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Baseline assessment of groundwater characteristics in the Beetaloo Sub-basin, NT

Geochemistry Analysis

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GISERA was co-founded by CSIRO and Australia Pacific LNG in July 2011. For further information visit gisera.csiro.au.

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Acknowledgements

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Executive Summary

The Scientific Inquiry into Hydraulic Fracturing in the Northern Territory in their final report in 2018, has concluded that for Beetaloo Sub-basin, there is a lack of baseline data available to facilitate strategic environmental (water and air) and land-use planning as well as fully inform issues associated with social impacts, human health, and Aboriginal people and their culture. Specifically, the *Scientific Inquiry's* Final Report requires in **Recommendation 7.8** that:

'*Measures to be mandated to ensure any onshore shale gas development does not cause unacceptable local drawdown of aquifers, including that the extraction of water from water bores to supply water for hydraulic fracturing be prohibited within at least 1 km of existing or proposed groundwater bores (that are used for domestic or stock use) unless hydrogeological investigations and groundwater modelling indicate that a different distance is appropriate, relevant water allocation plans (WAPs) include provisions that adequately control both the rate and volume of water extraction and that gas companies be required to monitor drawdown in local water supply bores and immediately rectify any problems if the drawdown is found to be excessive*.'

In response to this recommendation and to address community concerns regarding potential impacts of onshore gas exploration and development on the groundwater of the Beetaloo Sub-basin, CSIRO in collaboration with the Northern Territory Government and three onshore gas explorers have commissioned a research project through GISERA to conduct baseline groundwater monitoring in the Beetaloo Sub-basin which is a prospective gas production region in the NT.

Groundwater characteristics data for the Beetaloo Sub-basin are currently poorly available in public groundwater databases. . While this project (GISERA Project W16 - Baseline assessment of groundwater characteristics in the Beetaloo Sub-basin, NT project) will provide this information for communities both in the Beetaloo region and the NT more broadly, it will also help to establish appropriate monitoring tools for use by the NT Government in assessing potential impacts that the Shale gas industry may have on water resources in the NT.

The aims of the project described in this report are to:

- Identify groundwater velocity, recharge rate and source of recharge of the Cambrian Limestone aquifer, and
- to improve the existing knowledge of the Cambrian Limestone Aquifer quality through characterisation of the groundwater chemistry of bores located in and around the three onshore gas explorer's permit areas.

This work is another important step in extending baseline groundwater characterisation of important aquifers of the Beetaloo Sub-basin.

This report provides results of a groundwater sampling program carried out in October – November 2018 and a comparison with a 2017 CSIRO survey. It also enables comparison with datasets supplied by three onshore gas explorers and Northern Territory Government.

The most significant outcome of this study is an improved characterisation of recharge mechanism of the Cambrian Limestone Aquifer. The existing regional interpretation was updated with additional data from around the Origin and Santos permit areas. The data gathered in this study represents a "snapshot" of groundwater geochemistry across the area at the time of data gathering. Results from the Noble Gas and Isotope measurements are awaited and will be reported separately when available after June 2019.

Conclusions from this work include:

- Regional groundwater flow is broadly from south to north. The observed flow direction and hydraulic gradient are similar to those reported by Tickell (2003), GHD (2016) and Tickell and Bruwer (2017) studies for the Cambrian Limestone Aquifer.
- In general, there is a lack of current monitoring data available in the Northern Territory groundwater database for the majority of bores located in the three onshore gas exploration permit areas to characterise the aquifers of the Cambrian Limestone Aquifer. However, Santos and Origin as part of their groundwater monitoring programs have installed water level loggers across their permit area and data from these data loggers will provide a better understanding of the localised flow regime as well as help in understanding impacts from extraction of water for stock and other purposes.
- Based on the current groundwater sampling campaign, the predominant water type in the study area is $Ca\text{-}SO_4\text{-}HCO_3$ based on hydro-chemical facies differing from the water type ($Ca\text{-}Mg\text{-}HCO_3$) observed during October 2017 groundwater monitoring program. The conductivity of the groundwater in the Cambrian Limestone Aquifer shows good to poor quality water with average electrical conductivity values (735 µS/cm – 1946 µS/cm) for most of the bores less than the acceptable limit for potable water.
- Most of the groundwater samples showed metal and hydrocarbon compound concentrations were below the Australian Drinking Water Guidelines (2011). Long term monitoring of these bores is required to understand seasonal variations of these analytes. Based on the June 2015 – November 2018 groundwater monitoring results, groundwater within the permit areas are suitable for irrigation and livestock purposes.
- Three monitoring bores (RN037654, RN038580 and RN039080) have naturally occurring radionuclide concentrations that exceed the WHO (2017) for gross alpha radiation activity screening level (less than 0.5 Bq/l) for drinking water quality and would require further investigation for identification of individual radionuclides.

1 Introduction

The Beetaloo Sub-basin is highly prospective for shale and tight gas and offers significant potential for the development of these resources. This development requires stimulation methods involving hydraulic fracturing of gas-bearing, low permeability strata. There are several activities associated with onshore gas development that can potentially lead to changes in water quality as well as water levels. The Scientific Inquiry into Hydraulic Fracturing in the Northern Territory in their final report (2018) has concluded that for the Beetaloo Sub-basin, there is a lack of baseline data required to facilitate strategic environmental (water and air) and land-use assessment as well as being able to fully inform issues associated with social impacts, human health, and Aboriginal people and their culture.

Specifically, the Scientific Inquiry Final Report requires in Recommendation 7.8 that:

> '*Measures to be mandated to ensure any onshore shale gas development does not cause unacceptable local drawdown of aquifers, including that the extraction of water from water bores to supply water for hydraulic fracturing be prohibited within at least 1 km of existing or proposed groundwater bores (that are used for domestic or stock use) unless hydrogeological investigations and groundwater modelling indicate that a different distance is appropriate, relevant water allocation plans (WAPs) include provisions that adequately control both the rate and volume of water extraction and that gas companies be required to monitor drawdown in local water supply bores and immediately rectify any problems if the drawdown is found to be excessive*.'

Groundwater characteristics data for the Beetaloo Sub-basin are currently poorly available in public groundwater databases. The Scientific Inquiry into Hydraulic Fracturing in the Northern Territory final report recommends that before any further production approvals are granted, a regional water assessment with a focus on surface and groundwater quality and quantity (recharge and flow) be conducted for any prospective shale gas basin, commencing with the Beetaloo Sub-basin. While this project will provide this information for communities both in the Beetaloo region and the NT more broadly, it will also establish appropriate monitoring tools for use by the NT Government in assessing impacts that the Shale gas industry may have on water resources in the Beetaloo Sub-basin, NT.

1.1 Objectives

The Northern Territory (NT) community have concerns about potential impacts of the developing onshore gas industry on the quality and quantity of groundwater resources that are important to agriculture, tourism and community water supplies. These concerns were recorded in submissions to the NT Government '*Scientific Inquiry into Hydraulic Fracturing in the Northern Territory'* and form part of the recommendations in the Final Report. A baseline characterization of aquifers expected to be intersected during the gas well drilling development is required to better understand the water systems, help address these concerns and meet recommendations of the Inquiry.

This project has four objectives for better understanding of groundwater characteristics of the important aquifers in the Beetaloo Sub-basin:

1. Extend baseline groundwater characterization of important aquifers of the Beetaloo Sub-basin in order to be able to monitor change due to the gas development.
2. Identify groundwater velocity, recharge rate and source of recharge of the Cambrian Limestone aquifer.
3. Undertake background measurement of dissolved methane and methane isotopes, Total Recoverable Hydrocarbons (C_6 – C_{40}), Phenols, Polycyclic Aromatic Hydrocarbons (PAH) and benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN) in water from these aquifers.
4. Alpha and beta radiation measurements which are related to Uranium and Thorium and their decay series. Note that Uranium is also measured geochemically in this project.

1.2 Need and scope

In this project (to be reported as part of Task 5 report), variations in recharge rates, recharge mechanisms, and groundwater flow directions in the Cambrian Limestone Aquifer (CLA) will be evaluated using an environmental tracer survey. Results are awaited as of June 2019. As per an initial pilot study in 2017, samples were collected along hypothesized groundwater flow paths overlapping the leases in which the industry are operating. Data collected during the 2018 survey will be combined with existing tracer information, including Geoscience Australia's (GA) 'Exploring for the Future' program. Because of some of the characteristics of the CLA (large system, suspected compartmentalization of groundwater flow, presence of karst features, climate and vegetation gradients) success for the tracer approach requires collecting the maximum number of samples possible, including *via* complementary research initiatives such as those by GA. The outcomes of this project will provide scientific data to supplement and underpin the engagement process with the community that will be undertaken as part of CSIRO GISERA's stakeholder engagement activities.

