**NORTHING**	7555403	**MAP NAME**	
R/O FILE NO.		**PLAN**	GV90	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.10108347	**PARISH NAME**	2420-ILSINGTON			**ORIGINAL BORE NO**	
GIS LNG	148.3101695	**COUNTY**	GROSVENOR			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	26/10/2013			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	NEIVANDT, ROSS				
ROLES	WS	**DRILL COMPANY**	IESA/JOHN NITSCHKE DRILLING				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	26/10/2013	1	Steel Casing	10.000	WT	324	0.00	32.00
A	26/10/2013	2	Steel Casing	8.000	WT	203	0.00	120.00
A	26/10/2013	3	Screen	2.000	AP	203	120.00	138.00
A	26/10/2013	4	Steel Casing	8.000	WT	203	135.00	144.00
A	26/10/2013	5	Gravel Pack			305	13.00	146.00
A	26/10/2013	6	Grout			375	0.00	32.00
A	26/10/2013	7	Grout			305	0.00	12.00
A	26/10/2013	8	Bentonite Seal			305	12.00	13.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.50	BLACK SOIL, CRACKING CLAY

BORE REPORT

REG NUMBER 162185

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
2	1.50	24.00	YELLOWY BROWN SILTSTONE
3	24.00	25.00	BROWN GREY SILTSTONE, WEATHERED
4	25.00	51.50	GREY SILTSTONE, FRESH HARD
5	51.50	58.00	SANDSTONE MEDIUM GRAINED, GREY HARD 0.5 L/S
6	58.00	78.00	SILTSTONE, GREY, HARD
7	78.00	88.00	SILTSTONE, GREY IRONSTAINED FAULTED AND BROKEN 3.8 L/S
8	88.00	106.00	SILTSTONE, FINE WEATHERED SANDSTONE, IRONSTAINED FRACTURED 15 L/S
9	106.00	114.00	INTERBEDDED SILTSTONE & SANDSTONE IRON STAINING 17.5 L/S
10	114.00	114.50	CARBONACEOUS SHALE 12 L/S
11	114.50	115.80	MEDIUM SANDSTONE, HARD
12	115.80	120.60	COAL, BLACK PYRITIC 12 L/S
13	120.60	146.00	SILTSTONE, GREY, MINOR IRONSTAINING SURFACE, HARD BUT BROKEN

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	51.50	78.00	SSTO	26/10/2013	-99.99	N	SALTY	0.50	N	FR	RANGAL COAL MEASURES
2	78.00	114.00	SDST	26/10/2013	-99.99	N	SALTY	15.00	N	FR	RANGAL COAL MEASURES
3	120.00	138.00	COAL	26/10/2013	-26.00	N	SALTY	15.40	Y	PS	RANGAL COAL MEASURES

PUMP TEST DETAILS PART 1

PIPE	DATE	REC NO.	RN OF PUMP-BORE	TOP (m)	BOTTOM (m)	DIST (m)	METH	TEST TYPES	PUMP TYPE	SUCTION SET (m)	Q PRIOR TO TEST (l/s)	DUR OF Q PR (min)	PRES ON ARRIV (m)	Q ON ARRIV (l/s)
A	26/10/2013	1	162185	51.50	58.00		PUM		AIR					
A	26/10/2013	2	162185	78.00	88.00		PUM		AIR					
A	26/10/2013	3	162185	88.00	106.00		PUM		AIR					
A	26/10/2013	4	162185	106.00	114.00		PUM		AIR					

BORE REPORT

REG NUMBER 162185

A	26/10/2013	5	162185	114.00	114.50	PUM	AIR
A	26/10/2013	6	162185	115.80	120.60	PUM	AIR
A	26/10/2013	7	162185	51.50	146.00	PUM	AIR

PUMP TEST DETAILS PART 2

PIPE	DATE	REC	TEST DUR (mins)	SWL (m)	RECOV. TIME (mins)	RESID. DD (m)	MAX DD or P RED (m)	Q at MAX DD (l/s)	TIME TO MAX DD (mins)	Max Q (l/s)	CALC STAT HD (m)	DESIGN YIELD (l/s)	DESIGN BP (m)	SUCT. SET (m)	TMSY (m2/DAY)	STOR
A	26/10/2013	1						0.50								
A	26/10/2013	2						3.80								
A	26/10/2013	3						15.00								
A	26/10/2013	4						17.50								
A	26/10/2013	5						12.00								
A	26/10/2013	6						12.00								
A	26/10/2013	7	300	-26.00	14		48.00	15.40								

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 162185

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	26/10/2013		11500	8.6						PU	GB

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - 162472**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	-	**Ref No/GW Number:**	162472
Easting (GDA94):	635533	**GPS Elevation:**	193
Northing:	7554547		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**91.2**	**Year Drilled:**	2009
Casing Stick Up (SU):	**0.9**	**Drilled By**	**Pioneer Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-81.0** **Slotted 81.0-90.0**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**poor**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**50mm Standpipe Piezometer**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**23.33**	**Date / Time of Measurement:**	11:25:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**20.7**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**2**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Standpipe damaged, bailer couldn't pass

GROUNDWATER BORE REPORT CARD

Additional Notes

Monument damaged, supported by starposts

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - 162472**

Photograph 2 **Olive Downs - 162472**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 162472

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-06-31	**MAP-SCALE**	
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-18-50	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	635531	**MAP-NO**	
D/O FILE NO.		**LOT**	3	**NORTHING**	7554554	**MAP NAME**	
R/O FILE NO.		**PLAN**	GV90	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.10872204	**PARISH NAME**	2420-ILSINGTON			**ORIGINAL BORE NO**	PZ4
GIS LNG	148.31394053	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	27/03/2009			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	MM	**DRILL COMPANY**	PIONEER DRILLING				
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	27/03/2009	1	Polyvinyl Chloride				0.00	81.00
A	27/03/2009	2	Perforated or Slotted Casing	1.000	AP		81.00	90.00
X	27/03/2009	3	Grout			114	0.00	73.00
X	27/03/2009	4	Bentonite Seal			114	73.00	75.00
X	27/03/2009	5	Gravel Pack			114	75.00	90.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	TOPSOIL: SILTY CLAY, BROWN, TRACE GRAVEL, ORGANIC MATTER PRESENT
2	2.00	4.00	SILTY CLAY: BROWN/ORANGE-BROWN, TRACE FINE SAND AND GRAVEL
3	4.00	7.00	SANDY CLAY: GREY-BROWN, MINOR FINE SAND AND GRAVEL
4	7.00	15.00	CLAYSTONE: GREY-BROWN, TRACE MEDIUM TO FINE GRAVEL, WELL CEMENTED

BORE REPORT

REG NUMBER 162472

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
5	15.00	27.00	SILTSTONE: BROWN/GREY BROWN, INTERBEDDED WITH FINE SANDSTONE, MODERATELY SOFT, IRON STAINING PRESENT
6	27.00	44.00	SILTSTONE: GREY-BROWN, MINOR FINE SANDSTONE, IRON STAINING, MODERATELY HARD, NON CARBONACEOUS
7	44.00	49.00	SILTSTONE: GREY, MINOR MUDSTONE AND FINE SANDSTONE, NON CARBONACEOUS, MODERATELY HARD
8	49.00	50.00	SANDSTONE: GREY, INTERBEDDED WITH SILTSTONE AND MUDSTONE, MODERATELY HARD
9	50.00	51.00	SILTSTONE: GREY, ONLY MINOR SANDSTONE, MODERATELY HARD
10	51.00	62.00	MUDSTONE: GREY, MINOR SILTSTONE, TRACE FINE SANDSTONE, INTERBEDDED WITH TUFF LAYER WHICH IS MOSTLY WEATHERED TO BROWN CLAY, MODERATELY HARD
11	62.00	72.00	SANDSTONE: GREY, INTERBEDDED WITH SOME SILTSTONE, TRACE MUDSTONE, TUFF LAYER PRESENT, MODERATELY HARD, NON CARBONACEOUS
12	72.00	82.00	MUDSTONE: GREY, MINOR SILTSTONE, TUFF LAYER STILL PRESENT, MODERATELY HARD
13	82.00	89.00	SILTSTONE: GREY, MINOR MUDSTONE, TUFF LAYER STILL PRESENT
14	89.00	90.00	SANDSTONE: BLUE-GREY, MINOR SILTSTONE AND MUDSTONE, NON CARBONACEOUS, TUFF LAYER PRESENT, QUARTZ PRESENT, MODERATELY HARD

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	81.00	90.00	SSTO SDST			N			Y	PS	

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

BORE REPORT

REG NUMBER 162472

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	27/03/2009	193.94	SVY	AHD	R	

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	06/05/2009	-23.96	R		ACT	A	10/06/2009	-23.87	R		ACT	A	08/07/2009	-23.92	R		ACT
A	19/08/2009	-23.95	R		ACT	A	14/09/2009	-23.94	R		ACT	A	15/10/2009	-23.94	R		ACT
A	17/11/2009	-23.94	R		ACT	A	16/12/2009	-23.95	R		ACT	A	12/01/2010	-23.96	R		ACT
A	18/03/2010	-23.91	R		ACT	A	22/04/2010	-23.91	R		ACT	A	16/02/2011	-23.73	R		ACT
A	14/04/2011	-23.77	R		ACT	A	03/06/2011	-23.78	R		ACT	A	30/06/2011	-23.70	R		ACT
A	21/07/2011	-23.72	R		ACT	A	17/08/2011	-23.71	R		ACT	A	07/09/2011	-23.74	R		ACT
A	25/10/2011	-23.22	R		ACT	A	11/11/2011	-23.77	R		ACT	A	23/08/2012	-24.03	R		ACT
A	20/09/2012	-23.66	R		ACT	A	23/10/2012	-23.68	R		ACT	A	21/11/2012	-23.68	R		ACT
A	19/12/2012	-23.68	R		ACT	A	16/01/2013	-23.69	R		ACT	A	21/02/2013	-23.63	R		ACT
A	13/03/2013	-23.64	R		ACT	A	18/04/2013	-23.60	R		ACT	A	09/05/2013	-23.65	R		ACT
A	18/06/2013	-23.60	R		ACT	A	08/07/2013	-23.63	R		ACT	A	07/08/2013	-23.66	R		ACT
A	02/09/2013	-23.64	R		ACT	A	03/10/2013	-23.65	R		ACT	A	04/11/2013	-23.63	R		ACT
A	05/12/2013	-23.64	R		ACT	A	06/01/2014	-23.65	R		ACT	A	06/03/2014	-23.64	R		ACT
A	07/04/2014	-23.64	R		ACT	A	05/05/2014	-23.66	R		ACT	A	05/06/2014	-23.00	R		ACT
A	03/07/2014	-23.70	R		ACT	A	19/08/2014	-23.66	R		ACT	A	17/09/2014	-23.68	R		ACT
A	23/10/2014	-23.70	R		ACT	A	20/11/2014	-23.72	R		ACT	A	30/12/2014	-23.72	R		ACT
A	24/02/2015	-23.70	R		ACT	A	25/03/2015	-23.69	R		ACT	A	14/04/2015	-23.72	R		ACT
A	27/05/2015	-23.73	R		ACT	A	29/06/2015	-23.74	R		ACT	A	22/07/2015	-23.75	R		ACT
A	11/08/2015	-23.74	R		ACT	A	03/09/2015	-23.75	R		ACT	A	21/10/2015	-23.77	R		ACT
A	24/11/2015	-23.77	R		ACT	A	23/02/2016	-23.70	R		ACT	A	12/04/2016	-23.69	R		ACT
A	24/08/2016	-23.63	R		ACT	A	16/11/2016	-23.83	R		ACT	A	06/02/2017	-23.50	R		ACT
A	05/06/2017	-23.40	R		ACT												

BORE REPORT

REG NUMBER 162472

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - Bore 9**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	House Bore	**Ref No/GW Number:**	162439
Easting (GDA94):	633886	**GPS Elevation:**	189
Northing:	7553064		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.19**	**Drilled By**	**-**
Casing Material	**Unknown**	**Internal Diameter**	Unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**No details Available**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**good**	**Pump Type**	screw
Power Source	**mains**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**2' Steel outlet** **Samples hose and 32mm H.D.**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Domestic**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	12:22:00 PM
Pumping History	Pumping at time of inspection		

PART F: WATER QUALITY

Well Head Gas Screening:		**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:** **-**
Sample Collection Point	**Sample Tap**	**Sample Method**		**Bucket**		**Purge Volume**		**20**
Electrical Conductivity (µS/cm)	**935.8**	**Temp**	**32**	**pH**	**7.01**	**ORP**	**39.1**	**DO (%)** **24.5**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - Bore 9**

Photograph 2 **Olive Downs - Bore 9**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Olive Downs - 162439**

PART A: PROPERTY DETAILS

Property Name:	Olive Downs		
Local Bore Name:	MB8	**Ref No/GW Number:**	-
Easting (GDA94):	631866	**GPS Elevation:**	196
Northing:	7553657		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**12.578**	**Year Drilled:**	2015
Casing Stick Up (SU):	**0.7**	**Drilled By**	**Barnes Drilling**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-11.90** **Slotted 8.9-11.9**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**Yes**	**Condition**	**good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Gal Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**12.517**	**Date / Time of Measurement:**	1:00:00 PM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**10.7**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

insufficient volume for grab sample

GROUNDWATER BORE REPORT CARD

Additional Notes

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	Yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Olive Downs - 162439**

Photograph 2 **Olive Downs - 162439**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 162439

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-07-02	**MAP-SCALE**	
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-16-43	**MAP-SERIES**	
DATE LOG RECD	27-JUL-15	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	631867	**MAP-NO**	
D/O FILE NO.		**LOT**	3	**NORTHING**	7553655	**MAP NAME**	
R/O FILE NO.		**PLAN**	GV90	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.1171238	**PARISH NAME**	2420-ILSINGTON			**ORIGINAL BORE NO**	MB08
GIS LNG	148.27849899	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	16/07/2015			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	WESTON, CLAY DEAN				
ROLES	MM	**DRILL COMPANY**	BARNES DRILLING				
		METHOD OF CONST.	ROTARY MUD				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	16/07/2015	1	Polyvinyl Chloride	5.000	WT	60	0.00	8.90
A	16/07/2015	2	Perforated or Slotted Casing	0.400	AP	60	8.90	11.90
X	16/07/2015	3	Grout			171	0.00	5.50
X	16/07/2015	4	Cuttings or other fill between casing and ho			171	5.50	7.60
X	16/07/2015	5	Bentonite Seal			171	7.60	8.40
X	16/07/2015	6	Gravel Pack			171	8.40	11.90
X	16/07/2015	7	Bentonite Seal			171	11.90	13.00
X	16/07/2015	8	Gravel Pack			171	13.00	20.50

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	2.00	SOIL: MEDIUM REDDIISH BROWN, VERY SOFT SOIL (X1), EXTREMELY WEATHERED

BORE REPORT

REG NUMBER 162439

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
2	2.00	7.00	CLAY: MEDIUM REDDISH BROWN, VERY SOFT SOIL (X1), EXTREMELY WEATHERED
3	7.00	9.00	SANDY CLAY: MEDIUM REDDISH BROWN, FIRM SOIL (X3), EXTREMELY WEATHERED
4	9.00	12.00	SAND: MEDIUM ORANGY BROWN, VERY SOFT SOIL (X1), EXTREMELY WEATHERED
5	12.00	17.00	CLAY: LIGHT ORANGY GREY, SOFT SOIL (X2), EXTREMELY WEATHERED
6	17.00	20.50	SILTSTONE: LIGHT ORANGY GREY, EXTREMELY LOW STRENGTH ROCK (H1), DISTINCTLY WEATHERED

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	8.90	11.90	SAND			N			N	WZ	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

BORE REPORT

REG NUMBER 162439

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Seloh Nolem - Vermont Park - 2497**

PART A: PROPERTY DETAILS

Property Name:	Seloh Nolem - Vermont Park		
Local Bore Name:	-	**Ref No/GW Number:**	2497
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Seloh Nolem - Vermont Park - 2497**

Photograph 2 **Seloh Nolem - Vermont Park - 2497**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Seloh Nolem - Vermont Park - 5883**

PART A: PROPERTY DETAILS

Property Name:	Seloh Nolem - Vermont Park		
Local Bore Name:	-	**Ref No/GW Number:**	5883
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Seloh Nolem - Vermont Park - 5883**

Photograph 2 **Seloh Nolem - Vermont Park - 5883**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**7/06/2017**	**SURVEY PERSONNEL:**	**Gage Enviro.**	**BORE ID:**	**Seloh Nolem - Vermont Park - 100252**

PART A: PROPERTY DETAILS

Property Name:	Seloh Nolem - Vermont Park		
Local Bore Name:	-	**Ref No/GW Number:**	100252
Easting (GDA94):	633904	**GPS Elevation:**	0
Northing:	7538068		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore located - decommissioned. Surveyed by Gage Environmental

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Seloh Nolem - Vermont Park - 100252**

Photograph 2 **Seloh Nolem - Vermont Park - 100252**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 100252

REGISTRATION DETAILS

		BASIN		**LATITUDE**	22-15-28	**MAP-SCALE**	
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-17-58	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	633893	**MAP-NO**	
D/O FILE NO.		**LOT**	9	**NORTHING**	7538053	**MAP NAME**	
R/O FILE NO.		**PLAN**	CNS98	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	ATOP EPP364	**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.257882431	**PARISH NAME**	1830-EXE			**ORIGINAL BORE NO**	MGC RIPSTONE 1
GIS LNG	148.299429081	**COUNTY**				**BORE LINE**	-
CHECKED	N						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Artesian - Condition Unknown	**DATE DRILLED**	17/10/1993			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	PE	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

****** NO RECORDS FOUND ******

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 100252

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Seloh Nolem - Vermont Park - 13040177**

PART A: PROPERTY DETAILS

Property Name:	Seloh Nolem - Vermont Park		
Local Bore Name:	-	**Ref No/GW Number:**	13040177
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	**Ericson F**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Dry test hole - 12.49 TD**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	no

PHOTOGRAPHIC RECORD

Photograph 1 **Seloh Nolem - Vermont Park - 13040177**

Photograph 2 **Seloh Nolem - Vermont Park - 13040177**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040177

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-16-54	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-28-29	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	651926	**MAP-NO**	8653
D/O FILE NO.	520/001(69)	**LOT**	7	**NORTHING**	7535228	**MAP NAME**	BOMBANDY
R/O FILE NO.	81-01045	**PLAN**	KL96	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P7	**ACCURACY**	UNKN	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.281900952	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	B1S1
GIS LNG	148.474669794	**COUNTY**	KILLARNEY			**BORE LINE**	VER-VERMONT LINE
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**				**DATA OWNER**	DNR
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	ERICKSON F				
ROLES	IN	**DRILL COMPANY**					
		METHOD OF CONST.	CABLE TOOL				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.21	TOP SOIL
3	1.21	5.48	BROWN CLAY
5	5.48	6.09	CLAYBOUND SAND
7	6.09	10.97	SAND HOLE DRY ABD
9	10.97	12.49	COARSE SAND BOTTOM GRANITE

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 13040177

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
X	20/05/1971	165.85	SVY	STD	N	

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Seloh Nolem - Vermont Park - 13040178**

PART A: PROPERTY DETAILS

Property Name:	Seloh Nolem - Vermont Park		
Local Bore Name:	-	**Ref No/GW Number:**	13040178
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1971
Casing Stick Up (SU):	-	**Drilled By**	**Ericson F**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Dry test hole - 10.05 TD**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	no

PHOTOGRAPHIC RECORD

Photograph 1 **Seloh Nolem - Vermont Park - 13040178**

Photograph 2 **Seloh Nolem - Vermont Park - 13040178**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040178

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-16-59	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-28-02	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	651167	**MAP-NO**	8553
D/O FILE NO.	520/001(69)	**LOT**	9	**NORTHING**	7535107	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.	81-01045	**PLAN**	CNS98	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**	UNKN	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.283065233	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	B2S2
GIS LNG	148.467314017	**COUNTY**	CAIRNS			**BORE LINE**	VER-VERMONT LINE
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	25/05/1971			**DATA OWNER**	DNR
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	ERICKSON F				
ROLES	IN	**DRILL COMPANY**					
		METHOD OF CONST.	CABLE TOOL				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.52	TOP SOIL
2	1.52	9.14	BROWN ORANGE CLAY
3	9.14	9.75	SOFT SHALE AND SANDSTONE
4	9.75	10.05	SHALE AND SANDSTONE HOLE DRY ABD

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

BORE REPORT

REG NUMBER 13040178

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
X	25/05/1971	165.67	SVY	STD	N	

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Seloh Nolem - Vermont Park - 13040179**

PART A: PROPERTY DETAILS

Property Name:	Seloh Nolem - Vermont Park		
Local Bore Name:	-	**Ref No/GW Number:**	13040179
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1971
Casing Stick Up (SU):	-	**Drilled By**	**Ericson F**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Dry test hole - 14.32 TD**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	no

PHOTOGRAPHIC RECORD

Photograph 1 **Seloh Nolem - Vermont Park - 13040179**

Photograph 2 **Seloh Nolem - Vermont Park - 13040179**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 13040179

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-17-01	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-27-09	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	649627	**MAP-NO**	8553
D/O FILE NO.	520/001(69)	**LOT**	9	**NORTHING**	7535053	**MAP NAME**	GROSVENOR DOWNS
R/O FILE NO.	81-01045	**PLAN**	CNS98	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P9	**ACCURACY**	UNKN	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.283687582	**PARISH NAME**	4814-VERMONT			**ORIGINAL BORE NO**	B3S3
GIS LNG	148.452376781	**COUNTY**	CAIRNS			**BORE LINE**	VER-VERMONT LINE
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	27/05/1971			**DATA OWNER**	DNR
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	ERICKSON F				
ROLES	IN	**DRILL COMPANY**					
		METHOD OF CONST.	CABLE TOOL				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION	
1	0.00	0.30	TOP SOIL	
2	0.30	5.48	CLAYBOUND SAND	
3	5.48	8.83	BROWN SANDY CLAY	
4	8.83	9.75	CLAYBOUND SAND	
5	9.75	13.10	SAND	
6	13.10	14.02	COARSE SAND	
7	14.02	14.32	GRANITE	HOLE DRY ABD

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

BORE REPORT

REG NUMBER 13040179

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
X	27/05/1971	164.00	SVY	STD	N	

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**13/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97181**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Pisscutter	**Ref No/GW Number:**	97181
Easting (GDA94):	656325	**GPS Elevation:**	167
Northing:	7523641		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**19.77**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.8**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-19.51** **Screen 17.37-18.29**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow meter
Headworks	**2" Steel manifold to 2" Poly. Bore standpipe encased in concrete**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**12.69**	**Date / Time of Measurement:**	4:10:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.9**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**298**	**Temp**	**26.31**	**pH**	**6.93**	**ORP**	**90.1**	**DO (%)** **30.96**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Two wells, one open and one with pump deployed. Sample taken from open bore. Land owner claims max yield of 1500 GPH

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97181**

Photograph 2 **Willunga - 97181**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97181

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-22-58	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-10	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	656434	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7523988	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.383010352	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	CUTTER BORE
GIS LNG	148.519511432	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	22/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	22/06/1996	1	Polyvinyl Chloride	5.900	WT	140	0.00	17.37
A	22/06/1996	2	Screen	0.750	AP	140	17.37	18.29
A	22/06/1996	3	Polyvinyl Chloride	5.900	WT	140	18.29	19.51
A	22/06/1996	4	Gravel Pack	10.000	GR		0.00	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	10.67	LOAM
2	10.67	14.33	SILTY LOAM
3	14.33	17.07	FINE TO COARSE SAND
4	17.07	18.29	DIRTY FINE TO COARSE SAND
5	18.29	20.42	YELLOW CLAY

BORE REPORT

REG NUMBER 97181

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.33	18.29	SAND	22/06/1996	-13.41	N	GOOD	12.00	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

BORE REPORT

REG NUMBER 97181

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97180**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Top Bore	**Ref No/GW Number:**	97180
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1996
Casing Stick Up (SU):	-	**Drilled By**	**Water Drill**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-17.37** **Screened 15.24-16.4**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	**unknown**	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

Site could not be accessed – assume bore is present

GROUNDWATER BORE REPORT CARD

Additional Notes

Unable to access due to standing water. Land owner claims max yield of 800 GPH

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97180**

Photograph 2 **Willunga - 97180**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97180

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-21-15	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-30-08	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	654694	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7527196	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.354198887	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	TOP BORE
GIS LNG	148.502299436	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	11/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	11/06/1996	1	Polyvinyl Chloride	5.918	WT	140	0.00	15.24
A	11/06/1996	2	Screen	0.750	AP	140	15.24	16.40
A	11/06/1996	3	Polyvinyl Chloride	5.900	WT	140	16.40	17.37

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.22	TOP SOIL
2	1.22	9.75	LOAMY CLAY
3	9.75	10.36	FINE SAND
4	10.36	11.28	FINE TO MEDIUM SAND
5	11.28	12.19	LOAMY CLAY
6	12.19	13.72	CEMENTED GRAVEL

BORE REPORT

REG NUMBER 97180

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	13.72	15.85	FINE TO COARSE SAND
8	15.85	19.81	RED & YELLOW CLAY

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	12.19	15.85	SAND	11/06/1996	-12.19	N	GOOD	0.76	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	02/12/1996	-6.55	R		NR	A	11/12/1996	-6.80	R		NR	A	18/12/1996	-6.87	R		NR

BORE REPORT

REG NUMBER 97180

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	25/12/1996	-6.95	R		NR	A	31/12/1996	-6.92	R		NR	A	08/01/1997	-6.90	R		NR
A	15/01/1997	-6.90	R		NR	A	22/01/1997	-7.00	R		NR	A	29/01/1997	-7.12	R		NR
A	05/02/1997	-7.25	R		NR	A	12/02/1997	-7.37	R		NR	A	19/02/1997	-7.50	R		NR
A	26/02/1997	-7.60	R		NR	A	05/03/1997	-7.67	R		NR	A	12/03/1997	-5.45	R		NR
A	01/04/1997	-5.42	R		NR	A	01/05/1997	-5.87	R		NR	A	02/06/1997	-6.65	R		NR
A	01/07/1997	-7.15	R		NR	A	01/08/1997	-7.55	R		NR	A	01/09/1997	-7.77	R		NR

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97185**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Bottom Bore	**Ref No/GW Number:**	97185
Easting (GDA94):	659239	**GPS Elevation:**	164
Northing:	7519220		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**19.53**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.73**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-18.9** **Screened 16.76-17.68**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow meter
Headworks	**3" Steel manifold to 3" HDPE. Standpipe concrete encased**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.25**	**Date / Time of Measurement:**	11:50:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**20.1**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**442.8**	**Temp**	**26.23**	**pH**	**7.12**	**ORP**	**-95.6**	**DO (%)** **24.4**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner claims max yield of 1200 GPH

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97185**

Photograph 2 **Willunga - 97185**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97185

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-25-09	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-32-38	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	658897	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7519944	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.41930535	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	BOTTOM BORE
GIS LNG	148.54383265	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	12/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	12/06/1996	1	Polyvinyl Chloride	5.900	WT	140	0.00	16.76
A	12/06/1996	2	Screen	0.750	AP	140	16.76	17.68
A	12/06/1996	3	Polyvinyl Chloride	5.900	WT	140	17.68	18.90
A	12/06/1996	4	Gravel Pack	10.000	GR	140	0.00	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.61	SANDY LOAM
2	0.61	6.10	LOAM
3	6.10	7.32	VERY FINE SAND
4	7.32	9.75	SILTY CLAY
5	9.75	10.67	BROWN CLAY

BORE REPORT

REG NUMBER 97185

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	10.67	12.80	BROWN & RED CLAY
7	12.80	14.63	BLUE & BROWN CLAY
8	17.68	17.68	FINE TO VERY COARSE SAND
9	17.68	20.42	WHITE CLAY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.63	17.68	SAND	12/06/1996	-14.33	N	GOOD	2.53	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 97185

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97184**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Leichardt Bore	**Ref No/GW Number:**	97184
Easting (GDA94):	659014	**GPS Elevation:**	163
Northing:	7519480		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**20.63**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.78**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-18.59** **Screened 16.46-17.37**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	power meter
Headworks	**3" Steel manifold to 3" HDPE. Standpipe concrete encased**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.615**	**Date / Time of Measurement:**	12:25:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**19.6**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**598.5**	**Temp**	**25.68**	**pH**	**6.79**	**ORP**	**45.9**	**DO (%)**	**32.51**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Two wells, one open and one with pump deployed. Sample taken from open bore.

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97184**

Photograph 2 **Willunga - 97184**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97184

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-53	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-32-31	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	658710	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7520443	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.414815254	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	LEICHARDT BORE
GIS LNG	148.541961757	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	25/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	25/06/1996	1	Polyvinyl Chloride	5.900	WT	140	0.00	16.46
A	25/06/1996	2	Screen	0.750	AP	140	16.46	17.37
A	25/06/1996	3	Polyvinyl Chloride	5.900	WT	140	17.37	18.59
A	25/06/1996	4	Gravel Pack	10.000			0.00	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	5.18	LOAM
2	5.18	8.23	LOAMY CLAY
3	8.23	10.67	BROWN CLAY
4	10.67	12.19	SILTY CLAY
5	12.19	13.41	WHITE CLAY

BORE REPORT

REG NUMBER 97184

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	13.41	15.24	FINE TO COARSE SAND
7	15.24	18.29	FINE TO VERY COARSE SAND
8	18.29	20.42	YELLOW & GRAY CLAY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	13.41	18.29	SAND	25/06/1996	-13.79	N	GOOD	2.60	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 97184

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97182**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Blue Pump 5"	**Ref No/GW Number:**	97182
Easting (GDA94):	657944	**GPS Elevation:**	165
Northing:	7521843		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**20.92**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.65**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-19.35** **Screened 17.37-18.29**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	no
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**Standpipe concrete encased**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**13.13**	**Date / Time of Measurement:**	1:07:00 PM
Pumping History	adjacent pump operating		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.9**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**472.5**	**Temp**	**26.26**	**pH**	**7.24**	**ORP**	**-142.1**	**DO (%)**	**26.53**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

adjacent pump operating at time of measurements

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97182**

Photograph 2 **Willunga - 97182**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97182

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-48	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-36	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	657151	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7522448	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.396854844	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	5 BLUE PUMP
GIS LNG	148.526620689	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	14/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	14/06/1996	1	Polyvinyl Chloride	5.900	WT	140	0.00	17.37
A	14/06/1996	2	Screen	0.750	AP	140	17.37	18.29
A	14/06/1996	3	Polyvinyl Chloride	5.900	WT	140	18.29	19.35
A	14/06/1996	4	Gravel Pack	10.000	GR		0.00	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	9.14	LOAM
2	9.14	12.19	DRY FINE TO MEDIUM SAND
3	12.19	12.80	CLAY
4	12.80	14.02	FINE SAND
5	14.02	15.24	DIRTY FINE TO MEDIUM SAND

BORE REPORT

REG NUMBER 97182

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
6	15.24	16.46	CLAYBOUND SAND
7	16.46	18.29	FINE TO COARSE WHITE SAND
8	18.29	20.42	CLAY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.02	18.29	SAND	14/06/1996	-14.78	N	GOOD	0.51	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 97182

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97183**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	Blue Pump 8"	**Ref No/GW Number:**	97183
Easting (GDA94):	657950	**GPS Elevation:**	165
Northing:	7521838		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	1996
Casing Stick Up (SU):	**0.7**	**Drilled By**	**Water Drill**
Casing Material	**PVC**	**Internal Diameter**	~220 (OD)
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-18.29** **Screened 17.68-18.29**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**powerline**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	flow meter
Headworks	**3" Steel manifold to 3" HDPE. Standpipe concrete encased**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	1:15:00 PM
Pumping History	Pumping at time of inspection		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.2**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

pumping at time of inspection

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97183**

Photograph 2 **Willunga - 97183**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97183

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-54	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-45	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	657419	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7522279	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.39835155	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	8 BLUE PUMP
GIS LNG	148.529239859	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	15/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/06/1996	3	Gravel Pack	10.000	GR		0.00	18.29
A	15/06/1996	1	Polyvinyl Chloride	10.000	WT	220	0.00	17.68
A	15/06/1996	2	Screen	1.100	AP	220	17.68	18.29

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	9.14	LOAM
2	9.14	12.19	FINE TO MEDIUM DRY SAND
3	12.19	12.80	CLAY
4	12.80	14.02	FINE SAND
5	14.02	15.24	DIRTY FINE TO MEDIUM SAND
6	15.24	16.46	CLAYBOUND SAND

BORE REPORT

REG NUMBER 97183

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
7	16.46	18.29	WHITE FINE TO COARSE SAND
8	18.29	20.42	CLAY

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	14.02	18.29	SAND	15/06/1996	-14.78	N	GOOD	0.51	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

BORE REPORT

REG NUMBER 97183

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 5882**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	5882
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner confirms no bore is present at location

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 5882**

Photograph 2 **Willunga - 5882**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 7058**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	7058
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner confirms no bore is present at location

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 7058**

Photograph 2 **Willunga - 7058**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 67216**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	67216
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1996
Casing Stick Up (SU):	-	**Drilled By**	**Water Drill**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**PVC 0-4.57** **Screened 3.66-4.57**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner aware of bores presence but confirms bore has since been abandoned / destroyed

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 67216**

Photograph 2 **Willunga - 67216**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 67216

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-21-44	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-30-32	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	655364	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7526286	**MAP NAME**	BOMBANDY
R/O FILE NO.	30-0016	**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L42588B	**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	CL
				GPS ACC			
GIS LAT	-22.362349678	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	BLACK TANK SPEAR
GIS LNG	148.508896687	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	18/06/1996			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	W BEALE				
ROLES	WS	**DRILL COMPANY**	WATER DRILL				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	18/06/1996	1	Steel Casing	5.400	WT	139	0.00	3.66
A	18/06/1996	2	Screen	0.750	AP	125	3.66	4.57
A	18/06/1996	3	Gravel Pack	10.000	GR		0.00	4.57

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	4.57	RIVER SAND SPEAR IN ISAAC RIVER

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

CTR

BORE REPORT

REG NUMBER 67216

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	0.00	4.57	SAND	18/06/1984	-1.80	N	GOOD	0.50	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 67217**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	67217
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1984
Casing Stick Up (SU):	-	**Drilled By**	**L. Bethal**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	Good		
Construction Summary (Driller Log)	**Screen 0-3.3**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner aware of bores presence but confirms bore has since been abandoned / destroyed

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 67217**

Photograph 2 **Willunga - 67217**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 67217

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-23-41	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-31-22	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	656764	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7522670	**MAP NAME**	BOMBANDY
R/O FILE NO.	30-0016	**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L42583B	**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	CL
				GPS ACC			
GIS LAT	-22.394885835	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	RED SPEAR
GIS LNG	148.522840732	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/10/1984			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	L BETHEL				
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.	HAND DUG				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1984	1	Screen			50	0.00	3.30

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.30	RIVER SAND SPEAR IN ISAAC RIVER
903			1986 DISCH 69.1 M3D ESTIMAT

STRATIGRAPHY DETAILS

**** NO RECORDS FOUND ****

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME

BORE REPORT

REG NUMBER 67217

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	0.00	3.30	SAND	12/12/1986	-0.50	N	GOOD	0.80	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 67219**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	67219
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1984
Casing Stick Up (SU):	-	**Drilled By**	**L. Bethal**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	Reasonable		
Construction Summary (Driller Log)	**Screen 0-3.3**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner aware of bores presence but confirms bore has since been abandoned / destroyed

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 67219**

Photograph 2 **Willunga - 67219**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 67219

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-25-23	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-32-44	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	659064	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7519525	**MAP NAME**	BOMBANDY
R/O FILE NO.	30-0016	**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L42588B	**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	CL
				GPS ACC			
GIS LAT	-22.423074547	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	WHITE SPEAR
GIS LNG	148.545496043	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/10/1984			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	L BETHEL				
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.	ROTARY				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1984	1	Screen			50	0.00	3.30

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.30	SAND SPEAR IN ISAAC RIVER
903			QUALITY REASONABLE

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1			BLENHEIM FORMATION

AQUIFER DETAILS

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 67219

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	0.00	3.00	SAND	12/12/1986	-0.50	N	REASONABLE	0.80	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 67218**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	67218
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1984
Casing Stick Up (SU):	-	**Drilled By**	**L. Bethal**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Screen 0-3.3**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner aware of bores presence but confirms bore has since been abandoned / destroyed

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	**-**

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 67218**

Photograph 2 **Willunga - 67218**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 67218

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-24-21	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-32-28	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	658629	**MAP-NO**	8653
D/O FILE NO.	515/030/0016	**LOT**	8	**NORTHING**	7521429	**MAP NAME**	BOMBANDY
R/O FILE NO.	30-0016	**PLAN**	KL95	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L42588B	**ORIGINAL DESCRIPTION**	P8	**ACCURACY**	SKET	**PRES EQUIPMENT**	CL
				GPS ACC			
GIS LAT	-22.405916673	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	BLUE SPEAR
GIS LNG	148.541076832	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/10/1984			**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**	L BETHEL				
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.	HAND DUG				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1984	1	Screen			50	0.00	3.30

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.30	RIVER SAND SPEAR IN RIVER
903			1986 DISCH 69.1 M3D ESTIMAT

STRATIGRAPHY DETAILS

SOURCE	RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
DNR	1	0.00	3.30	ISAAC RIVER ALLUVIUM

AQUIFER DETAILS

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 67218

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	0.00	3.30	SAND	11/12/1986	-0.50	N		0.80	Y	UC	ISAAC RIVER ALLUVIUM

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 47077**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	47077
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1975
Casing Stick Up (SU):	-	**Drilled By**	**Drillco**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	Dry		
Construction Summary (Driller Log)	**Dry test hole - 24.3 TD**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner confirms no bore is present at location

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 47077**

Photograph 2 **Willunga - 47077**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 47077

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-18-07	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-44	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672940	**MAP-NO**	8653
D/O FILE NO.	515/030/0007	**LOT**	5	**NORTHING**	7532788	**MAP NAME**	BOMBANDY
R/O FILE NO.	30-0007	**PLAN**	KL105	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L42588B	**ORIGINAL DESCRIPTION**	P5	**ACCURACY**	SKET	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.301958867	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	
GIS LNG	148.678836596	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	02/10/1975			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	HAWTHORNE J				
ROLES	WS	**DRILL COMPANY**	DRILLCO				
		METHOD OF CONST.	ROTARY RIG				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	15.20	SANDY MUDSTONE
2	15.20	39.60	MUDSTONE BORE DRY ABD

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 47077

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 161577**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	161577
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	2017
Casing Stick Up (SU):	-	**Drilled By**	**Depco**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	Salty		
Construction Summary (Driller Log)	**Backfilled 84 TD**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Test hole. Backfilled due to poor water quality

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 161577**

Photograph 2 **Willunga - 161577**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 161577

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-17-55	**MAP-SCALE**	
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-40-23	**MAP-SERIES**	
DATE LOG RECD	03-FEB-17	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	672339	**MAP-NO**	
D/O FILE NO.		**LOT**	5	**NORTHING**	7533163	**MAP NAME**	
R/O FILE NO.		**PLAN**	KL105	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.29863383	**PARISH NAME**	6000-NO LONGER USED			**ORIGINAL BORE NO**	
GIS LNG	148.67296958	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	18/01/2017			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	WHITE, LEE				
ROLES	OE	**DRILL COMPANY**	DEPCO				
		METHOD OF CONST.	ROTARY AIR				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
X	18/01/2017	1	Grout			125	0.00	7.00
X	18/01/2017	2	Cuttings or other fill between casing and ho			125	7.00	84.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	6.00	RED AND WHITE IRONSTONE
2	6.00	48.00	RED, WHITE AND YELLOW CLAY BANDS
3	48.00	66.00	GREEN AND YELLOW CLAY
4	66.00	67.00	COAL
5	67.00	72.00	SHALE
6	72.00	84.00	BLUE AND BLACK SANDSTONE: SALTY

STRATIGRAPHY DETAILS

BORE REPORT

REG NUMBER 161577

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	78.00		SDST			N	SALTY	1.90	Y	PS	BACK CREEK GROUP

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE

BORE REPORT

REG NUMBER 161577

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
X	18/01/2017			6.7						PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 47076**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	47076
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1975
Casing Stick Up (SU):	-	**Drilled By**	**Drillco**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	Dry		
Construction Summary (Driller Log)	**Dry test hole - 24.3 TD**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner confirms no bore is present at location

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 47076**

Photograph 2 **Willunga - 47076**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 47076

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-17-47	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-34-45	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	662675	**MAP-NO**	8653
D/O FILE NO.	515/030/0007	**LOT**	5	**NORTHING**	7533512	**MAP NAME**	BOMBANDY
R/O FILE NO.	30-0007	**PLAN**	KL105	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.	L42588B	**ORIGINAL DESCRIPTION**	P5	**ACCURACY**	SKET	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.296421217	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	
GIS LNG	148.579146685	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/10/1975			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**	HAWTHORNE J				
ROLES	WS	**DRILL COMPANY**	DRILLCO				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	1.50	SANDY SOIL DRILLER J HAWTHORNE
2	1.50	5.10	WEATHERED GREYWACKE
3	5.10	7.60	SANDSTONE
4	7.60	24.30	MUDSTONE BORE DRY ABD