1.3 Methodology

Reports by Fulton and Knapton (2015), Tickell and Bruwer (2017) and Rachakonda et al. (2018) provide a summary of current understanding of the geology, hydrogeology and groundwater characteristics of the Beetaloo Sub-basin and help to provide a contextual statement for the area, as defined by the Bioregional Assessment methodology. Using the Rachakonda et al. (2018) report as the starting point, the proposed project consists of four activities. The use of environmental tracers in the Beetaloo Sub-basin has been documented by Suckow et al (2018).

1. Groundwater characterisation through monitoring of groundwater geochemistry of selected bores within the area. These bores were selected in collaboration with the participating gas companies.
2. Groundwater sampling at selected bores located in these areas, to measure the concentration of dissolved methane (and its isotopic composition), major and minor ions, dissolved metals and other constituents of groundwater.
3. Groundwater monitoring of selected bores in the area to evaluate the horizontal groundwater velocity, recharge rate and source of recharge by sampling groundwater along hypothesised flow-paths of the CLA of the Beetaloo Sub-basin.
4. To acquire chemical data for rain events, possibly from a site at Daly Waters.

2 Methods

The methodology follows the requirements outlined in the NT Government methodology for the sampling of groundwater advisory note (DPIR, 2016). Details of specific methods are outlined below.

2.1 Water level measurements

During the groundwater monitoring program, 25 groundwater bores were sampled by CSIRO. Standing water level information was sourced from the Northern Territory groundwater database, due to presence of headworks on wells or in some cases pumps were operating for an unknown period. Figure 1 shows the location of bores monitored by CSIRO during October - November 2018.

2.2 Water quality sampling

During the October - November 2018 groundwater monitoring program, groundwater samples were collected using a Bore Boss pump (Model no: BBR300S) for bores without any pump headworks. For bores with headworks, water samples were collected from existing sampling taps or a fitted outlet on the pump headworks. The location of each sampling point was selected with an aim of having a good geological representation of the Cambrian Limestone Aquifer. The location and site conditions for each sampling point were documented as part of the assessment process.

Bores were purged for a minimum of three to five bore volumes. During sampling a steady state condition is maintained, and pumping rate of groundwater bore (bore yield) was estimated using a 9 litre bucket. Where this method was not practical due to the size of the flow or headworks configuration, bore yield was obtained from information provided in the Northern Territory groundwater database. During purging, field parameters were monitored regularly and groundwater samples were collected only when the field parameters were stabilised within a range outlined in the NT Government methodology for the sampling of groundwater advisory note DPIR (2016).

Field parameters - Electrical Conductivity (EC), pH, temperature, Oxidation Redox Potential (ORP), Dissolved Oxygen (DO) – were measured using Eureka Manta 2 Multiparameter water quality meters. Water quality meters were routinely field calibrated against standard solutions during the field program. EC and DO measurements have a precision of ±1 % units. Temperature and ORP measurements have an instrument precision of ±0.1°C and ±20 mV. The pH readings have a precision of ± 0.2.

For dissolved methane measurement, a 100 ml serum bottle is submerged in the bucket with water overflowing the bucket, as described in Groundwater Sampling and Analysis – A Field Guide (Sundaram et al., 2009). After the bottle has been thoroughly rinsed, a septum with a needle was inserted into it and used to plug the bottle (ensuring no bubbles were present). The bottle was removed from the bucket and a few drops of concentrated sulphuric acid were injected into it via a syringe and needle. Both needles were carefully withdrawn, and the septum capped before the bottle was stored inverted.

All equipped and operational bores were sampled for physical parameters, alkalinity, major ions and metals (dissolved and total). Dissolved metal samples were field filtered using 0.45 micron filters. Field blanks were collected after every 6 to 8 samples.

After collection, all samples were refrigerated and transported to CSIRO Perth NGL and ALS Darwin Laboratories respectively in eskies with ice blocks, for analysis. Chain of custody (COC) documentation was completed for all samples and was consistent with the CSIRO NGL and ALS Laboratories requirements.

2.3 Water analyses

2.3.1 Anions by Ion chromatography

The water samples were diluted and analysed using US EPA Method 9056A on a Thermo Scientific IC-4000 using Dionex IonPac AG-18- 4m 150 mm column. All samples were analysed at least in triplicate and the average value was reported. The blanks were also evaluated, with the concentrations of these samples found to be below detection limits. Quality Control (QC) of the analysis was based on frequent (every 10 samples) re-analyses of continuing calibration control standards (CCCV) and throughout the instrument runs there were three individual runs of a Quality Control standard (certified reference material for major ions in water: HAMIL 20.2 (harbor water) Environment Canada). The results of CCCV and the QC samples were always within specification ±2 times the standard deviation (σ) value of the QC standard and within 5% of the CCCV standards.

2.3.2 Alkalinity by titration

A sub sample of groundwater samples collected during the groundwater sampling campaign were analysed for alkalinity according to US EPA Method 310.2 on a Methrohm Auto-titrator. All samples were analysed at least in triplicate and the average value was reported. The trip and field blanks evaluated and the concentrations in these samples were below detection limits. Quality control of the analysis was based on frequent (every 10 samples) samples of Quality Control standard (certified reference material for major ions in water: HAMIL 20.2 (harbor water) Environment Canada). The results of QC sample were observed to have been always within specification ±2σ value of the standard.

2.3.3 Major cations in water by ICP-OES

The groundwater samples were diluted and analysed according to US EPA Method 200.7 on an Agilent 725 radial ICP-OES. All samples were analysed at least in triplicate and the average value was reported. The field blanks were evaluated and the concentrations in these samples were below detection limits. Quality control of the analysis was based on frequent (every 10 samples) re-analyses of continuing calibration control standards (CCCV) and throughout the instrument runs there were three individual runs of Quality Control standard (certified reference material for major ions in water: HAMIL 20.2 (harbor water) Environment Canada). The results of CCCV and the QC samples were observed to have been always within specification ±2σ value of the QC standard and within 5% of the CCCV standards.

2.3.4 Trace Elements in water by ICP-MS

The water samples were analysed according using US EPA Method 310.2 on an Agilent 7700 ICP-MS system after the addition of known amounts of Bi, Ge, In, Li, Lu, Rh, Sc and Tb as internal standards. The blanks were evaluated and any subsequent positive, but low values observed in the field blanks were deducted from samples that were sampled in the same batch. Quality control of the analysis was based on frequent (every 10 samples) re-analyses of continuing calibration control standards (CCCV) and throughout the instrument runs there were three individual runs of Quality Control standard (certified reference material for trace metals in water: TM 25.4 Environment Canada). The results of CCCV and the QC samples were observed to have been always within specification ±2σ value of the QC standard and within 5% of the CCCV standards.

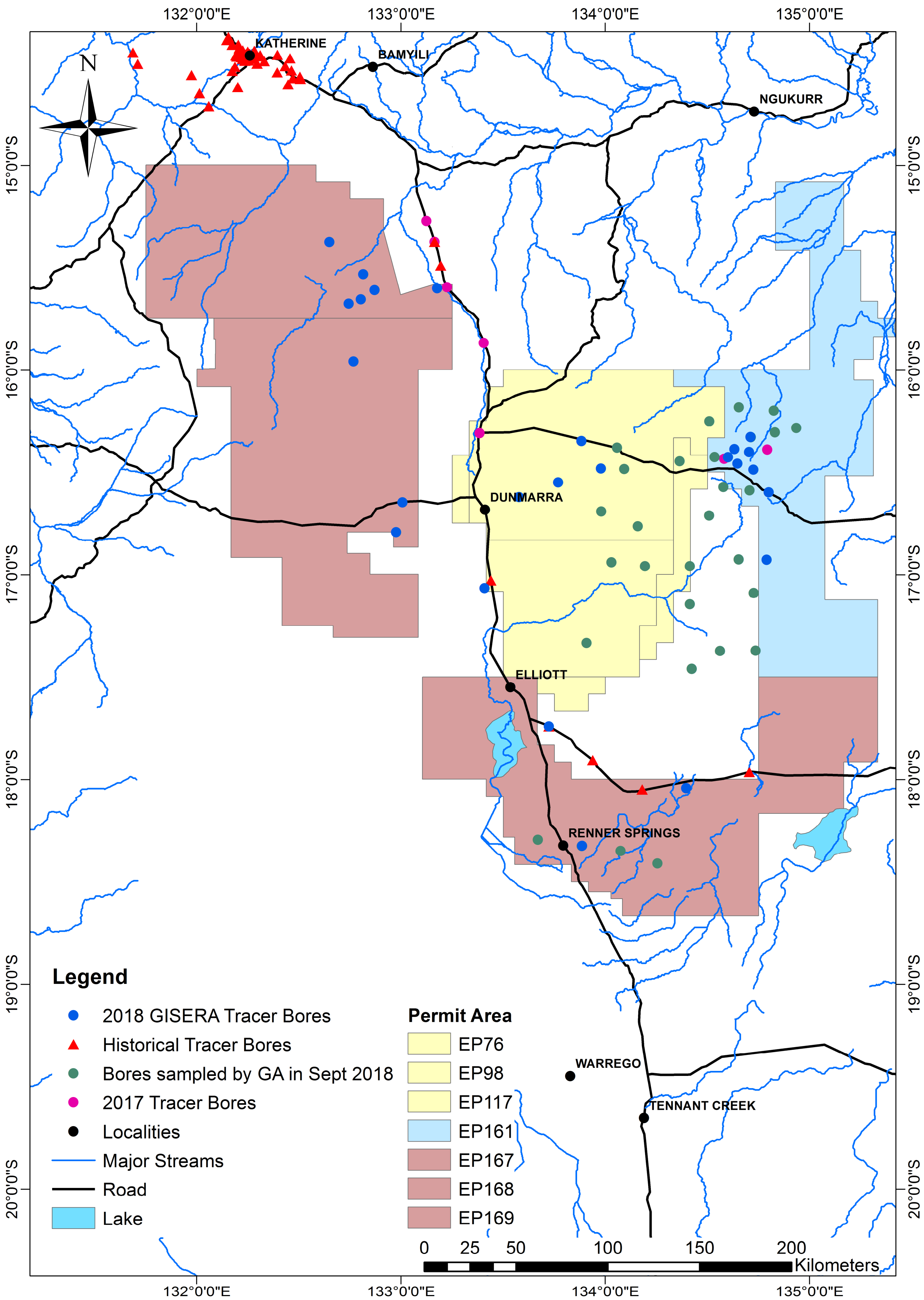

Figure 1 Locations of bores sampled as part of 2018 GISERA Groundwater project at Beetaloo Sub-basin

3 Results

The survey was completed over a three-week period commencing on 18 October 2018. Results of the geochemistry analysis study are presented in this report. Results of the environmental tracer study are discussed in the companion report (Task 5 report).

3.1 Potentiometric head calculation and contour generation

3.1.1 Potentiometric head calculation and contour generation

The 3902 bore monitoring results supplied by the DENR, Origin, Santos and Pangaea to CSIRO as part of the project as well as the data obtained during the October-November 2018 GISERA groundwater sampling campaign were considered. Of the 3902 groundwater bores, only 3302 bores had water level information and were considered for potentiometric head contour generation. Figure 2 shows the location of bores considered for the baseline assessment and groundwater level measurement records. The potentiometric head data have been used to generate contours to determine the direction of groundwater flow.

Based on the above data, a new set of potentiometric head contours for the Cambrian Limestone Aquifer was generated and are shown in Figure 3.

To create the potentiometric head contours for each formation of the Cambrian Limestone Aquifer, a georeferenced Surfer grid file was generated using default Kriging interpolation parameters with a mesh size of 100 m. The Surfer grid files were exported to ArcGIS software and a set of potentiometric head contours generated using the *Contour* tool and filled contour plot generated using *Filled Contours* tool. The contours were clipped to the individual formation of the Cambrian Limestone Aquifer shapefile provided by the DENR. At some locations, the potentiometric head contours contain a series of closed highs, which may be an artefact of the contouring method and the limited number of bores at the location.

Groundwater flow across the Cambrian Limestone Aquifer is broadly from south to north. The observed regional flow direction and hydraulic gradient are in accordance with Tickell (2003), GHD (2016) and Tickell and Bruwer (2017) studies for the Cambrian (Tindall) Limestone Aquifer. As reported by Tickell and Bruwer (2017), no groundwater discharge zones were observed for the formations of the Cambrian Limestone Aquifer considered.

As part of this project, a suite of environmental tracers were sampled in 25 wells whose locations are represented as red triangles in Figure 1. Results of environmental tracer study undertaken as part of the current project will be used for estimating the groundwater recharge for the Beetaloo Sub-basin region and will be reported as part of Task 5 report.

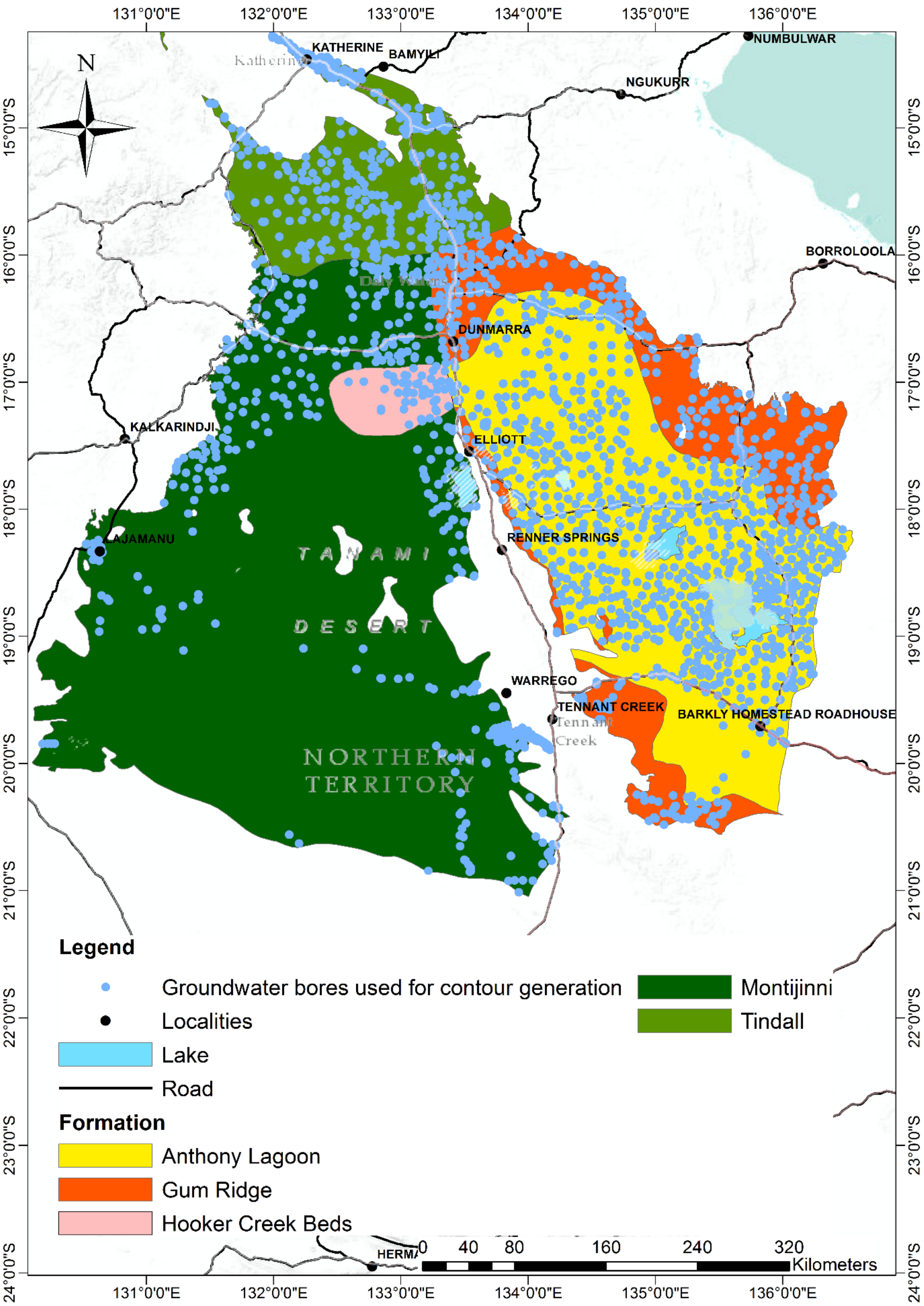

Figure 2 Location of groundwater bores considered for regional groundwater level contours