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

BORE REPORT

REG NUMBER 47076

**** NO RECORDS FOUND ****

PUMP TEST DETAILS PART 2

**** NO RECORDS FOUND ****

BORE CONDITION

**** NO RECORDS FOUND ****

ELEVATION DETAILS

**** NO RECORDS FOUND ****

WATER ANALYSIS PART1

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97019**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	97019
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1968
Casing Stick Up (SU):	-	**Drilled By**	**Aus Geo Prospectors**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Abandoned hole - 100.58**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner confirms no bore is present at location

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97019**

Photograph 2 **Willunga - 97019**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97019

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-21-45	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-41-05	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	673471	**MAP-NO**	8653
D/O FILE NO.	515/030/0007	**LOT**	5	**NORTHING**	7526074	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL105	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P5	**ACCURACY**	SKET	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.362534743	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	KILLARNEY OH3 OLO
GIS LNG	148.684721004	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/06/1968			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**					
ROLES	ME	**DRILL COMPANY**	AUSTRAL GEO PROSPECTORS				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.91	BROWN SOIL
2	0.91	2.44	SAND
3	2.44	6.71	CLAY
4	6.71	8.23	SHALE
5	8.23	10.67	SANDY CLAY
6	10.67	24.38	CLAY & GRAVEL
7	24.38	27.13	DARK GREY MUDSTONE & SOOTY COAL
8	27.13	33.53	GREY MUDSTONE
9	33.53	48.77	GREY SANDSTONE
10	48.77	57.30	GREY SANDY SHALE
11	57.30	100.58	VERY HARD GREY SANDSTONE

BORE REPORT

REG NUMBER 97019

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
903			HOLE ABD NO DETAILS ABOUT WATER

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

****** NO RECORDS FOUND ******

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

BORE REPORT

REG NUMBER 97019

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**17/09/2017**	**SURVEY PERSONNEL:**	**ML + AF**	**BORE ID:**	**Willunga - 97020**

PART A: PROPERTY DETAILS

Property Name:	Willunga		
Local Bore Name:	-	**Ref No/GW Number:**	97020
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	1968
Casing Stick Up (SU):	-	**Drilled By**	**Aus Geo Prospectors**
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**Abandoned hole - 134.11**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)** -

COMMENTS

No bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land owner confirms no bore is present at location

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	-

PHOTOGRAPHIC RECORD

Photograph 1 **Willunga - 97020**

Photograph 2 **Willunga - 97020**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 97020

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-19-51	**MAP-SCALE**	104
OFFICE	Rockhampton	**SUB-AREA**		**LONGITUDE**	148-39-58	**MAP-SERIES**	M
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	671585	**MAP-NO**	8653
D/O FILE NO.	515/030/0007	**LOT**	5	**NORTHING**	7529583	**MAP NAME**	BOMBANDY
R/O FILE NO.		**PLAN**	KL105	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**	P5	**ACCURACY**	SKET	**PRES EQUIPMENT**	NE
				GPS ACC			
GIS LAT	-22.33103532	**PARISH NAME**	1312-COXENDEAN			**ORIGINAL BORE NO**	KILLARNEY OH4
GIS LNG	148.666029171	**COUNTY**	KILLARNEY			**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	01/06/1968			**DATA OWNER**	
STATUS	Abandoned and Destroyed	**DRILLERS NAME**					
ROLES	ME	**DRILL COMPANY**	AUSTRAL GEO PROSPECTORS				
		METHOD OF CONST.	ROTARY				

CASING DETAILS

****** NO RECORDS FOUND ******

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	3.66	SANDY SOIL
2	3.66	7.62	CLAY
3	7.62	14.63	SANDY SHALE
4	14.63	19.51	FINE SAND
5	19.51	21.03	GREY MUDSTONE
6	21.03	22.86	SOOTY COAL
7	22.86	32.31	GREY SHALE
8	32.31	48.77	SHALEY GREY SANDSTONE
9	48.77	54.86	SHALE WITH SANDSTONE BANDS
10	54.86	60.96	DARK GREY SHALE
11	60.96	62.18	SHALE

BORE REPORT

REG NUMBER 97020

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
12	62.18	64.62	COAL
13	64.62	75.29	HARD GREY SANDSTONE
14	75.29	76.50	COAL
15	76.50	84.12	GREY SHALY SANDSTONE
16	84.12	85.04	COAL
17	85.04	91.44	GREY SANDY SHALE
18	91.44	97.54	HARD SANDSTONE
19	97.54	120.40	GREY SHALY SANDSTONE
20	120.40	122.83	COAL
21	122.83	134.11	GREY SHALY SANDSTONE
22	134.11	152.40	DARK GREY SANDY SHALE
903			HOLE ABD NO DETAILS OF WATER

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

****** NO RECORDS FOUND ******

WATER ANALYSIS PART1

BORE REPORT

REG NUMBER 97020

**** NO RECORDS FOUND ****

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

**** NO RECORDS FOUND ****

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

**** NO RECORDS FOUND ****

SPECIAL WATER ANALYSIS

**** NO RECORDS FOUND ****

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - White Tank**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	White Tank	**Ref No/GW Number:**	-
Easting (GDA94):	629347	**GPS Elevation:**	212
Northing:	7542483		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**53**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.48**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	127
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	35000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**17.133**	**Date / Time of Measurement:**	9:17:00 AM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**18.8**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**1721**	**Temp**	**26.1**	**pH**	**6.66**	**ORP**	**174.5**	**DO (%)**	**32.9**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

No pump deployed. Near to watering trough

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - White Tank**

Photograph 2 **Winchester Downs - White Tank**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 141382**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	-	**Ref No/GW Number:**	141382
Easting (GDA94):	628494	**GPS Elevation:**	205
Northing:	7542693		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**51.3**	**Year Drilled:**	2008
Casing Stick Up (SU):	**0.5**	**Drilled By**	**IESA**
Casing Material	**PVC**	**Internal Diameter**	50
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**PVC 0-51.5** **Screened 48.5-51.5**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	N/A
Power Source	**N/A**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	N/A
Headworks	**Steel Monument**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Monitoring**	**Pumping Regime**	N/A
Storage Type	**N/A**	**Approximate Volume**	N/A

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**14.929**	**Date / Time of Measurement:**	10:55:00 AM
Pumping History	N/A		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**18.3**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**2281**	**Temp**	**27**	**pH**	**5.98**	**ORP**	**-176.8**	**DO (%)**	**35.7**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

No logger deployed. Monument cap broken at hinge

SUPPORTING INFORMATION	Drillers Log	yes	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 141382**

Photograph 2 **Winchester Downs - 141382**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 141382

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-12-59	**MAP-SCALE**	254
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-14-48	**MAP-SERIES**	
DATE LOG RECD	01-MAY-08	**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	628490	**MAP-NO**	SF55-11
D/O FILE NO.	520/000/0072	**LOT**	5	**NORTHING**	7542693	**MAP NAME**	CLERMONT
R/O FILE NO.		**PLAN**	CNS90	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.21638819	**PARISH NAME**	5065-WINCHESTER			**ORIGINAL BORE NO**	MB5
GIS LNG	148.24663621	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**	09/04/2008			**DATA OWNER**	DNR
STATUS	Existing	**DRILLERS NAME**	MCLEAN, WAYNE ROBERT				
ROLES	SM	**DRILL COMPANY**	IESA				
		METHOD OF CONST.	ROTARY AIR - HAMMER				

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	09/04/2008	1	Polyvinyl Chloride	5.500	WT	60	0.00	48.50
A	09/04/2008	2	Centraliser				3.00	48.00
A	09/04/2008	3	Screen	0.500	AP		48.50	51.50
A	09/04/2008	4	Gravel Pack	7.000	GR	164	18.00	52.00
A	09/04/2008	5	Bentonite Seal			164	17.00	18.00
A	09/04/2008	6	Grout			164	0.00	17.00

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	0.70	"TOP SOIL CLAY BROWN"
2	0.70	3.00	CLAY, SILTY, ORANGE
3	3.00	11.00	CLAY, SILTY, OCHRE; SOME SILCRETE

BORE REPORT

REG NUMBER 141382

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
4	11.00	12.00	SHALE, LIGHT OCHRE
5	12.00	13.00	SHALE, SILTY, VERY FINE, SOFT; SOME IRON STAINING
6	13.00	16.00	SHALE, LIGHT OCHRE; SOME SILCRETE
7	16.00	33.00	SHALE, "SANDY/SILTY", LIGHT GREY; TRACE WATER 25 M
8	33.00	37.00	CARBONACEOUS MATERIAL, DARK GREY BLACK
9	37.00	40.00	SHALE, DARK GREY
10	40.00	52.00	"SHALE HARD/SOFT BANDS GREY"

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

REC	TOP BED(M)	BOTTOM BED(M)	BED LITHOLOGY	DATE	SWL (m)	FLOW	QUALITY	YIELD (l/s)	CTR	CONDIT	FORMATION NAME
1	25.00		SHLE	09/04/2008	-18.36	N		0.02	Y	PS	

PUMP TEST DETAILS PART 1

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	09/04/2008	209.33	SVY	AHD	R	
X	09/04/2008	208.83	SVY	AHD	N	

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

BORE REPORT

REG NUMBER 141382

WATER ANALYSIS PART 2

**** NO RECORDS FOUND ****

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	09/04/2008	-18.36	N		NR	A	19/04/2008	-15.95	R		ACT	A	11/06/2008	-15.46	R		ACT
A	13/10/2011	-15.12	R		ACT	A	10/11/2011	-15.09	R		ACT	A	11/01/2012	-15.04	R		ACT
A	12/06/2012	-14.87	R		ACT	A	09/08/2012	-15.08	R		ACT	A	11/09/2012	-14.86	R		ACT
A	10/10/2012	-14.81	R		ACT	A	05/11/2012	-14.80	R		ACT	A	05/12/2012	-14.78	R		ACT
A	08/01/2013	-14.34	R		ACT	A	11/02/2013	-14.75	R		ACT	A	18/03/2013	-14.33	R		ACT
A	08/04/2013	-14.35	R		ACT	A	08/05/2013	-14.29	R		ACT	A	11/06/2013	-14.40	R		ACT
A	08/07/2013	-14.15	R		ACT	A	06/08/2013	-14.40	R		ACT	A	09/09/2013	-14.40	R		ACT
A	08/10/2013	-14.33	R		ACT	A	06/11/2013	-14.27	R		ACT	A	04/12/2013	-14.31	R		ACT
A	07/01/2014	-14.32	R		ACT												

WIRE LINE LOG DETAILS

**** NO RECORDS FOUND ****

FIELD MEASUREMENTS

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	09/04/2008		6120	7.7						PU	GB
A	13/10/2011		3918	7.2			0.16			PU	GB
A	10/11/2011		3918	7.2			0.16			PU	GB
A	12/12/2011		3565	7.3			0.23			PU	GB
A	11/01/2012		4207	7.6	28.9		1.56			PU	GB
A	12/06/2012		4078	7.0	26.8		0.52			PU	GB
A	09/08/2012		3948	8.4	26.5		2.64			PU	GB
A	11/09/2012		4324	7.5	26.8		0.28			PU	GB
A	10/10/2012		4126	7.9	27.7		1.06			PU	GB
A	05/11/2012		5029	7.2	27.7					PU	GB
A	05/12/2012		4080	7.8	27.5					PU	GB
A	08/01/2013		4807	7.1	28.3		4.87			PU	GB
A	11/02/2013		3678	7.4	28.2					PU	GB

BORE REPORT

REG NUMBER 141382

PIPE	DATE	DEPTH (m)	COND (uS/cm)	pH	TEMP (C)	NO3 (mg/L)	DO (mg/L)	Eh (mV)	ALK (mEq)	METH	SOURCE
A	18/03/2013		4126	7.8	26.9		1.00			PU	GB
A	08/04/2013		5365	7.6	26.4					PU	GB
A	08/05/2013		4733	7.2	26.3		1.67			PU	GB
A	11/06/2013		5210	7.8	26.0		3.64			PU	GB
A	08/07/2013		4637	7.0	26.5		5.26			PU	GB
A	06/08/2013		4631	7.4	27.3					PU	GB
A	09/09/2013		5476	7.3	26.4					PU	GB
A	08/10/2013		5702	6.2	29.3		0.25			PU	GB
A	06/11/2013			6.3	27.3		0.36			PU	GB
A	04/12/2013		5785	6.9	29.4		1.98			PU	GB
A	07/01/2014		5330	7.4	28.2					PU	GB

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 16**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	-	**Ref No/GW Number:**	-
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status.

Coordinates near to large abandoned iron tank

Drilling subs and fittings in area

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 16**

Photograph 2 **Winchester Downs - 16**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 14**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	-	**Ref No/GW Number:**	-
Easting (GDA94):	628742	**GPS Elevation:**	202
Northing:	7546690		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**14.4**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.27**	**Drilled By**	**-**
Casing Material	**Steel**	**Internal Diameter**	144
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Poor**	**Pump Type**	no
Power Source	**windmill**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**Stock**	**Pumping Regime**	no
Storage Type	**Tank**	**Approximate Volume**	ruptured

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**3.59**	**Date / Time of Measurement:**	12:53:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.4**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**3003**	**Temp**	**25.3**	**pH**	**7.17**	**ORP**	**-135**	**DO (%)**	**34.5**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Windmill blades on ground

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 14**

Photograph 2 **Winchester Downs - 14**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 162460**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	Number One	**Ref No/GW Number:**	162460
Easting (GDA94):	627204	**GPS Elevation:**	215
Northing:	7546953		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**11.23**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.36**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**Good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**no**	**Bore Equipped With Meter**	Flow meter
Headworks	**2" HDPE outlet off steel manifold**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**tank**	**Approximate Volume**	20000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**dry**	**Date / Time of Measurement:**	1:40:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**2**	**O_2 %:**	**10.5**
Sample Collection Point	**bore**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

-

GROUNDWATER BORE REPORT CARD

Additional Notes

Insufficient water to take sample. Appears to be a duplicate bore as adjacent bore appears to have a similar construction.

Submersible pump deployed down adjacent bore. Windmill positioned over bore

SUPPORTING INFORMATION	**Drillers Log**	**yes**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 162460**

Photograph 2 **Winchester Downs - 162460**

GROUNDWATER DATABASE

BORE REPORT

REG NUMBER 162460

REGISTRATION DETAILS

		BASIN	1304	**LATITUDE**	22-10-41	**MAP-SCALE**	
OFFICE	Mackay	**SUB-AREA**		**LONGITUDE**	148-14-02	**MAP-SERIES**	
DATE LOG RECD		**SHIRE**	3980-ISAAC REGIONAL	**EASTING**	627200	**MAP-NO**	
D/O FILE NO.		**LOT**	8	**NORTHING**	7546952	**MAP NAME**	
R/O FILE NO.		**PLAN**	SP277384	**ZONE**	55	**PROG SECTION**	
H/O FILE NO.		**ORIGINAL DESCRIPTION**		**ACCURACY**		**PRES EQUIPMENT**	
				GPS ACC			
GIS LAT	-22.17801525	**PARISH NAME**	5065-WINCHESTER			**ORIGINAL BORE NO**	NO. 1 BORE
GIS LNG	148.23378644	**COUNTY**				**BORE LINE**	-
CHECKED	Y						
						POLYGON	
						RN OF BORE REPLACED	
FACILITY TYPE	Sub-Artesian Facility	**DATE DRILLED**				**DATA OWNER**	
STATUS	Existing	**DRILLERS NAME**					
ROLES	WS	**DRILL COMPANY**					
		METHOD OF CONST.					

CASING DETAILS

PIPE	DATE	RECORD NUMBER	MATERIAL DESCRIPTION	MAT SIZE (mm)	SIZE DESC	OUTSIDE DIAM (mm)	TOP (m)	BOTTOM (m)
A	01/01/1900	1	Polyvinyl Chloride			140		

STRATA LOG DETAILS

RECORD NUMBER	STRATA TOP (m)	STRATA BOT (m)	STRATA DESCRIPTION
1	0.00	30.00	NO DETAILS. DEPTH APPROX.

STRATIGRAPHY DETAILS

****** NO RECORDS FOUND ******

AQUIFER DETAILS

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 1

BORE REPORT

REG NUMBER 162460

****** NO RECORDS FOUND ******

PUMP TEST DETAILS PART 2

****** NO RECORDS FOUND ******

BORE CONDITION

****** NO RECORDS FOUND ******

ELEVATION DETAILS

PIPE	DATE	ELEVATION	PRECISION	DATUM	MEASUREMENT POINT	SURVEY SOURCE
A	09/02/2006	217.90	GPS	AHD	R	ISAAC PLAINS BORE CENSUS

WATER ANALYSIS PART1

****** NO RECORDS FOUND ******

WATER ANALYSIS PART 2

****** NO RECORDS FOUND ******

WATER LEVEL DETAILS

PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE	PIPE	DATE	MEASURE (m)	N/R	RMK	MEAS TYPE
A	09/02/2006	-14.78	R		ACT												

WIRE LINE LOG DETAILS

****** NO RECORDS FOUND ******

FIELD MEASUREMENTS

****** NO RECORDS FOUND ******

SPECIAL WATER ANALYSIS

****** NO RECORDS FOUND ******

BORE REPORT

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GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 15**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	-	**Ref No/GW Number:**	-
Easting (GDA94):	629039	**GPS Elevation:**	204
Northing:	7546882		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**23.4**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.2**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	135
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**Poor**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**9.67**	**Date / Time of Measurement:**	2:44:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**2.4**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**11.3**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**2063**	**Temp**	**25.4**	**pH**	**7.5**	**ORP**	**-178.4**	**DO (%)**	**28**

COMMENTS

methane present at 2.4%

GROUNDWATER BORE REPORT CARD

Additional Notes

Appears to previously have had piston pump installed

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 15**

Photograph 2 **Winchester Downs - 15**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 2485**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	-	**Ref No/GW Number:**	2485
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 2485**

Photograph 2 **Winchester Downs - 2485**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - 146040**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	-	**Ref No/GW Number:**	146040
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - 146040**

Photograph 2 **Winchester Downs - 146040**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**10/11/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Winchester Downs - Lemon Tree**

PART A: PROPERTY DETAILS

Property Name:	Winchester Downs		
Local Bore Name:	Lemon Tree	**Ref No/GW Number:**	-
Easting (GDA94):	630655	**GPS Elevation:**	195
Northing:	7551954		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	**0.51**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**yes**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	Flow meter
Headworks	**2" Steel manifold to 2" Poly**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	no
Storage Type	**no**	**Approximate Volume**	no

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	4:18:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**-**	**H_2S ppm:**	**-**	**CO ppm:**	**-**	**O_2 %:**	**-**
Sample Collection Point	**-**	**Sample Method**	**-**		**Purge Volume**	**-**		
Electrical Conductivity (µS/cm)	**-**	**Temp**	**-**	**pH**	**-**	**ORP**	**-**	**DO (%)** **-**

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

-

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Winchester Downs - Lemon Tree**

Photograph 2 **Winchester Downs - Lemon Tree**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Wynette - Bore 1**

PART A: PROPERTY DETAILS

Property Name:	Wynette		
Local Bore Name:	Bore 1	**Ref No/GW Number:**	-
Easting (GDA94):	634791	**GPS Elevation:**	189
Northing:	7550019		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**-**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.5**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	unknown
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	Submersible
Power Source	**Genset**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**3" Steel with sample tap**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	-
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**-**	**Date / Time of Measurement:**	2:40:00 PM
Pumping History	Bore hasn't been successfully pumped for +15 years		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:** -	**H_2S ppm:** -		**CO ppm:** -	**O_2 %:** -
Sample Collection Point -	**Sample Method** -			**Purge Volume** -	
Electrical Conductivity (µS/cm) -	**Temp** -	**pH** -		**ORP** -	**DO (%)** -

COMMENTS

Pump deployed

GROUNDWATER BORE REPORT CARD

Additional Notes

No sample or gas measurements taken due to headworks

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Wynette - Bore 1**

Photograph 2 **Wynette - Bore 1**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Wynette - Bore 2**

PART A: PROPERTY DETAILS

Property Name:	Wynette		
Local Bore Name:	Bore 2	**Ref No/GW Number:**	-
Easting (GDA94):	634788	**GPS Elevation:**	191
Northing:	7550024		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**19.85**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.61**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**yes**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock/monitoring**	**Pumping Regime**	-
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**15.97**	**Date / Time of Measurement:**	2:10:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0**	**H_2S ppm:**	**0**	**CO ppm:**	**1**	**O_2 %:**	**11.9**
Sample Collection Point	**bore**	**Sample Method**		**bailer**	**Purge Volume**		**2**	
Electrical Conductivity (µS/cm)	**2903**	**Temp**	**30.9**	**pH**	**6.69**	**ORP**	**124**	**DO (%)** **27.13**