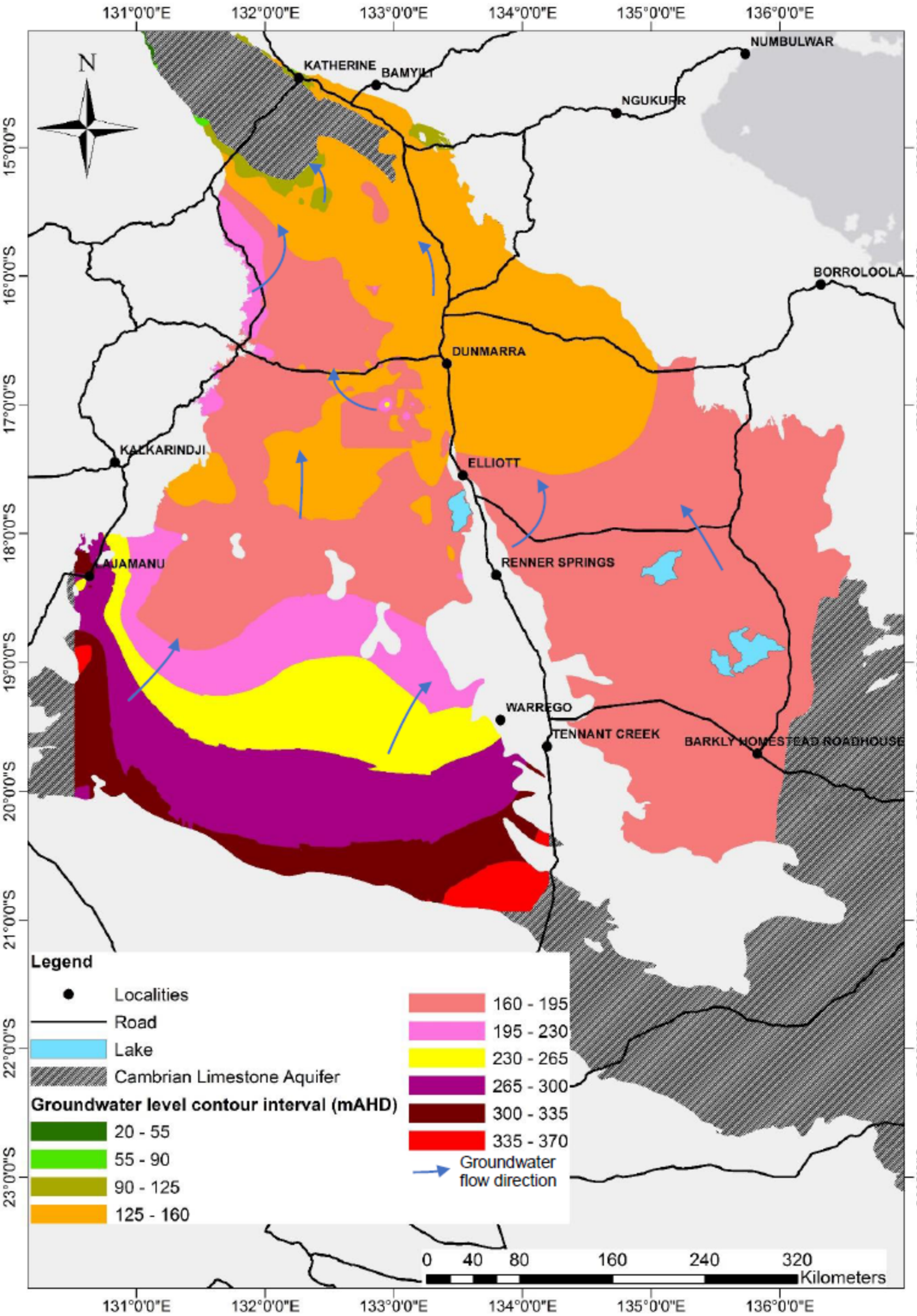

Figure 3 Regional groundwater level contours in the Cambrian Limestone Aquifer

3.2 Groundwater quality

Water quality samples were collected from 25 bores located in and around the Pangaea, Santos and Origin Permit areas. The samples were analysed for physical parameters, alkalinity, carbonates, major ions, and metals (dissolved and total). Results of water quality analysis along with detection limits and Australian drinking and freshwater guidelines are provided in Table 1. Groundwater analytical results were compared with the following water quality guidelines:

- Australian and New Zealand Environment and Conservation Council (ANZECC) / Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ), October 2000, Australian and New Zealand Guidelines for Fresh and Marine Water Quality
- National Health and Medical Research Council, National Resource Management Ministerial Council (NHMRC, NRMMC), October 2011, Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy, Version 3.4, October 2017.
- World Health Organization fourth edition incorporating the first addendum, 2017, Guidelines for drinking water quality.

In the DENR HYDSTRA database, water quality information related to samples collected before 2000 are available for groundwater bores located within the study area. Based on CSIRO request for information about the water bores and water quality results for bores located within and around their permit areas, Origin, Pangaea and Santos have supplied water-monitoring results for various sampling periods. The geochemistry data being obtained by Origin, Pangaea and Santos represent an important data source to supplement the data currently existing in the DENR HYDSTRA database.

The field analysis and water quality parameters measured by Origin for June 2015 – September 2018, Santos during August 2017 and Pangaea during 2015 periods, were compared with the results observed during the October - November 2018 monitoring campaign. Oxidising conditions with a pH range of 6.44 – 7.65 were observed in a majority of the groundwater bores during the October – November 2018 monitoring period. For a majority of bores, field analysis and water quality parameters observed during the October – November 2018 monitoring period were within the range observed during previous monitoring periods.

The data gathered in this study represents a "snapshot" of groundwater chemistry distribution across the area at the time of sampling, and long-term monitoring of these bores is required to understand seasonal variations. The impacts of rainfall and transpiration on migration of chemicals to groundwater is not studied as part of the current study. The environmental tracer study (Task 5 report) undertaken as part of the current project could help in understanding the recharge processes as well as interactions between aquifers.

Based on the 2015-18 groundwater monitoring results, groundwater in the permit areas are suitable for irrigation and livestock purposes.

3.2.1 Salinity

The spatial distribution of groundwater quality (EC) data across the study area is presented in Figure 4. The conductivity of groundwater in the Cambrian Limestone Aquifer shows water is of good to poor water quality with the average EC value for most of the bores less than the acceptable limit for potable water of 1875 µS/cm.

There were no time series salinity data available for the majority of bores monitored as part of this project (including the bores monitored by Origin, Pangaea and Santos) in the publicly available records. The only time series data available in the permit areas is that being generated by the Origin, Pangaea and Santos themselves.

3.2.2 Major ions

The relative major ion concentrations of the Cambrian Limestone Aquifer are plotted on a tri-linear Piper diagram in Figure 5. All groundwaters are of Calcium (Ca)-Sulphate (SO_4)-Bicarbonate (HCO_3) type based on the cation and anion concentrations of diagnostic chemical character of water solutions in hydrologic systems (hydro-chemical facies), but waters from the different wells cluster in distinct groups. The high proportion of Ca-SO_4-HCO_3 is characteristic of aquifers in limestone and dolomitic aquifer systems and with relatively high influence of meteoric recharge. During the October – November 2018 monitoring period, the majority of bores in the study area displayed a Na-Ca-Mg cationic signature.

3.2.3 Metals

Most of the groundwater sample metal concentrations were below the ANZECC & ARMCANZ (2000) and Australian Drinking Water Guidelines (NHMRC, 2011) values.

3.2.4 Methane

During the October – November 2018 monitoring program, groundwater sample dissolved methane concentrations were less 10 mg/l. Stable carbon isotopic compositional range of methane were detected in two groundwater wells (RN031397 and RN038179) and observed methane is due to sub-surface microbial activities (Coleman et al., 1993).

3.2.5 Phenolic and Hydrocarbons

Groundwater sample phenolic and hydrocarbon compounds were not detected during the October – November 2018 sampling program.

3.2.6 BTEXN

BTEXN compounds were not detected during the October – November 2018 sampling period.

3.2.7 Alpha and Beta Activity

During the October – November 2018 sampling program, three groundwater bores: RN037654, RN038580 and RN039080 as shown in Figure 6, have exceeded the WHO (2017) initial gross alpha screening level (less than 0.5 Bq/l) for drinking water quality and would require that the concentrations of individual radionuclides be measured and compared with the radionuclide specific guidance level, taking local circumstances (e.g. geology, hydrogeology) into account.

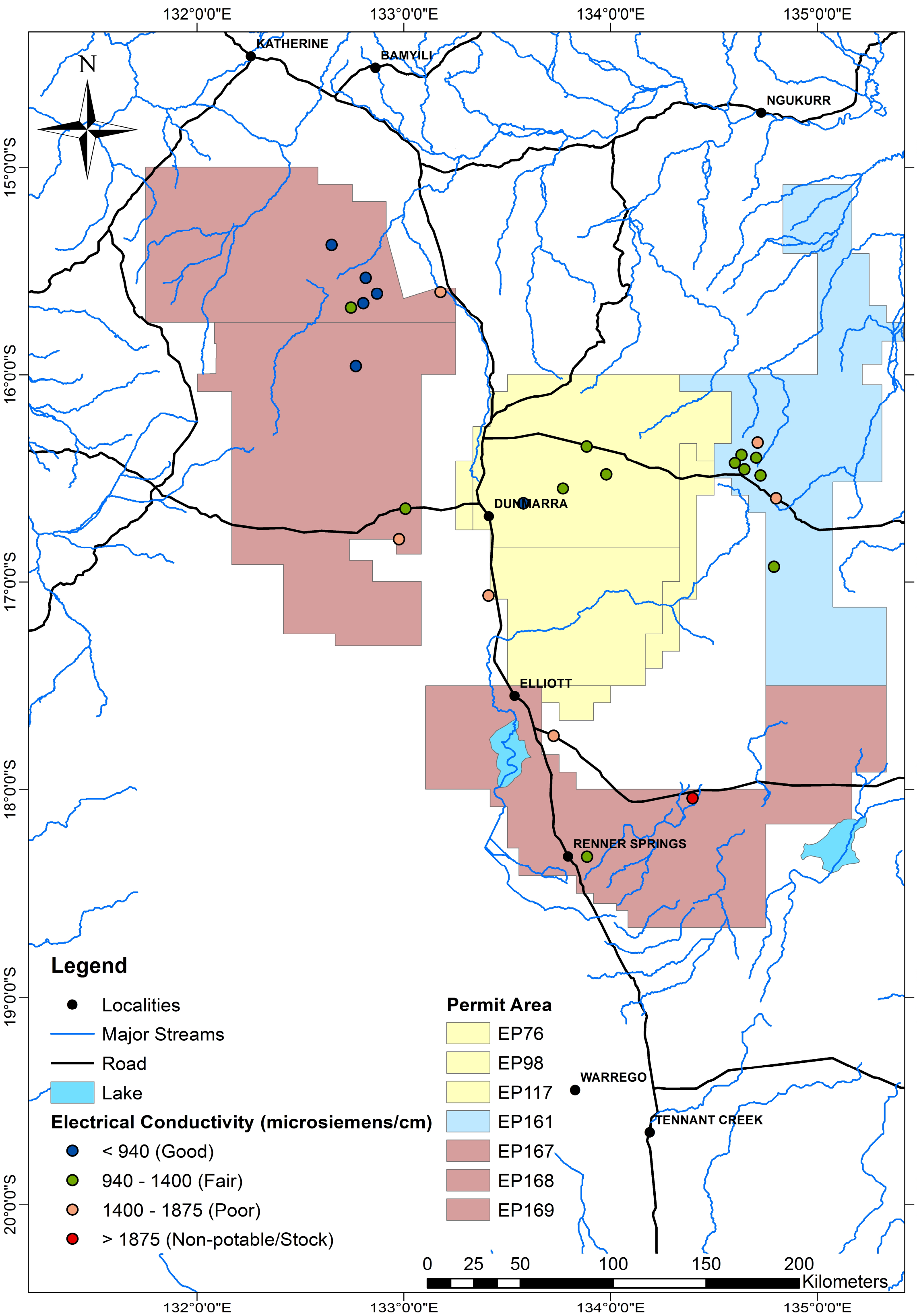

Figure 4 Distribution of groundwater electrical conductivity for bores in Cambrian Limestone Aquifer

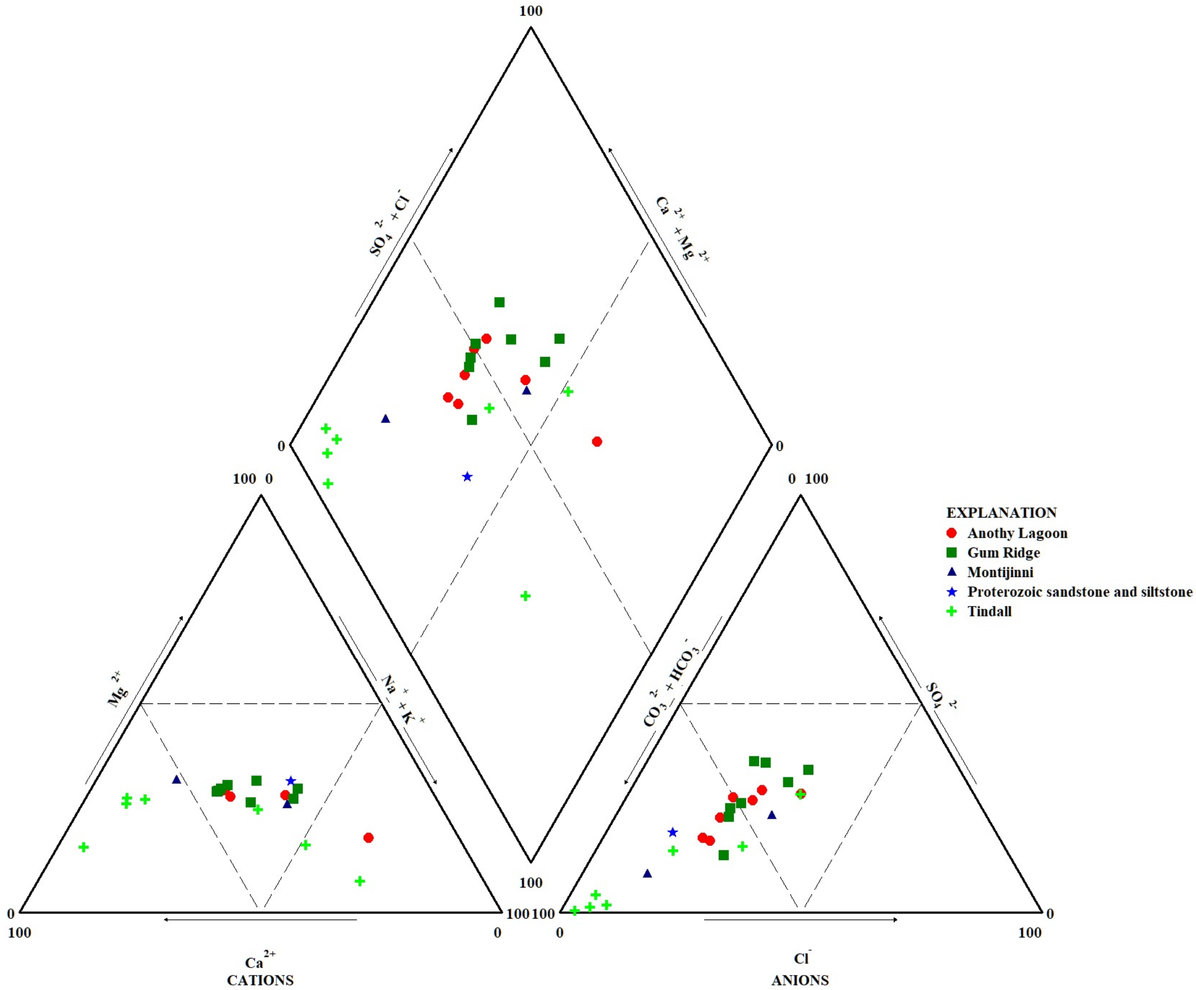

Figure 5 Piper diagram showing major ion signature for the Cambrian Limestone Aquifer