COMMENTS

Water level logger present in bore

GROUNDWATER BORE REPORT CARD

Additional Notes

Bore was drilled when Bore 1 became dry 15 years ago. Bore doesn't yield sufficient volumes to warrant the permanent deployment of a pump

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Wynette - Bore 2**

Photograph 2 **Wynette - Bore 2**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Wynette - Bore 3**

PART A: PROPERTY DETAILS

Property Name:	Wynette		
Local Bore Name:	Bore 3	**Ref No/GW Number:**	-
Easting (GDA94):	634785	**GPS Elevation:**	187
Northing:	7550009		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	**94**	**Year Drilled:**	-
Casing Stick Up (SU):	**0.6**	**Drilled By**	**-**
Casing Material	**PVC**	**Internal Diameter**	125
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	**-**		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	**no**	**Condition**	**good**	**Pump Type**	no
Power Source	**no**	**Bore Capped**	**no**	**Bore Equipped With Meter**	no
Headworks	**no**				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	**stock**	**Pumping Regime**	-
Storage Type	**Tank**	**Approximate Volume**	40000

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	**15.91**	**Date / Time of Measurement:**	1:40:00 PM
Pumping History	no		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	**0.6**	**H_2S ppm:**	**0**	**CO ppm:**	**0**	**O_2 %:**	**19.8**	
Sample Collection Point	**bore**	**Sample Method**	**bailer**		**Purge Volume**	**2**			
Electrical Conductivity (µS/cm)	**6677**	**Temp**	**26.79**	**pH**	**7.44**	**ORP**	**43.5**	**DO (%)**	**28.3**

COMMENTS

methane present at 0.6%. Likely penetrating coal measures

GROUNDWATER BORE REPORT CARD

Additional Notes

Drilled at same time as bore 2 but to an increased depth looking for an alternate aquifer

SUPPORTING INFORMATION	**Drillers Log**	**no**	**Meeting With Land Representative**	**yes**	**Photo**	yes

PHOTOGRAPHIC RECORD

Photograph 1 **Wynette - Bore 3**

Photograph 2 **Wynette - Bore 3**

GROUNDWATER BORE REPORT CARD

SURVEY DATE:	**29/09/2017**	**SURVEY PERSONNEL:**	**ML + TF**	**BORE ID:**	**Wynette - 2498**

PART A: PROPERTY DETAILS

Property Name:	Wynette		
Local Bore Name:	-	**Ref No/GW Number:**	2498
Easting (GDA94):	0	**GPS Elevation:**	0
Northing:	0		

PART B: BORE CONSTRUCTION DETAILS

Bore Depth (mBTOC):	-	**Year Drilled:**	-
Casing Stick Up (SU):	-	**Drilled By**	-
Casing Material	-	**Internal Diameter**	-
Initial Water Quality Measurement (Driller Log)	-		
Construction Summary (Driller Log)	-		

PART C: BORE EQUIPMENT AND CONDITION DETAILS

Bore In Use	-	**Condition**	-	**Pump Type**	-
Power Source	-	**Bore Capped**	-	**Bore Equipped With Meter**	-
Headworks	-				

PART D: BORE WATER SUPPLY INFORMATION

Observed Purpose	-	**Pumping Regime**	-
Storage Type	-	**Approximate Volume**	-

PART E: WATER LEVEL INFORMATION

Depth to Water (mBTOC):	-	**Date / Time of Measurement:**	12:00:00 AM
Pumping History	-		

PART F: WATER QUALITY

Well Head Gas Screening:	**CH_4 ppm:**	-	**H_2S ppm:**	-	**CO ppm:**	-	**O_2 %:**	-
Sample Collection Point	-	**Sample Method**	-		**Purge Volume**	-		
Electrical Conductivity (µS/cm)	-	**Temp**	-	**pH**	-	**ORP**	-	**DO (%)**	-

COMMENTS

Registered coordinates visited - no bore present

GROUNDWATER BORE REPORT CARD

Additional Notes

Land representative not aware of bores presence or status

SUPPORTING INFORMATION	Drillers Log	no	Meeting With Land Representative	yes	Photo	no

PHOTOGRAPHIC RECORD

Photograph 1 **Wynette - 2498**

Photograph 2 **Wynette - 2498**

26 July 2019 Proposal No. 1898818-015-L-Rev0

Peabody Energy Australia Coal Pty Ltd
Level 5, 100 Melbourne Street
South Brisbane
QLD,4101

BORE INVENTORY RESULTS

1.0 INTRODUCTION

Peabody Energy Australia Coal Pty Limited (Peabody) has contracted Golder Associates Pty Ltd (Golder) for Stage 1 and Stage 2 of the groundwater modelling and impact assessment for the Olive Downs North coal mining project. Stage 1 of the investigation involved collation of data, identification of data gaps, and design of the field investigation program, and was reported previously (Golder, 2018a). This factual report presents the results of the bore inventory conducted within the Olive Downs North (ODN) area as part of the Stage 2- "Implementation of Recommended Monitoring Program". Results of Stage 2 will support updates to the hydrogeological conceptual model for the Stage 3 and subsequent groundwater modelling for the ODN site.

2.0 SCOPE OF WORK

- The objective of the bore inventory is to identify bores suitable to collect hydrogeological and geological information in areas where data gaps have been identified during Stage 1 (Golder, 2018a) to support the development or update of groundwater model within ODN area. Twenty-five bores listed in Table 1 have been selected to be surveyed during the bore inventory to collect the following information:
- Bore ID;
- Northing and Easting (GDA 1994 MGA, zone 54 or 55) using hand-held GPS – in a later stage of the project a surveyor will determine the location of the bores with higher accuracy;
- Bore depth;
- Screen interval depth (from construction report or downhole camera records) – this helps to relate screen interval to a hydrogeological unit;
- Screened hydrogeological unit (from construction report or landholder comments);
- Monument condition;
- Presence of pump (visual assessment, pump brand and type, yield, pumping frequency);
- Water level measurement;
- In-situ field physicochemical parameters (pH, EC, redox potential, dissolved oxygen) with a calibrated water quality meter;
- Data and time of measurements.

The list of proposed bores is presented in Table 1, the location of the bores part of the revised bore inventory list is shown in Figure 1.

Table 1: The original list of bores to be surveyed.

Bore ID	Downhole camera survey to be conducted	Groundwater Sampling to be carried out
44164*	No	No
136090	Yes	No
141157	No	No
141677	No	No
162185	No	No
162682	No	No
162683	No	Yes
162684	No	Yes
162686	No	No
162826 (Bore 9)*	No	No
162827 (Bore 8)*	No	No
162841 (Bore 10)	Yes	Yes
162842 (Bore 11)	Yes	No
162909	No	No
162910	No	No
162911	No	No
162912	No	No
162913	No	No
162914	No	No
162915	No	No
162916	No	Yes
162917	Yes	Yes
C-Pit Borehole 1 (MV2848)	No	No
C-Pit Borehole 2 (MV2849)	No	No
F-Pit (MV2850)	No	No

*Bores have been removed from the Golder proposed bore inventory list after review of the Pembroke bore census EIS (Pembroke, 2017) as these bores were not accessible or unknown.

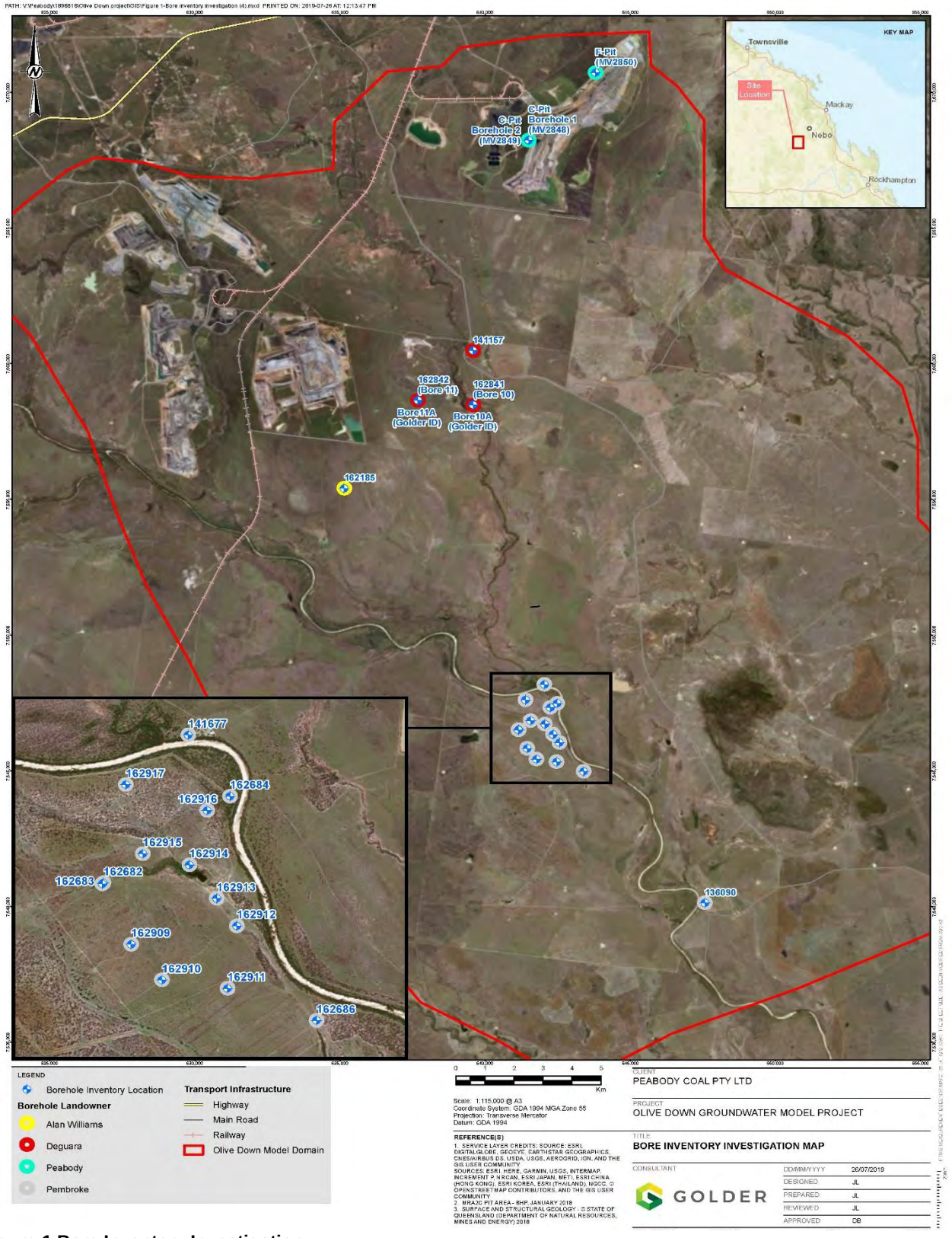

Figure 1 Bore Inventory Investigation

3.0 BORE INVENTORY SUMMARY

A Golder field hydrogeologist has completed the bore inventory from the 8 to 11 May 2019 on 5 registered/landholder bores. Twenty of the originally selected bores could not be surveyed as detailed in Table 2.

Results of the bore inventory are summarised in Table 3 and bore report cards are presented in APPENDIX A. Purging and sampling bore field record are presented in APPENDIX B and calibration sheet in APPENDIX C. Electronical version of the downhole camera video will be provided separately to Peabody as part of APPENDIX E.

One bore BH10A (Golder site name based on the closest registered bore) has been sampled for groundwater analysis of the ODN suite as described in the ODN groundwater monitoring program (Golder, 2018). The sample has been sent to ALS, NATA accredited laboratory, for analysis. Laboratory results are presented in APPENDIX D. Holding times have been exceeded for pH, turbidity, dissolved oxygen, nitrite as N and microbiological parameters as presented in APPENDIX D.

Table 2: Bore surveyed conducted

Bore ID	Bore surveyed	Comments
44164	No	Could not have been found at registered coordinates, not to survey
136090	No	Pembroke bore, survey cancelled
141157	Yes	Surveyed
141677	No	Pembroke bore, survey cancelled
162185	No	Pembroke bore, survey cancelled
162682	No	Pembroke bore, survey cancelled
162683	No	Pembroke bore, survey cancelled
162684	No	Pembroke bore, survey cancelled
162686	No	Pembroke bore, survey cancelled
162826 (Bore 9)	No	Equipped with pump, not to survey
162827 (Bore 8)	No	Equipped with pump, not to survey
162841 (Bore 10)	Yes	Surveyed
162842 (Bore 11)	Yes	Surveyed
162909	No	Pembroke bore, survey cancelled
162910	No	Pembroke bore, survey cancelled
162911	No	Pembroke bore, survey cancelled
162912	No	Pembroke bore, survey cancelled
162913	No	Pembroke bore, survey cancelled
162914	No	Pembroke bore, survey cancelled
162915	No	Pembroke bore, survey cancelled
162916	No	Pembroke bore, survey cancelled
162917	No	Pembroke bore, survey cancelled
C-Pit Borehole 1 (MV2848)	Yes	Surveyed
C-Pit Borehole 2 (MV2849)	Yes	Surveyed
F-Pit (MV2850)	No	Mined away

A few notes on this list:

- The survey of all Pembroke bores has been cancelled following verbal communication (dated on the 13/05/19 between Jennifer Lallier from Golder and Kylie Gomez-Gane from Peabody), since Peabody and Pembroke prepared a data sharing agreement, so groundwater level and quality data become available for Peabody. Thus, Pembroke bores were not surveyed;
- MV2850 was mined away;
- Bore 8 and Bore 9 are equipped with pumps, they were not surveyed;
- 44164 could not have been found at the registered coordinates based on the Pembroke Census report (Pembroke, 2017);
- As a total five bores have been surveyed from the list, plus two other bores nearby (Bore 10A and Bore 11A). These two bores are not in the original list, they are unnamed and located close to Bore 10 and Bore 11, respectively.

Though the survey of the Pembroke bores has been cancelled due to the data sharing agreement between Pembroke and Peabody, the careful evaluation of the Pembroke data and their incorporation into the monitoring program is vital

Table 3: Summary of bore inventory investigations

Bore ID	Local Bore	Property	Easting (GDA 1994, zone 55)	Northing(GDA 1994, zone 55)	Elevation	Year drilled	Date visited
141157	NA	Unknown	639596	7560480	210	unknown	10/05/19
Bore10	NA	Daunia	639599	7558478	201	unknown	10/05/19
Bore10A (additional bore name by Golder)	NA	Daunia	639584	7558489	201	unknown	10/05/19
Bore11	NA	Daunia	637651	7558649	219	unknown	11/05/19
Bore11A (additional bore name by Golder)	NA	Daunia	637705	7558642	219	unknown	11/05/19
MV2848	C Pit1	Moorvale mine	641488	7568232	236	2010	08/05/19
MV2849	C Pit2	Moorvale mine	641495	7568239	236	2010	08/05/19

4.0 RECOMMENDATIONS

A summary of bores visited during the bore inventory and recommendations for future monitoring are summarised in Table 4.

Table 4: Recommendation

Bore ID	Visited during bore inventory	Monitoring required
141157	Yes	No as not accessible.
MV2848	Yes	Yes, but depend on the ODN Groundwater model domain
MV2849	Yes	Yes, but depend on the ODN Groundwater model domain
Bore 10	Yes	No, no deemed suitable.
Bore 10A	Yes	Yes, if the screened formation is inferred from the updated Peabody geological model using the bore screen interval assess from the downhole camera survey.
Bore 11	Yes	No as not accessible.
Bore 11A	Yes	Yes, if the screened formation is inferred from the updated Peabody geological model using the bore screen interval assess from the downhole camera survey.
Pembroke bore	No	Yes within at least 3 shallow bores and one deep bore at the frequency outlined within table 6 of Appendix D of ODN monitoring program (Golder,2018).

5.0 REFERENCES

- DNRME, 2018. Queensland groundwater database (GWDB), consulted in June 2018. https://data.qld.gov.au/dataset/groundwater-database-queensland
- Golder Associates Pty Ltd (Golder), 2018. Olive Downs North Groundwater Model. Stage 1-Data Collation and Assessment. 1898818-001-Rev0
- Pembroke Olive Downs Pty Ltd (Pembroke), 2018. Olive Downs Coking Coal Project. Draft Environmental Impact Statement. Appendix D-Groundwater assessment.
- Peabody Energy, 2016.Triennial Groundwater Review, Moorvale Mine, QLD.

Signature Page

Golder Associates Pty Ltd

Dr. Kalman Benedek
Senior Hydrogeologist

John Fortuna
Principal Hydrogeologist

KB/JF/rw

Attachments: APPENDIX A- Groundwater bore report card
APPENDIX B- Purging/sampling bore field record
APPENDIX C – Calibration Sheet
APPENDIX D- Laboratory Results
APPENDIX E- Electronical version of downhole camera survey
APPENDIX F- Important Information

APPENDIX A

Groundwater bore report card

Survey Date:	**08/05/2019**	**Survey Personnel:**	**Kalman Benedek**	**Bore ID:**	**CPit MV2848 shallow**

PART A: PROPERTY DETAILS					
Property Name:	Moorvale Mine				
Local Bore Name:	C Pit 1		Ref No/GW Number:	MV2848	
Easting:	~641488	Northing:	~7568232	Elevation:	~236(mAHD)
PART B: BORE CONSTRUCTION DETAILS					
Bore Depth (mBTOC)	76.3		Casing Stick Up and Diameter:	85.5cm, 76mm	
Casing Material:	PVC		Drilled By (year):	TWB (2010)	
Geology:	Sandstone and siltstone with highly variable appearance (Peabody Energy, 2016)				
Screening Interval:	60-76m (based on bore log from Peabody Energy, 2016), filter pack between 12-76m				
Downhole Camera Survey:	No				
Monument Conditions:	Very good, refer to Photograph 1 to 2				
PART C: BORE EQUIPMENT AND CONDITION DETAILS					
Bore in Use:	No	Condition:	NA	Pump Type/Brand:	NA
Power Source:	NA	Bore Capped:	Yes	Bore Equipped with Meter:	No
PART D: BORE WATER SUPPLY INFORMATION					
Purpose:	Monitoring		Storage:	NA	
Volume/Yield:	NA				

PART E: WATER LEVEL INFORMATION			
Depth to Water (mBTOC):	66.41 (71.93 after bailing)	Date/Time Measurement:	08/05/2019 8:40
Pumping History:	NA		

PART F: WATER QUALITY INFORMATION, IN-SITU FIELD PHYSICOCHEMICAL PARAMETERS					
Sample Method:	Bailer	Purge Volume:	50L	Quality Meter:	YSI Quatro Pro Plus
pH:	6.97	Electrical Conductivity:	35468 µS/cm	Redox Potential:	-112.6 mV
Dissolved Oxygen:	4.9%	Date/Time Measurement:		05/05/2019, 11:26	
Sampling for Laboratory Measurement:		No			

PART E: SUPPORTING INFORMATION	
Landholder Information and Comments:	The bore is regularly monitored by Peabody (manual measurements).

Photograph 1 (MV2848)

Photograph 2 (MV2848)

GROUNDWATER BORE REPORT CARD

Survey Date:	**08/05/2019**	**Survey Personnel:**	**Kalman Benedek**	**Bore ID:**	**CPit Borehole2 (MV2849) deep**

PART A: PROPERTY DETAILS					
Property Name:	Moorvale Mine				
Local Bore Name:	C Pit 2		Ref No/GW Number:	MV2849	
Easting:	~641495	Northing:	~7568239	Elevation:	236(mAHD)
PART B: BORE CONSTRUCTION DETAILS					
Bore Depth (mBTOC)	166m (bore log)		Casing Stick Up and Diameter:	92cm, 76mm	
Casing Material:	PVC		Drilled By (year):	TWB (2010)	
Geology:	Mostly siltstone and sandstone, black coal between 150-157m (LU/LL1 and LL2, between 158-161m (LL2S) (Peabody Energy, 2016)				
Screening Interval:	64-166m (filter pack between 12-166m) (Peabody Energy, 2016)				
Downhole Camera Survey:	No				
Monument Conditions:	Very good, refer to Photograph 1 to 2				
PART C: BORE EQUIPMENT AND CONDITION DETAILS					
Bore in Use:	No	Condition:	NA	Pump Type/Brand:	NA
Power Source:	NA	Bore Capped:	NA	Bore Equipped with Meter:	NA
PART D: BORE WATER SUPPLY INFORMATION					
Purpose:	Monitoring		Storage:	NA	

Volume/Yield:	NA				
PART E: WATER LEVEL INFORMATION					
Depth to Water (mBTOC):	77.35	Date/Time Measurement:	08/05/2019 11:40		
Pumping History:	NA				
PART F: WATER QUALITY INFORMATION, IN-SITU FIELD PHYSICOCHEMICAL PARAMETERS					
Sample Method:	Bailer	Purge Volume:	30L	Quality Meter:	YSI Quatro Pro Plus
pH:	7.59	Electrical Conductivity:	24294 µS/cm	Redox Potential:	-137mV
Dissolved Oxygen:	3.9%	Date/Time Measurement:	08/05/2019 13:09		
Sampling for Laboratory Measurement:	No				
PART E: SUPPORTING INFORMATION					
Landholder Information and Comments:	The bore is monitored regularly by Peabody (manual measurements).				

Photograph 1 (MV2849)

Photograph 2 (MV2849)

GROUNDWATER BORE REPORT CARD

Survey Date:	**10/05/2019**	**Survey Personnel:**	**Kalman Benedek**	**Bore ID:**	**141157**

PART A: PROPERTY DETAILS					
Property Name:					
Local Bore Name:			Ref No/GW Number:		
Easting:	~639596	Northing:	~7560480	Elevation:	~210m
PART B: BORE CONSTRUCTION DETAILS					
Bore Depth (mBTOC)	Not measurable at the site (50m based on DNRME data base)		Casing Stick Up and Diameter:	36cm, diameter is not measurable	
Casing Material:	PVC		Drilled By (year):	Not known	
Geology:	Blackwater Group (DNRME data base)				
Screening Interval:	30-50m (DNRME data base)				
Downhole Camera Survey:	No				
Monument Conditions:	Very good, refer to Photograph 1 to 3				
PART C: BORE EQUIPMENT AND CONDITION DETAILS					
Bore in Use:	Yes	Condition:	Very good	Pump Type/Brand:	Not available
Power Source:	Solar	Bore Capped:	No, equipped	Bore Equipped with Meter:	No, pressure meter
PART D: BORE WATER SUPPLY INFORMATION					
Purpose:	Likely farming		Storage:	Not seen	
Volume/Yield:	1.26L/s (DNRME data base)				

PART E: WATER LEVEL INFORMATION			
Depth to Water (mBTOC):	Not measurable (25-33m, DNRME data base)	Date/Time Measurement:	NA
Pumping History:	Not available		
Comments:	No access to the bore, equipped with pump, in operation		

PART F: WATER QUALITY INFORMATION, IN-SITU FIELD PHYSICOCHEMICAL PARAMETERS					
Sample Method:	From the tap	Purge Volume:	NA	Quality Meter:	YSI Quatro Pro Plus
pH:	7.15	Electrical Conductivity:	4449 µS/cm	Redox Potential:	19.8 mV
Dissolved Oxygen:	35.3 %	Date/Time Measurement:		10/05/2019 11:00	
Sampling for Laboratory Measurement:		No			

PART E: SUPPORTING INFORMATION	
Landholder Information and Comments:	No landholder present.

Photograph 1 (141157)

Photograph 2 (141157)

Photograph 3 (141157)

GROUNDWATER BORE REPORT CARD

Survey Date:	**10/05/2019**	**Survey Personnel:**	**Kalman Benedek**	**Bore ID:**	**Bore 10**

PART A: PROPERTY DETAILS					
Property Name:	Daunia				
Local Bore Name:			Ref No/GW Number:	162841	
Easting:	~639599	Northing:	~7558478	Elevation:	~201(mAHD)
PART B: BORE CONSTRUCTION DETAILS					
Bore Depth (mBTOC)	170-190m (based on owner comment)		Casing Stick Up and Diameter:	45cm, 170mm	
Casing Material:	PVC		Drilled By (year):	Not known	
Geology:	Not known				
Screening Interval:	Not known				
Downhole Camera Survey:	Yes, not to depth, there was a risk tangle up with pump cables				
Construction Summary:	In good condition, casing stick up broken				
Monument Conditions:	No monument, refer to Photograph 1 to 2				
PART C: BORE EQUIPMENT AND CONDITION DETAILS					
Bore in Use:	Yes	Condition:	Good	Pump Type/Brand:	Grundfos unknown
Power Source:	Power line	Bore Capped:	No, equipped	Bore Equipped with Meter:	No
PART D: BORE WATER SUPPLY INFORMATION					
Purpose:	Stock, animal, farming		Storage:	pond	
Volume/Yield:					

PART E: WATER LEVEL INFORMATION			
Depth to Water (mBTOC):	20.2m	Date/Time Measurement:	10/05/19 12:56
Pumping History:	Not available		

PART F: WATER QUALITY INFORMATION, IN-SITU FIELD PHYSICOCHEMICAL PARAMETERS					
Sample Method:	Bailer	Purge Volume:	1L	Quality Meter:	YSI Quatro Pro Plus
pH:	7.28	Electrical Conductivity:	5660 µS/cm	Redox Potential:	85.2 mV
Dissolved Oxygen:	34%	Date/Time Measurement:		10/05/2019 13:12	
Sampling for Laboratory Measurement:		No			

PART E: SUPPORTING INFORMATION	
Landholder Information and Comments:	No landholder present.

Photograph 1 (Bore 10)

Photograph 2 (Bore 10)

GROUNDWATER BORE REPORT CARD

Survey Date:	**10/05/2019**	**Survey Personnel:**	**Kalman Benedek**	**Bore ID:**	**Bore10A**

PART A: PROPERTY DETAILS					
Property Name:	Daunia				
Local Bore Name:	Not known		Ref No/GW Number:	Not known	
Easting:	~639584	Northing:	~7558489	Elevation:	~201(mAHD)
PART B: BORE CONSTRUCTION DETAILS					
Bore Depth (mBTOC)	101		Casing Stick Up and Diameter:	46cm, 130mm	
Casing Material:	Pvc		Drilled By (year):	Not known	
Geology:	Not known				
Screening Interval:	From 60m it is clear to have slots on the casing down to 84m, below 90 m there is no casing				
Downhole Camera Survey:	Yes, down to the bottom				
Construction Summary:	Only casing stick up is visible, not capped				
Monument Conditions:	No monument, refer to Photograph 1 to 3				
PART C: BORE EQUIPMENT AND CONDITION DETAILS					
Bore in Use:	No	Condition:	Good	Pump Type/Brand:	NA
Power Source:	NA	Bore Capped:	No	Bore Equipped with Meter:	NA
PART D: BORE WATER SUPPLY INFORMATION					
Purpose:	Not in use		Storage:	NA	
Volume/Yield:	NA				

PART E: WATER LEVEL INFORMATION			
Depth to Water (mBTOC):	20.24	Date/Time Measurement:	10/05/19 14:00
Pumping History:	Not available		

PART F: WATER QUALITY INFORMATION, IN-SITU FIELD PHYSICOCHEMICAL PARAMETERS					
Sample Method:	Bailer	Purge Volume:	30L	Quality Meter:	YSI Quatro Pro Plus
pH:	7.3	Electrical Conductivity:	4124 µS/cm	Redox Potential:	35.1 mV
Dissolved Oxygen:	9.1%	Date/Time Measurement:		10/05/2019 16:00	
Sampling for Laboratory Measurement:		Yes			

PART E: SUPPORTING INFORMATION	
Landholder Information and Comments:	No landholder present.

Photograph 1 (Bore 10A)

Photograph 2 (Bore 10A)

Photograph 3 (slot on the casing at 65m, Bore 10A) refer video in APPENDIX E.

GROUNDWATER BORE REPORT CARD

Survey Date:	**11/05/2019**	**Survey Personnel:**	**Kalman Benedek**	**Bore ID:**	**Bore11**

PART A: PROPERTY DETAILS					
Property Name:	Daunia				
Local Bore Name:	NA		Ref No/GW Number:	162842	
Easting:	~637651	Northing:	~7558649	Elevation:	~219(mAHD)
PART B: BORE CONSTRUCTION DETAILS					
Bore Depth (mBTOC)	Not accessible		Casing Stick Up and Diameter:	23.5cm, 135mm	
Casing Material:	PVC		Drilled By (year):	Not known	
Geology:	Not known				
Screening Interval:	Not accessible				
Downhole Camera Survey:	No				
Construction Summary:	The bore is equipped with pump				
Monument Conditions:	Very good, refer to Photograph 1 to 2				
PART C: BORE EQUIPMENT AND CONDITION DETAILS					
Bore in Use:	No	Condition:	Good	Pump Type/Brand:	Grundfos
Power Source:	Generator(?)	Bore Capped:	Yes	Bore Equipped with Meter:	No
PART D: BORE WATER SUPPLY INFORMATION					
Purpose:	NA		Storage:	NA	

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Volume/Yield:	NA				
PART E: WATER LEVEL INFORMATION					
Depth to Water (mBTOC):	No access		Date/Time Measurement:	NA	
Pumping History:	NA				
PART F: WATER QUALITY INFORMATION, IN-SITU FIELD PHYSICOCHEMICAL PARAMETERS					
Sample Method:	NA	Purge Volume:	NA	Quality Meter:	NA
pH:	NA	Electrical Conductivity:	NA	Redox Potential:	NA
Dissolved Oxygen:	NA	Date/Time Measurement:			
Sampling for Laboratory Measurement:		No			
PART E: SUPPORTING INFORMATION					
Landholder Information and Comments:	No landholder present.				

Photograph 1 (Bore 11)

Photograph 2 (Bore 11)

GROUNDWATER BORE REPORT CARD

Survey Date:	**11/05/2019**	**Survey Personnel:**	**Kalman Benedek**	**Bore ID:**	**Bore11A**

PART A: PROPERTY DETAILS					
Property Name:	Daunia				
Local Bore Name:	Not known		Ref No/GW Number:	Not known	
Easting:	~637705	Northing:	~7558642	Elevation:	~219(mAHD)
PART B: BORE CONSTRUCTION DETAILS					
Bore Depth (mBTOC)	36.2m		Casing Stick Up and Diameter:	20cm, 140mm	
Casing Material:	PVC		Drilled By (year):	Not known	
Geology:	Not known				
Screening Interval:	From 25m it is visible down to the total depth				
Downhole Camera Survey:	Yes				
Construction Summary:	Very good, no cap, open				
Monument Conditions:	No monument				
PART C: BORE EQUIPMENT AND CONDITION DETAILS					
Bore in Use:	No	Condition:	Good	Pump Type/Brand:	NA
Power Source:	NA	Bore Capped:	No	Bore Equipped with Meter:	NA
PART D: BORE WATER SUPPLY INFORMATION					
Purpose:	Not in use		Storage:	NA	
Volume/Yield:	NA				
PART E: WATER LEVEL INFORMATION					

Depth to Water (mBTOC):	18.81	Date/Time Measurement:	11/05/19 9:21
Pumping History:	NA		

PART F: WATER QUALITY INFORMATION, IN-SITU FIELD PHYSICOCHEMICAL PARAMETERS

Sample Method:	Bailer	Purge Volume:	30	Quality Meter:	YSI Quatro Pro Plus
pH:	6.85	Electrical Conductivity:	4520 µS/cm	Redox Potential:	-146.7 mV
Dissolved Oxygen:	6.9%	Date/Time Measurement:		11/05/2019 10:15	
Sampling for Laboratory Measurement:		No			

PART E: SUPPORTING INFORMATION

Landholder Information and Comments:	Landholder not present.

Photograph 1 (Bore 11A)

Photograph 2 (Bore 11A)

Photograph 3 (slotted casing, Bore 11A) refer in APPENDIX E

APPENDIX B

Purging/sampling bore field record

GROUNDWATER SAMPLING RECORD FORM THREE WELL VOLUME PURGING and SAMPLING

GOLDER

WELL ID:	141157

PROJECT INFORMATION

Project Number:	1898818	Date:	10/05/19
Client:	PEABODY	Sampled By:	KB
Site Location:	MOORVALE	Time:	1020

Weather Conditions (Temperature, Precipitation, Wind): perfect

Well Maintenance Required? YES / NO (NO) Detail

WELL INFORMATION

Diameter of well casing (mm)	13-14 cm
Standpipe stick up (m)	36 cm
Surveyed reference point (RP)	TOC
Height of filter pack (from log)	
Depth of well (from log)	
Diameter of well casing plus filter pack (mm)	

Pre-Sampling Information

Interface probe used?	YES / NO	Depth to product (mbRP) =
Initial depth to water (mbRP) =		Thickness of product (m) =
Total depth of well (mbRP) =		Bailed product thickness (m) =
Thickness of sediment on base of well (m) =		

Three Well Volume Calculation

mbRP - metres below top of reference point (note: standard reference point is top of PVC standpipe)

Volume per metre of casing above filter pack **[Y]**

Casing Diameter (mm)	Volume in casing (L)
25	0.5
50	2
100	8

Volume per metre in casing and filter pack **[Z]**

Diameter at filter pack (mm)	Volume in Casing and filter pack (L)		
	25 mm casing	50 mm casing	100 mm casing
100	2.7	3.7	-
120	3.7	4.8	8.9
125	4	5.1	9.2
150	5.6	6.7	10.8
200	9.8	10.8	14.9

Purging and Sampling Information

	YES/NO
Is initial water level within the filter pack?	
Height of water above filterpack (m) = **[A]**	
Height of water within filterpack (m) = **[B]**	
Volume of water in well (L) = [(A x Y) + (B x Z)]	
Purge Volume (L) [3 x volume of water in well]	
Depth of footvalve/pump/bailer (mbRP)	
Purging Equipment	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Cumulative Well Volume (L)	Depth to Groundwater (mbRP)	±0.1 pH	±5% Conductivity (µS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5 Temperature (°C)	Appearance (Colour, Turbidity, Odour, etc)
1020	0.1			7.13	5135	16.8	35.6	27.6	clear, no odour, Clear
1120	0.2			7.15	4449	19.8	35.3	27.5	drinking water

SAMPLING RECORD

Time Sampled:

Colour:

Odour:

Turbidity: Low Medium High

Hydrocarbon Sheen ? Yes No

DI Water Lab Certificate No.

Sample IDs

Primary Duplicate:

Secondary Duplicate:

Trip Blank:

Rinsate:

Field Blank:

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

Vials (P/UP)	Metals (F/UF;P/UP)
1L Amber	Cyanide
1L Plastic	Sulphide
Phenols/COD/NH3 (F/UF; P/UP)	Other
Ferrous/Ferric Iron (F/UF; P/UP)	Other

Notes: water sample is taken from the tap

GROUNDWATER SAMPLING RECORD FORM THREE WELL VOLUME PURGING and SAMPLING

GOLDER

WELL ID:	Bore 10

PROJECT INFORMATION			
Project Number:	1898818	Date:	10/05/10
Client:	PEABODY	Sampled By:	KB
Site Location:	MOORVALE	Time:	

Weather Conditions (Temperature, Precipitation, Wind) good, sunny

Well Maintenance Required? YES / NO Detail

WELL INFORMATION	
Diameter of well casing (mm)	160
Standpipe stick up (m)	0.47
Surveyed reference point (RP)	TOC
Height of filter pack (from log)	?
Depth of well (from log)	170-190 m
Diameter of well casing plus filter pack (mm)	

Pre-Sampling Information			
Interface probe used?	YES / NO	Depth to product (mbRP) =	
Initial depth to water (mbRP) =	20.2	Thickness of product (m) =	
Total depth of well (mbRP) =		Bailed product thickness (m) =	
Thickness of sediment on base of well (m) =			

Three Well Volume Calculation

mbRP - metres below top of reference point (note: standard reference point is top of PVC standpipe)

Volume per metre of casing above filter pack **[Y]**

Casing Diameter (mm)	Volume in casing (L)
25	0.5
50	2
100	8

Volume per metre in casing and filter pack **[Z]**

Diameter at filter pack (mm)	Volume in Casing and filter pack (L)		
	25 mm casing	50 mm casing	100 mm casing
100	2.7	3.7	-
120	3.7	4.8	8.9
125	4	5.1	9.2
150	5.6	6.7	10.8
200	9.8	10.8	14.9

Purging and Sampling Information

Is initial water level within the filter pack?	YES/NO
Height of water above filterpack (m) = **[A]**	
Height of water within filterpack (m) = **[B]**	
Volume of water in well (L) = [(A x Y) + (B x Z)]	
Purge Volume (L) [3 x volume of water in well]	
Depth of footvalve/pump/bailer (mbRP)	
Purging Equipment	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Cumulative Well Volume (L)	Depth to Groundwater (mbRP)	±0.1 pH	±5% Conductivity (µS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5 Temperature (°C)	Appearance (Colour, Turbidity, Odour, etc)
1312	1		20.2	7.28	5660	85.2	34	27.8	clear, transparent

SAMPLING RECORD

Time Sampled:

Colour:

Odour:

Turbidity: Low Medium High

Hydrocarbon Sheen ? Yes No

DI Water Lab Certificate No.

Sample IDs

Primary Duplicate:

Secondary Duplicate:

Trip Blank:

Rinsate:

Field Blank:

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

Vials (P/UP)

1L Amber

1L Plastic

Phenols/COD/NH3 (F/UF; P/UP)

Ferrous/Ferric Iron (F/UF; P/UP)

Metals (F/UF;P/UP)

Cyanide

Sulphide

Other

Other

Notes: after the first bailer sample, the bailer stuck in the bore, removed but no additional water was extracted

GROUNDWATER SAMPLING RECORD FORM THREE WELL VOLUME PURGING and SAMPLING

GOLDER

WELL ID:	Bore 10a

PROJECT INFORMATION

Project Number:	1898818	Date:	10/05/19
Client:	PEABODY	Sampled By:	KB
Site Location:	MOORVALE	Time:	

Weather Conditions (Temperature, Precipitation, Wind) excellent

Well Maintenance Required? YES / NO (NO circled) Detail

WELL INFORMATION

Diameter of well casing (mm)	130
Standpipe stick up (m)	0.46
Surveyed reference point (RP)	TOC
Height of filter pack (from log)	
Depth of well (from log)	101
Diameter of well casing plus filter pack (mm)	

Pre-Sampling Information

Interface probe used?	YES / NO	Depth to product (mbRP) =	
Initial depth to water (mbRP) =	20.24	Thickness of product (m) =	
Total depth of well (mbRP) =		Bailed product thickness (m) =	
Thickness of sediment on base of well (m) =			

Three Well Volume Calculation

mbRP - metres below top of reference point (note: standard reference point is top of PVC standpipe)

Volume per metre of casing above filter pack [Y]

Casing Diameter (mm)	Volume in casing (L)
25	0.5
50	2
100	8

Volume per metre in casing and filter pack [Z]

Diameter at filter pack (mm)	Volume in Casing and filter pack (L) 25 mm casing	50 mm casing	100 mm casing
100	2.7	3.7	-
120	3.7	4.8	8.9
125	4	5.1	9.2
150	5.6	6.7	10.8
200	9.8	10.8	14.9

Purging and Sampling Information

Is initial water level within the filter pack?	YES/NO
Height of water above filterpack (m) = [A]	
Height of water within filterpack (m) = [B]	
Volume of water in well (L) = [(A x Y) + (B x Z)]	
Purge Volume (L) [3 x volume of water in well]	
Depth of footvalve/pump/bailer (mbRP)	
Purging Equipment	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Cumulative Well Volume (L)	Depth to Groundwater (mbRP)	±0.1 pH	±5% Conductivity (µS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5 Temperature (°C)	Appearance (Colour, Turbidity, Odour, etc)
14:45	1		20.24	7.37	3937	47.3	9.2	27.9	transparent
15:20	10			7.33	3928	38.9	9.8	27.5	
15:30	20			7.33	3997	35	9.4	27.3	
16:20	30			7.3	4124	35.1	9.1	27.1	

SAMPLING RECORD

Time Sampled:

Colour:

Odour:

Turbidity: Low Medium High

Hydrocarbon Sheen ? Yes No

DI Water Lab Certificate No.