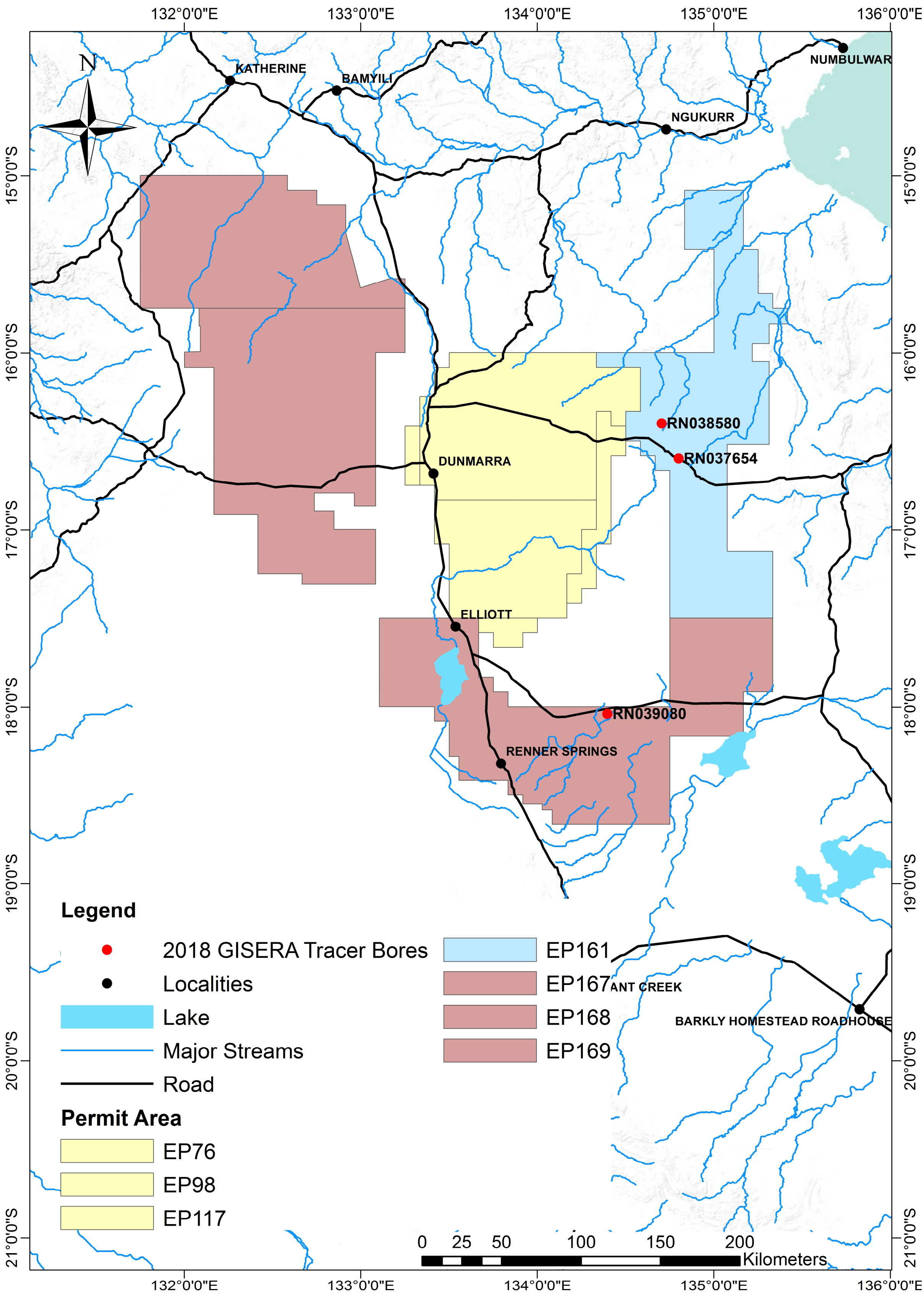

Figure 6 Location of bores exceeding the WHO (2017) drinking water guidelines for gross alpha activity

Table 1 Water quality sampling results

Bore_ID	Alternative_Name	Sampled_Date	Latitude	Longtitude	Formation	Field: pH (Field)	Temperature (Field)	Dissolved Oxygen (Field)	Redox Potential (Field)	Electrical Conductivity (Field)	Purged_time (after which sample is taken)	Discharge Rate*	Water level	Vol_Purged (3-5 bore volumes)
Units						pH_Units	°C	mg/L	mV	µS/cm	min	l/s	mAHD	L
Limit of Reporting														
Australian Driking Water Guidelines (2011) Aesthetic														
Australian Driking Water Guidelines (2011) Health														
ANZECC & ARMCANZ Water Quality Guidelines for Livestock 2000														
World Health Organisation Drinking Water Guidelines 2017														
Technique used														
RN007658	No 3	24/10/18	-16.486	134.726	Gum Ridge	6.56	33.68	2.56	204	1357.00	40	0.50	150.00	1200
RN024616	Birdum Station	19/10/18	-15.601	133.178	Tindall	6.46	32.34	0.15	121	1703.00	20	4.80	143.00	5760
RN029027	Replacement bore for RN007659	24/10/18	-16.327	134.712	Gum Ridge	6.70	33.73	not able to measure	73	1765.00	30	2.50	151.00	4500
RN031243	Buchanan Downs - Wendy's	27/10/18	-16.646	133.008	Montijinni	6.74	36.34	2.34	190	964.05	33	3.00	161.00	5940
RN031382	Konkaberry Berry	18/10/18	-15.374	132.651	Tindall	7.32	33.18	1.31	250	903.30	26	2.00	124.00	3120
RN031397	Cow Creek Scrubby Bore	18/10/18	-15.532	132.816	Tindall	7.25	35.23	0.09	33	774.00	27	4.00	142.00	6480
RN032961	Tarlee Station Railway Bore	19/10/18	-15.655	132.804	Tindall	7.26	33.13	0.35	423	910.00	25	0.50	145.00	750
RN033135	Cow Creek House Bore	18/10/18	-15.609	132.871	Tindall	6.84	34.16	3.23	400	735.60	31	5.00	163.00	9300
RN033608	No 1/02	26/10/18	-16.456	134.648	AnthonyLagoon	6.65	36.45	0.74	148	1332.00	10	1.00	154.00	600
RN033671	No 4/02	24/10/18	-16.386	134.634	Gum Ridge	6.51	35.53	0.03	128	1366.00	23	3.00	153.00	4140
RN034660	Helen Springs	2/11/18	-18.323	133.887	Proterozoic sandstone and siltstone	7.27	31.86	1.46	147	1100.50	38	1.00	249.00	2280
RN035130	Avago Station	19/10/18	-15.957	132.768	Tindall	7.17	33.02	0.77	317	786.30	30	8.00	143.00	14400
RN035146	Tarlee Station House Bore	19/10/18	-15.676	132.745	Tindall	6.59	32.84	1.17	469	978.00	26	15.00	144.00	23400
RN036654	Buchanan Downs - 4X	27/10/18	-16.792	132.977	Montijinni	6.74	34.32	2.93	187	1499.50	40	4.00	159.00	9600
RN037654	RN037654	25/10/18	-16.597	134.801	Gum Ridge	6.72	36.05	0.22	-77	1507.00	35	6.00	149.00	12600
RN037673	Vanderlin	1/11/18	-16.549	133.770	AnthonyLagoon	7.02	34.75	1.80	95	1179.00	22	6.00	156.00	7920
RN038159	RN038159	25/10/18	-16.926	134.791	AnthonyLagoon	6.63	33.49	0.09	-36	1329.00	25	2.00	147.00	3000
RN038179	Taskers Bore	24/10/18	-16.425	134.602	AnthonyLagoon	6.75	34.07	0.55	-12	1187.00	13	2.50	179.00	1950
RN038580	RN038580	26/10/18	-16.400	134.705	Gum Ridge	6.53	33.56	0.01	-178	1378.50	32	4.00	152.00	7680
RN038630	Container Bore	30/10/18	-16.480	133.980	AnthonyLagoon	6.77	34.83	0.47	104	1247.00	63	5.00	153.64	18900
RN038817	Barkly Stock Route	3/11/18	-17.740	133.725	Gum Ridge	6.78	28.93	6.14	128	1488.00	33	6.00	176.00	11880
RN039080	Helen Springs	2/11/18	-18.041	134.397	AnthonyLagoon	7.65	29.92	4.92	37	1946.00	24	1.60	169.26	2304
Amungee NW1	BET-LB025	30/10/18	-16.346	133.885	Gum Ridge Formation	6.89	35.99	0.56	84	1239.00	30	2.85	152.80	5130
Shenandoah 1 WB1	BET-LB062	1/11/18	-16.620	133.579	Gum Ridge	6.44	30.08	0.13	-53	939.70	52	4.00	154.45	12480
Sturt Plains Homestead Bore	BET-LB052	1/11/18	-17.065	133.410	AnthonyLagoon	6.86	34.25	2.54	182	1521.00	35	not measured**	158.40	not measured**
Rain Water						3.72								
Mean Value						6.84	33.67	1.44	134.56	1245.42	30.52	3.93	157.14	7304.75
Median						6.75	33.73	0.76	128.00	1247.00	30.00	3.50	153.00	5850.00
25th Percentile						6.61	32.9	0.17	35	951.88	24.5	2	146	2478
50th Percentile						6.76	33.9	0.74	124.5	1243	30	4	153.3	5940
90th Percentile						7.3	36.2	4.41	413.8	1667.4	47.2	7.4	177.8	17550

Bore_ID	Inorganics: Alkalinity (Total) as CaCO3	Bi-carbonates (HCO3)	Carbonates (CO3)	Bromide	Anions Total	Calcium Dissolved	Calcium Total	Cations Total	Chloride	Fluoride	Ionic Balance	Magnesium Dissolved	Magnesium Total	Nitrate (as N)	Phosphate	Potassium Dissolved	Potassium Total	Sodium Dissolved	Sodium Total	Sulphate as SO4
Units	mg/L	mg/L	mg/L	mg/L	meq/L	mg/L	mg/L	meq/L	mg/L	mg/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Limit of Reporting	1			1	0.01	0.1	0.1	0.01	0.1	0.05	0.010	0.01	0.01	0.15	0.25	0.5	0.5	0.1	0.1	0.1
Australian Driking Water Guidelines (2011) Aesthetic									250									180	180	250
Australian Driking Water Guidelines (2011) Health										2										
ANZECC & ARMCANZ Water Quality Guidelines for Livestock 2000						1000	1000			2				30						1000
World Health Organisation Drinking Water Guidelines 2017																				
Technique used				Ion		ICP-OES	ICP-OES		IC	IC		ICP-OES	ICP-OES	IC	IC	ICP-OES	ICP-OES	ICP-OES	ICP-OES	IC
RN007658	485.4	485.2	0.2	0.39	14.80	134.9	141.8	16.08	125.2	0.50	4.142	58.17	62.72	1.50	0.30	11.9	12.3	98.7	102.0	164.2
RN024616	609.9	609.8	0.2	0.53	18.36	151.0	165.8	19.81	196.7	0.30	3.801	58.18	64.39	1.90	0.30	15.5	16.9	164.0	174.5	140.4
RN029027	423.1	422.9	0.2	0.44	18.55	104.6	128.6	19.21	210.0	0.75	1.747	69.10	84.22	1.20	0.30	31.7	32.6	173.3	211.9	278.7
RN031243	501.5	501.3	0.2	0.39	10.55	125.4	112.1	11.47	51.2	0.20	4.188	42.60	41.64	2.25	0.40	8.2	7.6	35.2	37.4	47.3
RN031382	595.1	594.0	1.2	0.17	10.35	133.9	145.0	10.43	20.7	0.20	0.376	34.78	37.53	1.90	0.30	1.4	1.3	20.2	22.0	5.9
RN031397	396.0	395.3	0.7	0.20	9.27	50.9	51.1	10.00	54.0	0.40	3.759	8.39	8.85	1.10	0.30	1.2	0.8	155.1	152.1	66.0
RN032961	544.2	543.3	0.9	0.18	9.87	134.2	149.9	10.28	31.3	0.25	2.036	32.05	36.34	2.25	0.30	1.3	1.1	21.5	23.9	7.9
RN033135	443.9	443.6	0.3	0.25	7.96	140.4	146.8	8.80	15.3	0.45	5.022	16.31	17.49	2.40	0.30	<0.5	<0.5	11.0	11.7	16.2
RN033608	478.1	477.9	0.2	0.33	14.04	131.0	142.3	15.22	110.0	0.50	4.042	54.35	59.09	1.60	0.30	10.5	11.4	91.5	100.0	154.0
RN033671	469.4	469.2	0.1	0.35	14.66	138.2	152.2	15.93	120.0	0.50	4.154	57.69	62.98	1.20	0.30	11.3	12.5	92.8	101.8	177.3
RN034660	512.4	511.9	0.5	0.24	12.51	74.8	78.9	13.35	62.0	0.40	3.247	49.46	53.74	4.85	0.30	3.5	3.7	126.1	129.0	116.0
RN035130	582.8	581.8	1.0	0.15	9.77	121.2	130.9	10.02	10.0	0.30	1.267	32.21	35.56	1.80	0.30	1.9	2.2	30.0	30.2	2.0
RN035146	491.8	491.7	0.2	1.12	22.62	140.2	145.2	21.77	285.3	1.55	-1.923	41.89	43.20	14.45	0.30	3.6	2.8	259.2	260.2	305.3
RN036654	469.8	469.6	0.2	0.56	17.30	120.9	132.2	18.94	199.9	0.30	4.510	58.87	65.14	5.10	0.30	19.3	21.6	174.8	191.4	193.2
RN037654	467.1	466.9	0.2	0.35	18.32	131.9	133.4	18.51	146.0	0.50	0.520	69.04	72.76	1.10	0.30	21.9	22.2	131.8	132.6	320.0
RN037673	492.4	491.9	0.5	0.30	13.04	118.8	134.4	13.52	96.7	0.40	1.832	48.75	53.43	1.70	0.30	8.9	10.4	77.9	89.3	112.7
RN038159	413.6	413.4	0.2	0.36	14.46	131.0	139.7	15.60	137.2	0.50	3.781	56.73	61.16	1.50	0.30	10.8	11.5	95.5	101.6	188.2
RN038179	494.0	493.8	0.3	0.38	13.34	104.8	123.4	12.65	108.0	0.45	-2.634	46.49	48.89	1.50	0.20	15.5	10.1	74.3	94.5	110.7
RN038580	474.1	474.0	0.1	0.32	15.63	144.5	167.3	16.40	137.3	0.45	2.394	59.74	66.82	<0.15	0.30	12.2	13.7	92.1	107.6	198.3
RN038630	438.5	438.3	0.2	0.25	14.20	131.5	135.3	14.80	112.3	0.40	2.072	51.72	53.97	1.70	0.70	10.6	10.7	86.1	87.9	189.2
RN038817	323.0	322.8	0.2	0.65	16.81	108.5	114.8	18.17	205.3	0.70	3.896	59.67	63.69	5.85	0.30	27.3	29.8	165.2	174.3	276.2
RN039080	487.4	485.4	2.0	1.12	22.57	89.9	89.3	23.83	285.3	1.55	2.713	50.23	51.83	14.45	0.80	15.2	15.1	341.5	339.7	305.3
Amungee NW1	325.2	324.9	0.2	0.50	13.41	130.5	135.7	14.51	119.2	0.40	3.934	49.69	53.53	1.00	0.25	10.3	10.4	84.8	86.3	232.7
Shenandoah 1 WB1	467.8	467.7	0.1	1.40	12.92	88.4	89.6	11.79	125.2	2.00	-4.585	35.19	36.75	<0.15	0.30	11.1	11.6	97.2	85.5	84.7
Sturt Plains Homestead Bore	508.2	507.8	0.3	1.12	19.34	110.6	114.4	17.97	185.3	1.55	-3.673	60.52	63.44	14.45	<0.25	22.3	23.4	159.5	162.2	270.3
Rain Water	0			<0.1			7.2		20.7	2.2			3.2	1.1	<0.25		2.5		11.9	13.4
Mean Value	475.79	475.37	0.42	0.48	14.59	119.67	128.00	15.16	125.98	0.62	2.02	48.07	51.97	3.77	0.34	11.99	12.32	114.38	120.39	158.51
Median	478.07	477.87	0.23	0.36	14.20	130.47	134.42	15.22	120.00	0.45	2.71	50.23	53.74	1.80	0.30	10.97	11.45	95.54	101.77	164.20
25th Percentile	441.2	440.95	0.173	0.2475	11.527	106.665	114.589	11.631	58	0.35	0.894	38.5376	39.5847	1.5	0.3	4.75	4.69	76.11	85.94	75.33
50th Percentile	476.1	475.93	0.231	0.35	14.118	127.92	133.926	15.009	119.6	0.45	2.553	49.9643	53.636	1.85	0.3	10.84	11.36	94.18	101.71	165.66
90th Percentile	567.4	566.40	1.107	1.12	21.275	140.296	151.279	20.748	255.2	1.55	4.381	65.6325	70.383	14.45	0.61	25.80	27.84	225.44	240.86	305.33

* Discharge rate were estimated either from Bore Boss pump flow curve (FPS 4400) or as provided by Origin/Santos/Pangaea personal or obtained from NT groundwater database.

** As pump was running for unknown period, it was assumed that well is purged before arrival of team at site.

ICP-MS: Inductively Coupled Plasma - Mass Spectrometry. US EPA Method 6020A has been used for analysis.