Sample IDs

Primary Duplicate:

Secondary Duplicate:

Trip Blank:

Rinsate:

Field Blank:

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

	Vials (P/UP)		Metals (F/UF;P/UP)
	1L Amber		Cyanide
	1L Plastic		Sulphide
	Phenols/COD/NH3 (F/UF; P/UP)		Other
	Ferrous/Ferric Iron (F/UF; P/UP)		Other

Notes:

GROUNDWATER SAMPLING RECORD FORM THREE WELL VOLUME PURGING and SAMPLING

GOLDER

WELL ID:	BreMa

PROJECT INFORMATION

Project Number:	1898818	Date:	11/05/19
Client:	PEABODY	Sampled By:	KB
Site Location:	MOOREVALE	Time:	

Weather Conditions (Temperature, Precipitation, Wind) excellent

Well Maintenance Required? YES / NO Detail

WELL INFORMATION

Diameter of well casing (mm)	140
Standpipe stick up (m)	0.2
Surveyed reference point (RP)	
Height of filter pack (from log)	
Depth of well (from log)	36.2
Diameter of well casing plus filter pack (mm)	

Pre-Sampling Information

Interface probe used?	YES / NO	Depth to product (mbRP) =	
Initial depth to water (mbRP) =	18.81	Thickness of product (m) =	
Total depth of well (mbRP) =		Bailed product thickness (m) =	
Thickness of sediment on base of well (m) =			

Three Well Volume Calculation

mbRP - metres below top of reference point (note: standard reference point is top of PVC standpipe)

Volume per metre of casing above filter pack **[Y]**

Casing Diameter (mm)	Volume in casing (L)
25	0.5
50	2
100	8

Volume per metre in casing and filter pack **[Z]**

Diameter at filter pack (mm)	Volume in Casing and filter pack (L)		
	25 mm casing	50 mm casing	100 mm casing
100	2.7	3.7	-
120	3.7	4.8	8.9
125	4	5.1	9.2
150	5.6	6.7	10.8
200	9.8	10.8	14.9

Purging and Sampling Information

Is initial water level within the filter pack?		YES/NO
Height of water above filterpack (m) = **[A]**		
Height of water within filterpack (m) = **[B]**		
Volume of water in well (L) = [(A x Y) + (B x Z)]		
Purge Volume (L) [3 x volume of water in well]		
Depth of footvalve/pump/bailer (mbRP)		
Purging Equipment		

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Cumulative Well Volume (L)	Depth to Groundwater (mbRP)	±0.1 pH	±5% Conductivity (µS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5 Temperature (°C)	Appearance (Colour, Turbidity, Odour, etc)
9:30	1		18.81	7.15	4259	-143	6.8	25.4	
9:45	10			7.02	4473	-142.5	7.0	25.6	
10:05	20			6.94	4497	-145.4	6	25.4	
10:35	30			6.85	4520	-146.7	6.9	25.6	

SAMPLING RECORD

Time Sampled:

Colour:

Odour:

Turbidity: Low Medium High

Hydrocarbon Sheen ? Yes No

DI Water Lab Certificate No.

Notes:

Sample IDs

Primary Duplicate:	
Secondary Duplicate:	
Trip Blank:	
Rinsate:	
Field Blank:	

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

	Vials (P/UP)		Metals (F/UF;P/UP)
	1L Amber		Cyanide
	1L Plastic		Sulphide
	Phenols/COD/NH3 (F/UF; P/UP)		Other
	Ferrous/Ferric Iron (F/UF; P/UP)		Other

GROUNDWATER SAMPLING RECORD FORM THREE WELL VOLUME PURGING and SAMPLING

GOLDER

WELL ID:	CPIT MW2848

PROJECT INFORMATION

Project Number:	1893818	Date:	08/05/19
Client:	PEABODY	Sampled By:	CB
Site Location:	MOODVALE	Time:	

Weather Conditions (Temperature, Precipitation, Wind): very good

Well Maintenance Required? YES / NO (NO circled) Detail

WELL INFORMATION

Diameter of well casing (mm)	50.75
Standpipe stick up (m)	0,855
Surveyed reference point (RP)	
Height of filter pack (from log)	
Depth of well (from log)	78.3
Diameter of well casing plus filter pack (mm)	

Pre-Sampling Information

Interface probe used?	YES / NO	Depth to product (mbRP) =	
Initial depth to water (mbRP) =	66,41	Thickness of product (m) =	
Total depth of well (mbRP) =		Bailed product thickness (m) =	
Thickness of sediment on base of well (m) =			

Three Well Volume Calculation

mbRP - metres below top of reference point (note: standard reference point is top of PVC standpipe)

Volume per metre of casing above filter pack **[Y]**

Casing Diameter (mm)	Volume in casing (L)
25	0.5
50	2
100	8

Volume per metre in casing and filter pack **[Z]**

Diameter at filter pack (mm)	Volume in Casing and filter pack (L)		
	25 mm casing	50 mm casing	100 mm casing
100	2.7	3.7	-
120	3.7	4.8	8.9
125	4	5.1	9.2
150	5.6	6.7	10.8
200	9.8	10.8	14.9

Purging and Sampling Information

Is initial water level within the filter pack?	YES/NO
Height of water above filterpack (m) = **[A]**	
Height of water within filterpack (m) = **[B]**	
Volume of water in well (L) = [(A x Y) + (B x Z)]	
Purge Volume (L) [3 x volume of water in well]	
Depth of footvalve/pump/bailer (mbRP)	
Purging Equipment	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Cumulative Well Volume (L)	Depth to Groundwater (mbRP)	±0.1 pH	±5% Conductivity (µS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5 Temperature (°C)	Appearance (Colour, Turbidity, Odour, etc)
9:50	1		66,41	6,87	12613	-92,1	1,5	23,6	
9:30	10			6,94	34172	-100,1	6,7	23,5	
10:25	20			6,94	32925	-92,2	7,8	24	
10:34	30			6,94	34956	-122,5	1,5	24,4	
11:21	40			6,95	35043	-115,5	5,7	24,6	
11:26	50		71,93	6,97	35468	-112,6	4,9	25,1	

SAMPLING RECORD

Time Sampled:

Colour:

Odour:

Turbidity: Low Medium High

Hydrocarbon Sheen ? Yes No

DI Water Lab Certificate No.

Notes:

Sample IDs

Primary Duplicate:

Secondary Duplicate:

Trip Blank:

Rinsate:

Field Blank:

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

Vials (P/UP)	Metals (F/UF;P/UP)
1L Amber	Cyanide
1L Plastic	Sulphide
Phenols/COD/NH3 (F/UF; P/UP)	Other
Ferrous/Ferric Iron (F/UF; P/UP)	Other

GROUNDWATER SAMPLING RECORD FORM THREE WELL VOLUME PURGING and SAMPLING

GOLDER

WELL ID:	PITMV2869

PROJECT INFORMATION			
Project Number:	1893818	Date:	08/05/19
Client:	PEABODY	Sampled By:	KG
Site Location:	MOORVALE	Time:	

WELL INFORMATION	
Diameter of well casing (mm)	75
Standpipe stick up (m)	0,92
Surveyed reference point (RP)	
Height of filter pack (from log)	
Depth of well (from log)	
Diameter of well casing plus filter pack (mm)	

Weather Conditions (Temperature, Precipitation, Wind): very good

Well Maintenance Required? YES / NO (NO circled) Detail

Pre-Sampling Information		
Interface probe used?	YES / NO	Depth to product (mbRP) =
Initial depth to water (mbRP) =	77,35	Thickness of product (m) =
Total depth of well (mbRP) =		Bailed product thickness (m) =
Thickness of sediment on base of well (m) =		

Three Well Volume Calculation

mbRP - metres below top of reference point (note: standard reference point is top of PVC standpipe)

Volume per metre of casing above filter pack **[Y]**

Casing Diameter (mm)	Volume in casing (L)
25	0.5
50	2
100	8

Volume per metre in casing and filter pack **[Z]**

Diameter at filter pack (mm)	Volume in Casing and filter pack (L)		
	25 mm casing	50 mm casing	100 mm casing
100	2.7	3.7	-
120	3.7	4.8	8.9
125	4	5.1	9.2
150	5.6	6.7	10.8
200	9.8	10.8	14.9

Purging and Sampling Information

Is initial water level within the filter pack?	YES/NO
Height of water above filterpack (m) = **[A]**	
Height of water within filterpack (m) = **[B]**	
Volume of water in well (L) = [(A x Y) + (B x Z)]	
Purge Volume (L) [3 x volume of water in well]	
Depth of footvalve/pump/bailer (mbRP)	
Purging Equipment	

WQM Model

WQM Calibration Certificate

GROUNDWATER MONITORING WELL PURGING RECORD

Time	Cumulative Volume Purged (L)	Cumulative Well Volume (L)	Depth to Groundwater (mbRP)	±0.1 pH	±5% Conductivity (µS/cm)	±10 Redox (mV)	±10% Dissolved Oxygen (ppm)	±0.5 Temperature (°C)	Appearance (Colour, Turbidity, Odour, etc)
11:46	1		77,35	7,63	23304	-125,6	9,2	24,6	
12:56	10			7,62	24099	-131,5	4	25,3	
13:00	20			7,6	24102	-137,5	4,8	25,7	
13:20	30			7,59	24256	-137	3,9	25,9	

SAMPLING RECORD

Time Sampled:

Colour:

Odour:

Turbidity: Low Medium High

Hydrocarbon Sheen ? Yes No

DI Water Lab Certificate No.

Sample IDs

Primary Duplicate:

Secondary Duplicate:

Trip Blank:

Rinsate:

Field Blank:

Sample Containers/Preservation (F=Filtered; UF=Unfiltered; P=Preserved; UP=Unpreserved)

Vials (P/UP)

1L Amber

1L Plastic

Phenols/COD/NH3 (F/UF; P/UP)

Ferrous/Ferric Iron (F/UF; P/UP)

Metals (F/UF;P/UP)

Cyanide

Sulphide

Other

Other

Notes:

APPENDIX C

Calibration Sheet

GOLDER

Water Quality Meter Calibration Sheet

Job: PEABODY / ODN

Date and time: 08/05/2019

Name: VALMAN BENEDEK

Signature: Benedek Valman

Phase/Task Number: 1898818/1100/1107

WQ meter make/model: YSI Quatro Pro Plus

WQ meter serial number: 11C100754

Certificate Number*:

* use unique identifier (e.g YYYYMMDD_"technician's initials")

Parameter	Standard Solution	Pre-calibration reading	Acceptable range	Calibration Required (Y/N)	Post Calibration Reading
Temperature	23,5 °C		± 0.5 °C		
pH	4	4,08	3.9 - 4.1	N	
	7	7,07	6.9 - 7.1	N	
	10	10,10	9.9 – 10.1	N	
Conductivity	0		0.0 - 0.1 mS/cm		
	2680 mS/cm @ 23,5 °C	2670	± 5%	N	
	_____ mS/cm @ _____ °C		± 5%		
Dissolved Oxygen	0% Saturation Solution		± 0.1 ppm		
	Ambient Air		± 0.5 ppm of value on Table A overleaf		
Redox	_____ mV @ _____ °C		± 10 MV		

Comments (including any additional repairs or services performed)

Water Quality Meter Calibration Sheet

GOLDER

Job: PEABODY 10DR

Date and time: 07/05/2019

Name: KALMAN BENEDEK

Signature: Benedek Kalman

Phase/Task Number: 1898818/1100/1107

WQ meter make/model: YSI Quatro Pro Plus

WQ meter serial number: 11C100754

Certificate Number*:

* use unique identifier (e.g YYYYMMDD_"technician's initials")

Parameter	Standard Solution	Pre-calibration reading	Acceptable range	Calibration Required (Y/N)	Post Calibration Reading
Temperature	23,7 °C		± 0.5 °C		
pH	4	3,93	3.9 - 4.1	N	
	7	6,96	6.9 - 7.1	N	
	10	10,03	9.9 – 10.1	N	
Conductivity	0		0.0 - 0.1 mS/cm		
	12,39 mS/cm @ 22,7 °C	12,34	± 5%	N	
	_____ mS/cm @ _____ °C		± 5%		
Dissolved Oxygen	0% Saturation Solution		± 0.1 ppm		
	Ambient Air		± 0.5 ppm of value on Table A overleaf		
Redox	_____ mV @ _____ °C		± 10 MV		

Comments (including any additional repairs or services performed)

Water Quality Meter Calibration Sheet

Table A: Change in Dissolved Oxygen with Temperature at 100% Relative Humidity (Altitude:sea level)

Temperature (Celsius)	DO (100% (ppm, mg/L)
0	14.6
1	14.19
2	13.81
3	13.44
4	13.09
5	12.75
6	12.43
7	12.12
8	11.83
9	11.55
10	11.27
11	11.01
12	10.76
13	10.52
14	10.29
15	10.07
16	9.85
17	9.65
18	9.45
19	9.26
20	9.07
21	8.9
22	8.72
23	8.56
24	8.4
25	8.24
26	8.09
27	7.95
28	7.81
29	7.67
30	7.54
31	7.41
32	7.28

Values are for pressure = 760 mm Hg for measurements at sea level.
For a given temperature, the concentration of dissolved oxygen concentration decreases by 0.3 mg/L with every 500 ft (152.4 m) increase in altitude.

APPENDIX D

Laboratory Results

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EB1912177**	Page	: 1 of 7
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS JENNIFER LALLIER	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3552 8616
Project	: 1898818 ODN-Stage 2	Date Samples Received	: 14-May-2019 09:00
Order number	:	Date Analysis Commenced	: 14-May-2019
C-O-C number	: ----	Issue Date	: 20-May-2019 14:42
Sampler	: ----		
Site	: ----		
Quote number	: EN/002/18 National BQ		
No. of samples received	: 1		
No. of samples analysed	: 1		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD
Nibi Karl	Microbiologist	Brisbane Microbiological, Stafford, QLD
Santusha Pandra	Organic Chemist	Brisbane Organics, Stafford, QLD

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- It is recognised that EG020-T (Total Metals by ICP-MS) is less than EG020-F (Dissolved Metals by ICP-MS). However, the difference is within experimental variation of the methods.
- MF = membrane filtration
- CFU = colony forming unit
- Microbiological Comment: In accordance with ALS work instruction QWI-MIC/04, membrane filtration result is reported an approximate (~) when the count of colonies on the filtered membrane is outside the range of 10 - 100cfu.
- Microbiological Comment: Accordance with ALS work instruction, membrane filtration result for EB1912177 -01 is estimated ~<1 where the sample was filtered at 100mL and the target organisms are not detected but there are overgrown non-typical colonies on the filtered membrane that may have inhibited the growth of the target organisms. It may be informative to record this fact.
- MW006 is ALS's internal code and is equivalent to AS4276.7.
- Sodium Adsorption Ratio (where reported): Where results for Na, Ca or Mg are <LOR, a concentration at half the reported LOR is incorporated into the SAR calculation. This represents a conservative approach for Na relative to the assumption that <LOR = zero concentration and a conservative approach for Ca & Mg relative to the assumption that <LOR is equivalent to the LOR concentration.

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bore 10A	----	----	----	----
			Client sampling date / time	10-May-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1912177-001	--------	--------	--------	--------
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	**7.90**	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	**3750**	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	**2120**	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	**19**	----	----	----	----
EA045: Turbidity								
Turbidity	----	0.1	NTU	**11.7**	----	----	----	----
ED037P: Alkalinity by PC Titrator								
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	**706**	----	----	----	----
Total Alkalinity as CaCO3	----	1	mg/L	**706**	----	----	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA								
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	**69**	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	1	mg/L	**861**	----	----	----	----
ED093F: Dissolved Major Cations								
Calcium	7440-70-2	1	mg/L	**56**	----	----	----	----
Magnesium	7439-95-4	1	mg/L	**54**	----	----	----	----
Sodium	7440-23-5	1	mg/L	**715**	----	----	----	----
Potassium	7440-09-7	1	mg/L	**23**	----	----	----	----
ED093F: SAR and Hardness Calculations								
^ Sodium Adsorption Ratio	----	0.01	-	**16.3**	----	----	----	----
EG020F: Dissolved Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	<0.01	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.001**	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.006**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.34**	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.134**	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0001**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bore 10A	----	----	----	----
			Client sampling date / time	10-May-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1912177-001	--------	--------	--------	--------
				Result	----	----	----	----
EG020F: Dissolved Metals by ICP-MS - Continued								
Cobalt	7440-48-4	0.001	mg/L	**0.001**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.004**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.091**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.007**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.006**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.019**	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.025**	----	----	----	----
Molybdenum	7439-98-7	0.001	mg/L	**0.006**	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**2.28**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.022**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	<0.05	----	----	----	----
EG020T: Total Metals by ICP-MS								
Aluminium	7429-90-5	0.01	mg/L	**0.22**	----	----	----	----
Antimony	7440-36-0	0.001	mg/L	**0.005**	----	----	----	----
Arsenic	7440-38-2	0.001	mg/L	**0.007**	----	----	----	----
Boron	7440-42-8	0.05	mg/L	**0.28**	----	----	----	----
Barium	7440-39-3	0.001	mg/L	**0.138**	----	----	----	----
Beryllium	7440-41-7	0.001	mg/L	<0.001	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L	**0.0002**	----	----	----	----
Cobalt	7440-48-4	0.001	mg/L	**0.001**	----	----	----	----
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----
Copper	7440-50-8	0.001	mg/L	**0.006**	----	----	----	----
Manganese	7439-96-5	0.001	mg/L	**0.100**	----	----	----	----
Nickel	7440-02-0	0.001	mg/L	**0.010**	----	----	----	----
Lead	7439-92-1	0.001	mg/L	**0.040**	----	----	----	----
Selenium	7782-49-2	0.01	mg/L	<0.01	----	----	----	----
Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
Vanadium	7440-62-2	0.01	mg/L	<0.01	----	----	----	----
Zinc	7440-66-6	0.005	mg/L	**0.032**	----	----	----	----
Lithium	7439-93-2	0.001	mg/L	**0.021**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bore 10A	----	----	----	----
			Client sampling date / time	10-May-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1912177-001	--------	--------	--------	--------
				Result	----	----	----	----
EG020T: Total Metals by ICP-MS - Continued								
Molybdenum	7439-98-7	0.001	mg/L	**0.009**	----	----	----	----
Silver	7440-22-4	0.001	mg/L	<0.001	----	----	----	----
Strontium	7440-24-6	0.001	mg/L	**2.33**	----	----	----	----
Uranium	7440-61-1	0.001	mg/L	**0.026**	----	----	----	----
Iron	7439-89-6	0.05	mg/L	**0.34**	----	----	----	----
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----
EK040P: Fluoride by PC Titrator								
Fluoride	16984-48-8	0.1	mg/L	**0.6**	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	**31.1**	----	----	----	----
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N	14797-65-0	0.01	mg/L	**0.03**	----	----	----	----
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N	14797-55-8	0.01	mg/L	**5.50**	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	**5.53**	----	----	----	----
EK060G:Organic Nitrogen as N (TKN-NH3) By Discrete Analyser								
Organic Nitrogen as N	----	0.1	mg/L	<0.1	----	----	----	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Total Kjeldahl Nitrogen as N	----	0.1	mg/L	**31.0**	----	----	----	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser								
^ Total Nitrogen as N	----	0.1	mg/L	**36.5**	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser								
Total Phosphorus as P	----	0.01	mg/L	**3.90**	----	----	----	----
EN055: Ionic Balance								
Total Anions	----	0.01	meq/L	**39.8**	----	----	----	----
Total Cations	----	0.01	meq/L	**38.9**	----	----	----	----
Ionic Balance	----	0.01	%	**1.15**	----	----	----	----
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	**3.3**	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	Bore 10A	----	----	----	----
			Client sampling date / time	10-May-2019 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EB1912177-001	--------	--------	--------	--------
				Result	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	----	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ Total Xylenes	----	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
MW006: Faecal Coliforms & E.coli by MF								
Faecal Coliforms	----	1	CFU/100mL	<1	----	----	----	----
ED009: Anions								
Bromide	24959-67-9	0.02	mg/L	**1.56**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	2	%	**102**	----	----	----	----
Toluene-D8	2037-26-5	2	%	**97.5**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%	**96.2**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	*Low*	*High*
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	66	138
Toluene-D8	2037-26-5	79	120
4-Bromofluorobenzene	460-00-4	74	118

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **EB1912177**	Page	: 1 of 12
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS JENNIFER LALLIER	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3552 8616
Project	: 1898818 ODN-Stage 2	Date Samples Received	: 14-May-2019
Order number	:	Date Analysis Commenced	: 14-May-2019
C-O-C number	: ----	Issue Date	: 20-May-2019
Sampler	: ----		
Site	: ----		
Quote number	: EN/002/18 National BQ		
No. of samples received	: 1		
No. of samples analysed	: 1		

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Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Accreditation Category*
Kim McCabe	Senior Inorganic Chemist	Brisbane Inorganics, Stafford, QLD
Kim McCabe	Senior Inorganic Chemist	WB Water Lab Brisbane, Stafford, QLD
Nibi Karl	Microbiologist	Brisbane Microbiological, Stafford, QLD
Santusha Pandra	Organic Chemist	Brisbane Organics, Stafford, QLD

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Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
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
RPD = Relative Percentage Difference
# = Indicates failed QC

Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR: No Limit; Result between 10 and 20 times LOR: 0% - 50%; Result > 20 times LOR: 0% - 20%.

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
ED009: Anions (QC Lot: 2346702)									
EB1911559-001	Anonymous	ED009: Bromide	24959-67-9	0.02	mg/L	0.13	0.13	0.00	0% - 20%
EA005P: pH by PC Titrator (QC Lot: 2346524)									
EB1912177-001	Bore 10A	EA005-P: pH Value	----	0.01	pH Unit	7.90	7.86	0.508	0% - 20%
EB1912219-004	Anonymous	EA005-P: pH Value	----	0.01	pH Unit	8.00	8.03	0.374	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 2346523)									
EB1912177-001	Bore 10A	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	3750	3740	0.272	0% - 20%
EB1912219-004	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	1790	1800	0.342	0% - 20%
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 2347656)									
EB1912043-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	314	309	1.82	0% - 20%
EB1912187-004	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	437	429	2.00	0% - 20%
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 2347657)									
EB1912043-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.00	No Limit
EB1912187-004	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	21	22	5.71	No Limit
EA045: Turbidity (QC Lot: 2346068)									
EB1912177-001	Bore 10A	EA045: Turbidity	----	0.1	NTU	11.7	11.6	0.858	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 2346525)									
EB1912177-001	Bore 10A	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	706	710	0.554	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	706	710	0.554	0% - 20%
EB1912219-004	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.00	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	650	656	0.876	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	650	656	0.876	0% - 20%

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
				Laboratory Duplicate (DUP) Report					
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 2347850)									
EB1911535-005	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	7450	7690	3.17	0% - 20%
EB1911535-025	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	2690	2680	0.405	0% - 20%
ED045G: Chloride by Discrete Analyser (QC Lot: 2347852)									
EB1912165-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	873	880	0.822	0% - 20%
ED093F: Dissolved Major Cations (QC Lot: 2346425)									
EB1912168-012	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	206	204	1.18	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	182	183	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	3100	3080	0.599	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	22	22	0.00	0% - 20%
EB1912177-001	Bore 10A	ED093F: Calcium	7440-70-2	1	mg/L	56	57	0.00	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	54	54	0.00	0% - 20%
		ED093F: Sodium	7440-23-5	1	mg/L	715	723	1.15	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	23	23	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2346423)									
EB1912168-012	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-F: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	11.2	11.3	0.599	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Lithium	7439-93-2	0.001	mg/L	0.543	0.517	4.93	0% - 20%
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.053	0.052	0.00	0% - 20%
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.002	0.001	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.011	0.012	0.00	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	1.41	1.41	0.00	0% - 20%
		EG020A-F: Iron	7439-89-6	0.05	mg/L	1.19	1.18	0.905	0% - 20%
EB1912177-001	Bore 10A	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	0.0001	0.0001	0.00	No Limit
		EG020A-F: Antimony	7440-36-0	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Barium	7440-39-3	0.001	mg/L	0.134	0.131	1.93	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	0.001	0.001	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2346423) - continued									
EB1912177-001	Bore 10A	EG020A-F: Copper	7440-50-8	0.001	mg/L	0.004	0.005	0.00	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Lithium	7439-93-2	0.001	mg/L	0.025	0.025	0.00	0% - 20%
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.091	0.092	1.18	0% - 20%
		EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	0.007	0.008	0.00	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	0.019	0.029	40.4	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.01	0.00	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-F: Boron	7440-42-8	0.05	mg/L	0.34	0.34	0.00	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2346424)									
EB1912168-012	Anonymous	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020B-F: Strontium	7440-24-6	0.001	mg/L	16.4	15.8	3.64	0% - 20%
		EG020B-F: Uranium	7440-61-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EB1912177-001	Bore 10A	EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020B-F: Strontium	7440-24-6	0.001	mg/L	2.28	2.28	0.250	0% - 20%
		EG020B-F: Uranium	7440-61-1	0.001	mg/L	0.022	0.023	0.00	0% - 20%
EG020F: Dissolved Metals by ICP-MS (QC Lot: 2346427)									
EB1912177-001	Bore 10A	EG020D-F: Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 2346560)									
EB1912010-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.011	0.011	0.00	0% - 50%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Lithium	7439-93-2	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.005	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.10	0.05	74.4	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Laboratory Duplicate (DUP) Report LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Metals by ICP-MS (QC Lot: 2346560) - continued									
EB1912010-001	Anonymous	EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	<0.05	0.00	No Limit
EB1912177-001	Bore 10A	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0002	0.0002	0.00	No Limit
		EG020A-T: Antimony	7440-36-0	0.001	mg/L	0.005	0.005	0.00	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.007	0.006	0.00	No Limit
		EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Barium	7440-39-3	0.001	mg/L	0.138	0.136	1.30	0% - 20%
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020A-T: Cobalt	7440-48-4	0.001	mg/L	0.001	0.001	0.00	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.006	0.006	0.00	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.040	0.039	2.55	0% - 20%
		EG020A-T: Lithium	7439-93-2	0.001	mg/L	0.021	0.021	0.00	0% - 50%
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.100	0.100	0.00	0% - 20%
		EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	0.009	0.008	0.00	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.010	0.010	0.00	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.032	0.032	0.00	No Limit
		EG020A-T: Aluminium	7429-90-5	0.01	mg/L	0.22	0.22	0.00	0% - 20%
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	<0.01	0.00	No Limit
		EG020A-T: Boron	7440-42-8	0.05	mg/L	0.28	0.28	0.00	No Limit
		EG020A-T: Iron	7439-89-6	0.05	mg/L	0.34	0.32	3.81	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 2346561)									
EB1912177-001	Bore 10A	EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	<0.001	0.00	No Limit
		EG020B-T: Strontium	7440-24-6	0.001	mg/L	2.33	2.28	1.98	0% - 20%
		EG020B-T: Uranium	7440-61-1	0.001	mg/L	0.026	0.025	4.66	0% - 20%
EG020T: Total Metals by ICP-MS (QC Lot: 2346562)									
EB1912177-001	Bore 10A	EG020D-T: Gallium	7440-55-3	0.001	mg/L	<0.001	<0.001	0.00	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 2346426)									
ET1901515-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EB1912168-012	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 2346564)									
EB1912177-001	Bore 10A	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EB1912203-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.00	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 2346526)									
EB1912177-001	Bore 10A	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.6	0.6	0.00	No Limit
EB1912219-004	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	1.5	1.5	0.00	0% - 50%
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 2347448)									
EB1909549-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.10	0.07	42.3	0% - 50%
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2347851)									
EB1911535-005	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EK057G: Nitrite as N by Discrete Analyser (QC Lot: 2347851) - continued									
EB1911535-025	Anonymous	EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 2347447)									
EB1912194-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.06	0.06	0.00	No Limit
EB1909549-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	7.49	7.39	1.34	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 2346540)									
EB1912155-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	14.7	14.3	2.81	0% - 20%
EB1912056-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	0.2	0.2	0.00	No Limit
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 2346539)									
EB1912223-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	2.59	2.52	2.57	0% - 20%
EB1912056-002	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	<0.01	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 2350577)									
EB1912160-002	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EB1912049-004	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 2350577)									
EB1912160-002	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EB1912049-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.00	No Limit
EP080: BTEXN (QC Lot: 2350577)									
EB1912160-002	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit
EB1912049-004	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.00	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.00	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.00	No Limit

Method Blank (MB) and Laboratory Control Spike (LCS) Report

The quality control term Method / Laboratory Blank refers to an analyte free matrix to which all reagents are added in the same volumes or proportions as used in standard sample preparation. The purpose of this QC parameter is to monitor potential laboratory contamination. The quality control term Laboratory Control Spike (LCS) refers to a certified reference material, or a known interference free matrix spiked with target analytes. The purpose of this QC parameter is to monitor method precision and accuracy independent of sample matrix. Dynamic Recovery Limits are based on statistical evaluation of processed LCS.

Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED009: Anions (QCLot: 2346702)								
ED009: Bromide	24959-67-9	0.02	mg/L	<0.02	2 mg/L	90.0	77	117
EA005P: pH by PC Titrator (QCLot: 2346524)								
EA005-P: pH Value	----	----	pH Unit	----	4 pH Unit	101	98	102
				----	7 pH Unit	100	98	102
EA010P: Conductivity by PC Titrator (QCLot: 2346523)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	2100 µS/cm	98.0	91	107
				<1	12890 µS/cm	96.9	91	107
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QCLot: 2347656)								
EA015H: Total Dissolved Solids @180°C	----	10	mg/L	<10	293 mg/L	107	88	112
				<10	2000 mg/L	101	88	112
				<10	2460 mg/L	103	81	118
EA025: Total Suspended Solids dried at 104 ± 2°C (QCLot: 2347657)								
EA025H: Suspended Solids (SS)	----	5	mg/L	<5	150 mg/L	103	88	112
				<5	1000 mg/L	96.3	88	112
				<5	951 mg/L	106	88	116
EA045: Turbidity (QCLot: 2346068)								
EA045: Turbidity	----	0.1	NTU	<0.1	4 NTU	99.8	87	113
				<0.1	40 NTU	99.5	95	105
				<0.1	400 NTU	98.2	97	103
ED037P: Alkalinity by PC Titrator (QCLot: 2346525)								
ED037-P: Total Alkalinity as CaCO3	----	----	mg/L	----	50 mg/L	107	80	120
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2347850)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	107	85	118
				<1	100 mg/L	101	85	118
ED045G: Chloride by Discrete Analyser (QCLot: 2347852)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	10 mg/L	102	90	115
				<1	1000 mg/L	107	90	115
ED093F: Dissolved Major Cations (QCLot: 2346425)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	----	----	----	----
ED093F: Magnesium	7439-95-4	1	mg/L	<1	----	----	----	----
ED093F: Sodium	7440-23-5	1	mg/L	<1	----	----	----	----
ED093F: Potassium	7440-09-7	1	mg/L	<1	----	----	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 2346423)								

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 2346423) - continued								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	105	79	118
EG020A-F: Antimony	7440-36-0	0.001	mg/L	<0.001	0.1 mg/L	92.3	87	113
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	88	116
EG020A-F: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	105	81	117
EG020A-F: Barium	7440-39-3	0.001	mg/L	<0.001	0.5 mg/L	109	70	130
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	97.9	88	108
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	101	87	113
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	102	86	112
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.2 mg/L	104	88	114
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	97.0	89	110
EG020A-F: Lithium	7439-93-2	0.001	mg/L	<0.001	----	----	----	----
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	98.1	89	120
EG020A-F: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	99.8	89	112
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	102	89	113
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	101	83	112
EG020A-F: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	114	88	114
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.2 mg/L	103	87	113
EG020A-F: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	106	81	125
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	108	82	114
EG020F: Dissolved Metals by ICP-MS (QCLot: 2346424)								
EG020B-F: Silver	7440-22-4	0.001	mg/L	<0.001	0.1 mg/L	98.7	85	114
EG020B-F: Strontium	7440-24-6	0.001	mg/L	<0.001	0.5 mg/L	103	86	111
EG020B-F: Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
EG020F: Dissolved Metals by ICP-MS (QCLot: 2346427)								
EG020D-F: Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 2346560)								
EG020A-T: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	102	80	114
EG020A-T: Antimony	7440-36-0	0.001	mg/L	<0.001	0.1 mg/L	110	87	115
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	104	88	112
EG020A-T: Beryllium	7440-41-7	0.001	mg/L	<0.001	0.1 mg/L	104	81	119
EG020A-T: Barium	7440-39-3	0.001	mg/L	<0.001	0.5 mg/L	105	70	130
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	103	88	111
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	106	89	115
EG020A-T: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	108	89	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.2 mg/L	108	88	116
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	104	89	112
EG020A-T: Lithium	7439-93-2	0.001	mg/L	<0.001	----	----	----	----
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	106	88	114

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EG020T: Total Metals by ICP-MS (QCLot: 2346560) - continued								
EG020A-T: Molybdenum	7439-98-7	0.001	mg/L	<0.001	0.1 mg/L	109	90	114
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	107	88	116
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	104	79	111
EG020A-T: Vanadium	7440-62-2	0.01	mg/L	<0.01	0.1 mg/L	114	87	114
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.2 mg/L	105	84	114
EG020A-T: Boron	7440-42-8	0.05	mg/L	<0.05	0.5 mg/L	101	82	128
EG020A-T: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	110	82	118
EG020T: Total Metals by ICP-MS (QCLot: 2346561)								
EG020B-T: Silver	7440-22-4	0.001	mg/L	<0.001	0.1 mg/L	111	84	117
EG020B-T: Strontium	7440-24-6	0.001	mg/L	<0.001	0.5 mg/L	109	86	112
EG020B-T: Uranium	7440-61-1	0.001	mg/L	<0.001	----	----	----	----
EG020T: Total Metals by ICP-MS (QCLot: 2346562)								
EG020D-T: Gallium	7440-55-3	0.001	mg/L	<0.001	----	----	----	----
EG035F: Dissolved Mercury by FIMS (QCLot: 2346426)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	101	84	118
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2346564)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.01 mg/L	95.9	84	118
EK040P: Fluoride by PC Titrator (QCLot: 2346526)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5 mg/L	99.0	80	117
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2347448)								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	0.5 mg/L	97.9	86	112
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2347851)								
EK057G: Nitrite as N	14797-65-0	0.01	mg/L	<0.01	0.5 mg/L	101	90	110
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2347447)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	93.4	89	115
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2346540)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	84.0	70	108
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2346539)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	89.2	79	105
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2348395)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	1070 µg/L	98.4	65	135
EP071: C15 - C28 Fraction	----	100	µg/L	<100	1770 µg/L	96.7	62	138
EP071: C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2350577)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	160 µg/L	93.7	67	125
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2348395)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	1560 µg/L	100	66	134

Sub-Matrix: **WATER**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2348395) - continued								
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	1190 µg/L	96.9	61	139
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2350577)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	185 µg/L	92.4	66	123
EP080: C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
EP080: BTEXN (QCLot: 2350577)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	105	73	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	101	75	119
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	97.0	73	118
EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	20 µg/L	101	77	121
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	97.8	76	121
EP080: Total Xylenes	----	2	µg/L	<2	----	----	----	----
EP080: Sum of BTEX	----	1	µg/L	<1	----	----	----	----
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	99.2	75	120

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
ED009: Anions (QCLot: 2346702)							
EB1911832-001	Anonymous	ED009: Bromide	24959-67-9	10 mg/L	78.8	70	130
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 2347850)							
EB1911535-009	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	20 mg/L	# Not Determined	70	130
ED045G: Chloride by Discrete Analyser (QCLot: 2347852)							
EB1912165-002	Anonymous	ED045G: Chloride	16887-00-6	400 mg/L	75.7	70	130
EG020F: Dissolved Metals by ICP-MS (QCLot: 2346423)							
EB1912168-013	Anonymous	EG020A-F: Aluminium	7429-90-5	0.5 mg/L	102	70	130
		EG020A-F: Antimony	7440-36-0	0.1 mg/L	78.5	70	130
		EG020A-F: Arsenic	7440-38-2	0.1 mg/L	93.2	70	130
		EG020A-F: Beryllium	7440-41-7	0.1 mg/L	96.8	70	130
		EG020A-F: Barium	7440-39-3	0.5 mg/L	# Not Determined	70	130

Sub-Matrix: **WATER**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%) MS	Recovery Limits (%) Low	High
EG020F: Dissolved Metals by ICP-MS (QCLot: 2346423) - continued							
EB1912168-013	Anonymous	EG020A-F: Cadmium	7440-43-9	0.1 mg/L	91.4	70	130
		EG020A-F: Chromium	7440-47-3	0.1 mg/L	89.4	70	130
		EG020A-F: Cobalt	7440-48-4	0.1 mg/L	86.1	70	130
		EG020A-F: Copper	7440-50-8	0.2 mg/L	85.0	70	130
		EG020A-F: Lead	7439-92-1	0.1 mg/L	86.4	70	130
		EG020A-F: Manganese	7439-96-5	0.1 mg/L	86.2	70	130
		EG020A-F: Molybdenum	7439-98-7	0.1 mg/L	82.1	70	130
		EG020A-F: Nickel	7440-02-0	0.1 mg/L	83.9	70	130
		EG020A-F: Selenium	7782-49-2	0.1 mg/L	87.4	70	130
		EG020A-F: Vanadium	7440-62-2	0.1 mg/L	92.4	70	130
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	85.3	70	130
		EG020A-F: Boron	7440-42-8	0.5 mg/L	90.7	70	130
EG020T: Total Metals by ICP-MS (QCLot: 2346560)							
EB1912043-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	98.0	70	130
		EG020A-T: Beryllium	7440-41-7	0.1 mg/L	98.4	70	130
		EG020A-T: Barium	7440-39-3	1 mg/L	99.6	70	130
		EG020A-T: Cadmium	7440-43-9	0.5 mg/L	99.5	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	103	70	130
		EG020A-T: Cobalt	7440-48-4	1 mg/L	101	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	90.6	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	97.7	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	94.7	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.2	70	130
		EG020A-T: Vanadium	7440-62-2	1 mg/L	105	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	97.7	70	130
EG035F: Dissolved Mercury by FIMS (QCLot: 2346426)							
EB1912168-013	Anonymous	EG035F: Mercury	7439-97-6	0.01 mg/L	89.1	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2346564)							
EB1912181-001	Anonymous	EG035T: Mercury	7439-97-6	0.01 mg/L	93.0	70	130
EK040P: Fluoride by PC Titrator (QCLot: 2346526)							
EB1912196-001	Anonymous	EK040P: Fluoride	16984-48-8	5 mg/L	87.8	70	130
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2347448)							
EB1912060-003	Anonymous	EK055G: Ammonia as N	7664-41-7	0.4 mg/L	89.7	70	130
EK057G: Nitrite as N by Discrete Analyser (QCLot: 2347851)							
EB1911535-009	Anonymous	EK057G: Nitrite as N	14797-65-0	0.4 mg/L	105	70	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 2347447)							
EB1912060-003	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.4 mg/L	89.9	70	130

Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 2346540)							
EB1912056-003	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	92.6	70	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2346539)							
EB1912056-003	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	99.8	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 2350577)							
EB1912049-004	Anonymous	EP080: C6 - C9 Fraction	----	40 µg/L	113	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 2350577)							
EB1912049-004	Anonymous	EP080: C6 - C10 Fraction	C6_C10	40 µg/L	113	70	130
EP080: BTEXN (QCLot: 2350577)							
EB1912049-004	Anonymous	EP080: Benzene	71-43-2	10 µg/L	118	70	130
		EP080: Toluene	108-88-3	10 µg/L	110	70	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **EB1912177**	Page	: 1 of 11
Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS JENNIFER LALLIER	Telephone	: +61 7 3552 8616
Project	: 1898818 ODN-Stage 2	Date Samples Received	: 14-May-2019
Site	: ----	Issue Date	: 20-May-2019
Sampler	: ----	No. of samples received	: 1
Order number	:	No. of samples analysed	: 1

This report is automatically generated by the ALS LIMS through interpretation of the ALS Quality Control Report and several Quality Assurance parameters measured by ALS. This automated reporting highlights any non-conformances, facilitates faster and more accurate data validation and is designed to assist internal expert and external Auditor review. Many components of this report contribute to the overall DQO assessment and reporting for guideline compliance.

Brief method summaries and references are also provided to assist in traceability.

Summary of Outliers

Outliers : Quality Control Samples

This report highlights outliers flagged in the Quality Control (QC) Report.

- **NO Method Blank value outliers occur.**
- **NO Duplicate outliers occur.**
- **NO Laboratory Control outliers occur.**
- **Matrix Spike outliers exist - please see following pages for full details.**
- **For all regular sample matrices, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

- **Analysis Holding Time Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	EB1911535--009	Anonymous	**Sulfate as SO4 - Turbidimetric**	14808-79-8	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**
EG020F: Dissolved Metals by ICP-MS	EB1912168--013	Anonymous	**Barium**	7440-39-3	Not Determined	----	**MS recovery not determined, background level greater than or equal to 4x spike level.**

Outliers : Analysis Holding Time Compliance

Matrix: **WATER**

Method	*Extraction / Preparation*			*Analysis*		
Container / Client Sample ID(s)	*Date extracted*	*Due for extraction*	***Days overdue***	*Date analysed*	*Due for analysis*	***Days overdue***
EA005P: pH by PC Titrator						
Clear Plastic Bottle - Natural						
Bore 10A	----	----	----	15-May-2019	10-May-2019	**5**
EA045: Turbidity						
Clear Plastic Bottle - Natural						
Bore 10A	----	----	----	14-May-2019	12-May-2019	**2**
EK057G: Nitrite as N by Discrete Analyser						
Clear Plastic Bottle - Natural						
Bore 10A	----	----	----	15-May-2019	12-May-2019	**3**
EP025: Oxygen - Dissolved (DO)						
Clear Plastic Bottle - Natural						
Bore 10A	----	----	----	14-May-2019	10-May-2019	**4**
MW006: Faecal Coliforms & E.coli by MF						
Sterile Plastic Bottle - Sodium Thiosulfate						
Bore 10A	----	----	----	14-May-2019	11-May-2019	**3**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type	Count		Rate (%)		Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
TRH - Semivolatile Fraction	0	11	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
TRH - Semivolatile Fraction	0	11	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times (referencing USEPA SW 846, APHA, AS and NEPM) based on the sample container provided. Dates reported represent first date of extraction or analysis and preclude subsequent dilutions and reruns. A listing of breaches (if any) is provided herein.

Holding time for leachate methods (e.g. TCLP) vary according to the analytes reported. Assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These are: organics 14 days, mercury 28 days & other metals 180 days. A recorded breach does not guarantee a breach for all non-volatile parameters.

Holding times for ***VOC in soils*** vary according to analytes of interest. Vinyl Chloride and Styrene holding time is 7 days; others 14 days. A recorded breach does not guarantee a breach for all VOC analytes and should be verified in case the reported breach is a false positive or Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005P: pH by PC Titrator							
Clear Plastic Bottle - Natural (EA005-P)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	10-May-2019	×
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	07-Jun-2019	✓
EA015: Total Dissolved Solids dried at 180 ± 5 °C							
Clear Plastic Bottle - Natural (EA015H)							
Bore 10A	10-May-2019	----	----	----	16-May-2019	17-May-2019	✓
EA025: Total Suspended Solids dried at 104 ± 2°C							
Clear Plastic Bottle - Natural (EA025H)							
Bore 10A	10-May-2019	----	----	----	16-May-2019	17-May-2019	✓
EA045: Turbidity							
Clear Plastic Bottle - Natural (EA045)							
Bore 10A	10-May-2019	----	----	----	14-May-2019	12-May-2019	×
ED009: Anions							
Clear Plastic Bottle - Natural (ED009)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	07-Jun-2019	✓
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	24-May-2019	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	07-Jun-2019	✓
ED045G: Chloride by Discrete Analyser							
Clear Plastic Bottle - Natural (ED045G)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	07-Jun-2019	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)							
Bore 10A	10-May-2019	----	----	----	16-May-2019	07-Jun-2019	✓
ED093F: SAR and Hardness Calculations							
Clear Plastic Bottle - Filtered; Lab-acidified (ED093F)							
Bore 10A	10-May-2019	----	----	----	16-May-2019	07-Jun-2019	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020F: Dissolved Metals by ICP-MS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG020D-F)							
Bore 10A	10-May-2019	----	----	----	16-May-2019	06-Nov-2019	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020D-T)							
Bore 10A	10-May-2019	15-May-2019	06-Nov-2019	✓	15-May-2019	06-Nov-2019	✓
EG035F: Dissolved Mercury by FIMS							
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F)							
Bore 10A	10-May-2019	----	----	----	17-May-2019	07-Jun-2019	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T)							
Bore 10A	10-May-2019	----	----	----	16-May-2019	07-Jun-2019	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	07-Jun-2019	✓
EK055G: Ammonia as N by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK055G)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	07-Jun-2019	✓
EK057G: Nitrite as N by Discrete Analyser							
Clear Plastic Bottle - Natural (EK057G)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	12-May-2019	×
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G)							
Bore 10A	10-May-2019	----	----	----	15-May-2019	07-Jun-2019	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK061G)							
Bore 10A	10-May-2019	15-May-2019	07-Jun-2019	✓	15-May-2019	07-Jun-2019	✓
EK067G: Total Phosphorus as P by Discrete Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK067G)							
Bore 10A	10-May-2019	15-May-2019	07-Jun-2019	✓	15-May-2019	07-Jun-2019	✓
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural (EP025)							
Bore 10A	10-May-2019	----	----	----	14-May-2019	10-May-2019	×
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
Bore 10A	10-May-2019	16-May-2019	17-May-2019	✓	17-May-2019	25-Jun-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
Bore 10A	10-May-2019	16-May-2019	24-May-2019	✓	16-May-2019	24-May-2019	✓

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
Bore 10A	**10-May-2019**	**16-May-2019**	17-May-2019	✓	**17-May-2019**	25-Jun-2019	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
Bore 10A	**10-May-2019**	**16-May-2019**	24-May-2019	✓	**16-May-2019**	24-May-2019	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
Bore 10A	**10-May-2019**	**16-May-2019**	24-May-2019	✓	**16-May-2019**	24-May-2019	✓
MW006: Faecal Coliforms & E.coli by MF							
Sterile Plastic Bottle - Sodium Thiosulfate (MW006)							
Bore 10A	**10-May-2019**	**----**	----	----	**14-May-2019**	11-May-2019	×

Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(were) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	10	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	5	20.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite D	EG020D-F	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Standard Anions - by IC	ED009	1	8	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	10.53	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	13	15.38	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	25.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite D	EG020D-T	1	1	100.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	11	18.18	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	17	11.76	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	2	50.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Ammonia as N by Discrete analyser	EK055G	1	10	10.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	2	5	40.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Laboratory Control Samples (LCS) - Continued							
Nitrite as N by Discrete Analyser	EK057G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH by PC Titrator	EA005-P	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Standard Anions - by IC	ED009	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	19	**10.53**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	3	20	**15.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	3	2	**150.00**	**15.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Conductivity by PC Titrator	EA010-P	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite B	EG020B-F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite D	EG020D-F	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Cations - Dissolved	ED093F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Standard Anions - by IC	ED009	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite B	EG020B-T	1	4	**25.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite D	EG020D-T	1	1	**100.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Turbidity	EA045	1	2	**50.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							

Matrix: **WATER**

Evaluation: × = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	*Method*	*QC*	*Regular*	***Actual***	***Expected***	*Evaluation*	
Matrix Spikes (MS) - Continued							
Ammonia as N by Discrete analyser	EK055G	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Chloride by Discrete Analyser	ED045G	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Fluoride by PC Titrator	EK040P	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite as N by Discrete Analyser	EK057G	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Standard Anions - by IC	ED009	1	8	**12.50**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	19	**5.26**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	11	**9.09**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	11	**0.00**	**5.00**	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	17	**5.88**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH by PC Titrator	EA005-P	WATER	In house: Referenced to APHA 4500 H+ B. This procedure determines pH of water samples by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	In house: Referenced to APHA 2510 B. This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (2013) Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of `non-filterable` residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C . This method is compliant with NEPM (2013) Schedule B(3)
Turbidity	EA045	WATER	In house: Referenced to APHA 2130 B. This method is compliant with NEPM (2013) Schedule B(3)
Standard Anions - by IC	ED009	WATER	In house: Referenced to APHA 4110. This method is compliant with NEPM (2013) Schedule B(3)
Alkalinity by PC Titrator	ED037-P	WATER	In house: Referenced to APHA 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	In house: Referenced to APHA 4500-SO4. Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	In house: Referenced to APHA 4500 Cl - G.The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	In house: Referenced to APHA 3120 and 3125; USEPA SW 846 - 6010 and 6020; Cations are determined by either ICP-AES or ICP-MS techniques. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.

Analytical Methods	Method	Matrix	Method Descriptions
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite B	EG020B-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite B	EG020B-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Metals by ICP-MS - Suite D	EG020D-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite D	EG020D-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	In house: Referenced to APHA 4500-F C: CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrite as N by Discrete Analyser	EK057G	WATER	In house: Referenced to APHA 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Nitrate as N by Discrete Analyser	EK058G	WATER	In house: Referenced to APHA 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (2013) Schedule B(3)

Analytical Methods	Method	Matrix	Method Descriptions
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (2013) Schedule B(3)
Organic Nitrogen as N (TKN - NH3) (discrete analyser)	EK060G	WATER	In house: Referenced to APHA 4500-Norg/4500-NH3. This method is compliant with NEPM (2013) Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO3-. This method is compliant with NEPM (2013) Schedule B(3)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al (1976), Zhang et al (2006). This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	In house: Referenced to APHA 1030F. This method is compliant with NEPM (2013) Schedule B(3)
Oxygen - Dissolved	EP025	WATER	In house: Referenced to APHA 4500-O G. Dissolved Oxygen Probe. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
Thermotolerant Coliforms & E.coli by Membrane Filtration	MW006	WATER	AS 4276.7 2007

Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM (2013) Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

ALS Environmental

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **EB1912177**

Client	: **GOLDER ASSOCIATES**	Laboratory	: Environmental Division Brisbane
Contact	: MS JENNIFER LALLIER	Contact	: Carsten Emrich
Address	: P O BOX 1734 MILTON QLD, AUSTRALIA 4064	Address	: 2 Byth Street Stafford QLD Australia 4053
E-mail	: jlallier@golder.com.au	E-mail	: carsten.emrich@alsglobal.com
Telephone	: +61 07 3721 5400	Telephone	: +61 7 3552 8616
Facsimile	: +61 07 3721 5401	Facsimile	: +61-7-3243 7218
Project	: 1898818 ODN-Stage 2	Page	: 1 of 3
Order number	:	Quote number	: EM2017GOLASS0027 (EN/002/18 National BQ)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 14-May-2019 09:00	Issue Date	: 14-May-2019
Client Requested Due Date	: 20-May-2019	Scheduled Reporting Date	: **20-May-2019**

Delivery Details

Mode of Delivery	: Carrier	Security Seal	: Intact.
No. of coolers/boxes	: 1	Temperature	: 1.8°C - Ice present
Receipt Detail	: MEDIUM ESKY	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Please be advised, where “EV” has been requested on the provided chain of custody no analysis has been logged pending confirmation on what is required. If you wish to discuss this please contact client services at ALSEnviro.Brisbane@alsglobal.com**
- **Samples were originally received by ALS Mackay on 13/05/19, and forwarded to ALS Brisbane for analysis.**
- **Please be advised that "Temperature" can not be logged as it is considered a Field Parameter only.**
- Discounted Package Prices apply only when specific ALS Group Codes ('W', 'S', 'NT' suites) are referenced on COCs.
- Please direct any turn around / technical queries to the laboratory contact designated above.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Analysis will be conducted by ALS Environmental, Brisbane, NATA accreditation no. 825, Site No. 818 (Micro site no. 18958).
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Breaches in recommended extraction / analysis holding times (if any) are displayed overleaf in the Proactive Holding Time Report table.**
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

- **No sample container / preservation non-compliance exists.**

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA005P pH (PCT)	WATER - EA010P Electrical Conductivity (PCT)	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EA025H Suspended Solids - Standard Level	WATER - EA045 Turbidity	WATER - EP025 Dissolved Oxygen (DO)	WATER - NT-01 & 02 Ca, Mg, Na, K, Cl, SO4, Alkalinity
EB1912177-001	10-May-2019 00:00	Bore 10A	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EA006 (only) SAR	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EK058G Nitrate as N by Discrete Analyser	WATER - EK060G Organic Nitrogen as N (TKN - NH3) By Discrete	WATER - NT-11 Total Nitrogen and Total Phosphorus	WATER - W-03 15 Metals (NEPM Suite)	WATER - W-04 TRH/BTEXN
EB1912177-001	10-May-2019 00:00	Bore 10A	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - ED009 Standard Anions	WATER - EG020F Dissolved Metals by ICP/MS	WATER - EG020T Total Metals by ICP/MS (including digestion)	WATER - EK040-P Fluoride (PCT)	WATER - MW006 (FC) Thermotolerant Coliforms by Membrane Filtration	WATER - W-03T 15 Metals (Total) (NEPM)
EB1912177-001	10-May-2019 00:00	Bore 10A	✓	✓	✓	✓	✓	✓

Proactive Holding Time Report

The following table summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory.

Matrix: **WATER**

Evaluation: × = Holding time breach ; ✓ = Within holding time.

Method / Client Sample ID(s)	Container	Due for extraction	Due for analysis	Samples Received Date	Samples Received Evaluation	Instructions Received Date	Instructions Received Evaluation
EA005-P: pH by PC Titrator							
Bore 10A	Clear Plastic Bottle - Natural	----	10-May-2019	14-May-2019	×	----	----
EA045: Turbidity							
Bore 10A	Clear Plastic Bottle - Natural	----	12-May-2019	14-May-2019	×	----	----
EK057G: Nitrite as N by Discrete Analyser							
Bore 10A	Clear Plastic Bottle - Natural	----	12-May-2019	14-May-2019	×	----	----
EP025: Oxygen - Dissolved							
Bore 10A	Clear Plastic Bottle - Natural	----	10-May-2019	14-May-2019	×	----	----
MW006: Thermotolerant Coliforms & E.coli by Membrane Filtration							
Bore 10A	Sterile Plastic Bottle - Sodium Th	----	11-May-2019	14-May-2019	×	----	----

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV) — Email — au_accountspayable@golder.com.au

JENNIFER LALLIER

- *AU Certificate of Analysis - NATA (COA) — Email — jlallier@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) — Email — jlallier@golder.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) — Email — jlallier@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN) — Email — jlallier@golder.com.au
- Chain of Custody (CoC) (COC) — Email — jlallier@golder.com.au
- EDI Format - ESDAT (ESDAT) — Email — jlallier@golder.com.au

Kimberly HiltonBarber

From: Lallier, Jennifer <JLallier@golder.com.au>
Sent: Monday, 13 May 2019 4:13 PM
To: Rebecca Kleinschmidt <Rebecca.Kleinschmidt@alsglobal.com>
Cc: Benedek, Kalman <KBenedek@golder.com.au>; Groves, Hannah <HGroves@golder.com.au>
Subject: RE: ALS quotation for ODN

Hi Rebecca,

Please note that I have dropped an esky this morning at ALS Mackay with one set of sample for Bore10A for the following analysis (I said in the COC that the analysis to be conducted will be emailed to you):

Is it possible to conduct analysis to get the Bromide concentration too as an addition to the list of parameters required below? If so, please proceed with Bromide too.

- General field physiochemical parameters (pH, EC, Turbidity, Dissolved Oxygen, Temperature, EV) and Total Dissolved Solids (TDS), Suspended Solids (SS).
- Major Cations: Sodium, Potassium, Calcium, Magnesium
- Major Anions: Chloride, Sulphate, Carbonate and Bicarbonate alkalinity and total alkalinity
- Ionic balance
- Nutrients: Ammonia, Nitrate as N, Nitrite as N, Total Nitrogen, Organic Nitrogen, Total Phosphorus as P
- Sodium absorption ratio (SAR)
- Halides: Fluoride,
- Total and Dissolved Metals: Al, Ag, As, Ba, Be, B, Cd, Cr, Co, Cu, Fe, Ga, Hg, Li, Mn, Mo, Ni, Pb, Sb, Se, U, V, Zn
- Total Petroleum Hydrocarbon (C6-C9 and C10-C36)
- Median faecal coliform,100 organism per 100ml
- Strontium

Please note I am off tomorrow but will be back on Wednesday.

Regards,

Jennifer

Environmental Division
Brisbane
Work Order Reference
EB1912177

Telephone : + 61-7-3243 7222

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 3-1 Burma Road Pooraka SA 5095 Ph 08 8162 5130 E adelaide@alsglobal.com
☐BRISBANE 2 Byth Street Stafford QLD 4053 Ph 07 3243 7222 E samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Gladstone QLD 4680 Ph 07 4976 7944 E ALSEnviro.Gladstone@alsglobal.com
☐MACKAY Unit 2 29 Caterpillar Drive Paget QLD 4740 Ph 07 4952 5795 E ALSEnviro.Mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph 03 8549 9600 E samples.melbourne@alsglobal.com
☐MUDGEE 1/30 Sydney Road Mudgee NSW 2850 Ph 02 6372 0735 E mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Road Mayfield West NSW 2304 Ph 02 4014 2500 E samples.newcastle@alsglobal.com
☐NOWRA 4 13 Geary Place North Nowra NSW 2541 Ph 02 4423 2063 E nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph 08 9209 7655 E samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph 02 8784 8555 E samples.sydney@alsglobal.com
☐TOWNSVILLE 13 Carlton Street Kirwan QLD 4817 Ph 07 47796305 E ALSEnviro.Townsville@alsglobal.com
☐WOLLONGONG 1 19-21 Ralph Black Drive North Wollongong NSW 2500 Ph 02 4225 3125 E wollongong@alsglobal.com

LIENT: golder
FFICE: brisbane
ROJECT: CQN - Stage 2 PROJECT NO.: 1898818
RDER NUMBER: PURCHASE ORDER NO.:
ROJECT MANAGER: Jennifer Callie
AMPLER: Graham Benedek
OC Emailed to ALS? (YES / NO)
mail Reports to (will default to PM if no other addresses are listed): jlallie@golder.com.au
mail Invoice to (will default to PM if no other addresses are listed): "

TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)
☒ Standard TAT (List due date): 5 days
☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.:
COUNTRY OF ORIGIN:
CONTACT PH:
SAMPLER MOBILE:
EDD FORMAT (or default):

COC SEQUENCE NUMBER (Circle)
COC 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
J Callie	N. Sutton	N. Sutton	[illegible]
DATE/TIME: 13/05/19	DATE/TIME: 13/5/19 11:00am.	DATE/TIME: 13/5/19 4:00pm	DATE/TIME: 14/5 9:00

OMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
~~Bre 10 A~~	~~Bre 10A~~						
	Bre 10 A	10/05/19	W		8		
	~~"~~	~~10/05/19~~	~~"~~		~~"~~		
	~~"~~	~~"~~	~~"~~		~~"~~		
	~~"~~	~~"~~	~~"~~		~~"~~		
	~~"~~	~~"~~	~~"~~		~~"~~		
	~~"~~	~~"~~	~~"~~		~~"~~		
	~~"~~	~~"~~	~~"~~		~~"~~		
				TOTAL	8		

will email the analyses to rebecca in brisbane

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
= VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
= Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

APPENDIX E

Electronical version of downhole camera survey

Electronical version of the downhole camera video will be provided separately to Peabody.

APPENDIX F

Important Information

The document ("Report") to which this page is attached and which this page forms a part of, has been issued by Golder Associates Pty Ltd ("Golder") subject to the important limitations and other qualifications set out below.

This Report constitutes or is part of services ("Services") provided by Golder to its client ("Client") under and subject to a contract between Golder and its Client ("Contract"). The contents of this page are not intended to and do not alter Golder's obligations (including any limits on those obligations) to its Client under the Contract.

This Report is provided for use solely by Golder's Client and persons acting on the Client's behalf, such as its professional advisers. Golder is responsible only to its Client for this Report. Golder has no responsibility to any other person who relies or makes decisions based upon this Report or who makes any other use of this Report. Golder accepts no responsibility for any loss or damage suffered by any person other than its Client as a result of any reliance upon any part of this Report, decisions made based upon this Report or any other use of it.

This Report has been prepared in the context of the circumstances and purposes referred to in, or derived from, the Contract and Golder accepts no responsibility for use of the Report, in whole or in part, in any other context or circumstance or for any other purpose.

The scope of Golder's Services and the period of time they relate to are determined by the Contract and are subject to restrictions and limitations set out in the Contract. If a service or other work is not expressly referred to in this Report, do not assume that it has been provided or performed. If a matter is not addressed in this Report, do not assume that any determination has been made by Golder in regards to it.

At any location relevant to the Services conditions may exist which were not detected by Golder, in particular due to the specific scope of the investigation Golder has been engaged to undertake. Conditions can only be verified at the exact location of any tests undertaken. Variations in conditions may occur between tested locations and there may be conditions which have not been revealed by the investigation and which have not therefore been taken into account in this Report.

Golder accepts no responsibility for and makes no representation as to the accuracy or completeness of the information provided to it by or on behalf of the Client or sourced from any third party. Golder has assumed that such information is correct unless otherwise stated and no responsibility is accepted by Golder for incomplete or inaccurate data supplied by its Client or any other person for whom Golder is not responsible. Golder has not taken account of matters that may have existed when the Report was prepared but which were only later disclosed to Golder.

Having regard to the matters referred to in the previous paragraphs on this page in particular, carrying out the Services has allowed Golder to form no more than an opinion as to the actual conditions at any relevant location. That opinion is necessarily constrained by the extent of the information collected by Golder or otherwise made available to Golder. Further, the passage of time may affect the accuracy, applicability or usefulness of the opinions, assessments or other information in this Report. This Report is based upon the information and other circumstances that existed and were known to Golder when the Services were performed and this Report was prepared. Golder has not considered the effect of any possible future developments including physical changes to any relevant location or changes to any laws or regulations relevant to such location.

Where permitted by the Contract, Golder may have retained subconsultants affiliated with Golder to provide some or all of the Services. However, it is Golder which remains solely responsible for the Services and there is no legal recourse against any of Golder's affiliated companies or the employees, officers or directors of any of them.

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Any uncertainty as to the extent to which this Report can be used or relied upon in any respect should be referred to Golder for clarification