				Metals																																										Methane		Gross Alpha and Beta Activity	
				Aluminium		Arsenic		Barium		Beryllium		Boron		Cadmium		Chromium		Cobalt		Copper		Iron		Lead		Lithium		Manganese		Molybdenum		Mercury		Nickel		Selenium		Strontium		Tin		Uranium		Vanadium		Zinc		Dissolved methane	13 C methane	Gross alpha	Gross beta activity - 40K
			Formation	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total				
Units				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/l	δ13C ‰ VPDB	Bq/L	Bq/L
Limit of Reporting				0.5	0.5	0.1	0.1	0.005	0.005	0.1	0.1	0.5	0.5	0.01	0.01	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.1	0.1	0.05	0.05	0.1	0.1	0.1	0.1	0.01	0.01	1.0	1.0	0.01	0.01	0.01	0.01	0.1	0.1	0.1	0.005	0.1	0.1	0.1	0.1	0.0002	need aprox.0.2 mg/l	0.05	0.10
Australian Driking Water Guidelines (2011) Aesthetic				200	200															1000	1000	300	300					100	100																	3000	3000				
Australian Driking Water Guidelines (2011) Health						10	10	2000	2000	60	60	4000	4000	2	2					2000	2000			10	10			500	500	50	50	1	1	20	20	10	10					17	17								
ANZECC & ARMCANZ Water Quality Guidelines for Livestock 2000				5000	5000	500	500					5000	5000	10	10	1000	1000	1000	1000	500	500			100	100							2	2	1000	1000	20	20					200	200			20000	20000				
World Health Organisation Drinking Water Guidelines 2017																																																		0.5	1
Technique used				ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS (< 500		ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS		ICP-MS (< 500		ICP-MS		ICP-MS		ICP-MS		ICP-MS		GC-FID	GC-IRMS		
Bore_ID	**Alternative_Name**	**Sampled_Date**																																																	
RN007658	No 3	24/10/18	Gum Ridge	0.5	0.5	<0.1	0.9	46.671	66.695	<0.1	<0.1	124.0	198.5	<0.01	<0.01	0.2	0.1	1.8	2.5	6.5	7.8	1.9	4387.1	1.4	2.4	64.99	53.91	0.4	48.5	0.5	0.5	<0.01	<0.01	< 1	< 1	<0.01	<0.01	744.28	821.06	0.2	0.2	1.3	4.423	<0.1	<0.1	386.6	928.6	0.0007	too low	0.35	0.21
RN024616	Birdum Station	19/10/18	Tindall	<0.50	0.8	0.3	0.0	75.501	53.089	<0.1	<0.1	380.6	385.2	<0.01	<0.01	0.1	0.1	<0.1	2.0	<0.1	0.8	150.2	<0.5	0.6	1.6	29.47	69.11	5.8	6.2	1.2	1.1	<0.01	<0.01	< 1	< 1	<0.01	0.75	388.19	388.81	<0.1	<0.1	3.2	3.356	<0.1	<0.1	41.5	382.7	0.0064	too low	0.50	0.42
RN029027	Replacement bore for RN007659	24/10/18	Gum Ridge	1.5	875.2	0.2	0.3	37.413	78.064	<0.1	<0.1	133.7	176.9	<0.01	<0.01	0.4	0.1	0.1	0.1	0.1	0.5	157.8	103.5	0.1	0.3	30.43	239.80	2.4	6.0	1.3	1.9	<0.01	<0.01	< 1	< 1	<0.01	0.60	1016.00	1050.77	0.1	0.1	0.3	3.143	<0.1	<0.1	6.9	37.5	0.0003	too low	0.41	0.41
RN031243	Buchanan Downs - Wendy's	27/10/18	Montijinni	2.7	2.6	<0.1	0.2	85.306	36.478	<0.1	<0.1	60.1	63.2	<0.01	<0.01	0.3	0.1	<0.1	<0.1	0.4	7.2	1.1	104.0	0.3	0.4	19.16	221.89	<0.1	2.7	<0.1	<0.1	<0.01	<0.01	< 1	< 1	<0.01	0.46	190.01	197.78	<0.1	<0.1	1.3	1.211	0.8	<0.1	7.2	7.4	0.0029	too low	0.15	<0.10
RN031382	Konkaberry Berry	18/10/18	Tindall	0.8	<0.50	<0.1	0.1	21.459	84.035	<0.1	<0.1	237.3	257.9	<0.01	<0.01	<0.1	0.0	<0.1	<0.1	0.3	0.9	3.6	<0.5	0.2	0.1	16.82	19.16	<0.1	<0.1	0.3	1.4	<0.01	<0.01	< 1	< 1	<0.01	0.07	136.42	135.56	<0.1	<0.1	0.9	1.293	1.4	<0.1	0.5	7.5	0.0029	too low	0.10	<0.10
RN031397	Cow Creek Scrubby Bore	18/10/18	Tindall	1.3	<0.50	<0.1	0.1	57.234	20.891	<0.1	<0.1	544.7	606.9	<0.01	<0.01	0.1	<0.1	<0.1	<0.1	<0.1	0.4	39.2	<0.5	0.7	0.7	16.54	32.61	1.6	<0.1	<0.1	<0.1	<0.01	<0.01	< 1	< 1	<0.01	<0.01	364.73	201.98	<0.1	<0.1	1.7	1.866	0.9	<0.1	109.0	110.2	1.1295	-74.6	0.06	0.11
RN032961	Tarlee Station Railway Bore	19/10/18	Tindall	<0.50	6.8	<0.1	0.1	28.943	930.284	<0.1	<0.1	537.1	529.9	<0.01	<0.01	0.3	0.5	<0.1	<0.1	1.6	1.1	2.4	101.0	0.2	1.4	15.65	63.97	<0.1	132.2	<0.1	<0.1	<0.01	<0.01	< 1	< 1	<0.01	0.95	92.27	130.20	<0.1	<0.1	0.6	0.723	0.9	3.6	3.5	4.7	0.0106	too low	0.10	<0.10
RN033135	Cow Creek House Bore	18/10/18	Tindall	0.8	0.9	<0.1	0.1	172.405	20.656	<0.1	<0.1	186.9	192.2	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	1.1	<0.5	<0.5	0.1	1.4	11.16	18.12	<0.1	0.1	<0.1	0.5	<0.01	<0.01	< 1	< 1	<0.01	<0.01	166.98	175.87	0.2	0.2	1.5	1.771	10.6	<0.1	<0.1	1.2	0.0035	too low	0.09	<0.10
RN033608	No 1/02	26/10/18	AnthonyLagoon	<0.50	1.5	0.2	0.2	56.901	195.021	<0.1	<0.1	91.9	110.8	<0.01	<0.01	0.3	<0.1	<0.1	<0.1	2.3	0.7	2.5	<0.5	0.6	1.6	11.14	51.82	1.3	1.2	0.4	0.3	<0.01	<0.01	< 1	< 1	<0.01	0.98	750.25	737.99	<0.1	0.1	2.3	2.611	0.6	9.4	8.0	8.2	0.0008	too low	0.18	<0.10
RN033671	No 4/02	24/10/18	Gum Ridge	<0.50	<0.50	<0.1	0.1	70.010	53.929	<0.1	<0.1	129.7	239.3	<0.01	<0.01	0.1	<0.1	<0.1	<0.1	0.9	3.1	11.4	<0.5	0.3	0.3	19.06	54.60	0.4	1.2	0.3	<0.1	<0.01	<0.01	< 1	< 1	<0.01	<0.01	190.10	790.53	<0.1	<0.1	1.2	2.139	3.4	-0.9	27.9	29.1	0.0002	too low	0.11	0.14
RN034660	Helen Springs	2/11/18	Proterozoic sandstone and siltstone	<0.50	<0.50	<0.1	0.1	81.323	48.660	<0.1	<0.1	407.5	409.6	<0.01	<0.01	0.1	<0.1	<0.1	<0.1	1.4	0.0	4.2	8.5	0.2	1.0	24.50	61.24	0.4	2.5	0.3	0.4	<0.01	<0.01	< 1	< 1	<0.01	<0.01	295.88	562.73	<0.1	<0.1	1.4	1.178	3.9	<0.1	9.3	9.8	0.0004	too low	0.49	0.21
RN035130	Avago Station	19/10/18	Tindall	<0.50	<0.50	<0.1	0.3	39.554	131.359	<0.1	<0.1	300.6	325.7	<0.01	<0.01	0.1	0.4	<0.1	<0.1	0.5	0.5	3.7	128.1	0.7	0.7	17.45	20.61	0.4	13.4	<0.1	<0.1	<0.01	<0.01	< 1	< 1	<0.01	<0.01	69.88	72.80	<0.1	<0.1	0.3	8.877	1.5	54.1	33.2	31.7	0.0034	too low	<0.05	<0.10
RN035146	Tarlee Station House Bore	19/10/18	Tindall	0.6	11.0	<0.1	0.1	53.933	47.519	<0.1	<0.1	381.2	382.2	<0.01	<0.01	<0.1	1.0	<0.1	<0.1	1.8	17.4	2.6	<0.5	0.3	0.4	19.19	52.13	1.2	2.7	<0.1	<0.1	<0.01	<0.01	< 1	< 1	<0.01	0.35	734.19	487.80	<0.1	<0.1	2.0	2.336	0.8	<0.1	6.8	36.1	0.0060	too low	<0.05	<0.10
RN036654	Buchanan Downs - 4X	27/10/18	Montijinni	<0.50	<0.50	<0.1	0.1	61.205	66.972	<0.1	<0.1	183.2	381.0	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	1.2	1.5	5.5	<0.5	0.4	1.3	28.28	34.98	0.6	0.7	<0.1	0.5	<0.01	<0.01	< 1	< 1	<0.01	<0.01	322.51	868.47	<0.1	<0.1	1.2	3.944	2.4	<0.1	19.3	25.2	0.0010	too low	0.26	0.18
RN037654	RN037654	25/10/18	Gum Ridge	<0.50	<0.50	0.7	0.8	40.123	43.203	<0.1	<0.1	444.2	162.8	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	1107.7	1079.6	0.3	0.3	169.59	167.86	30.0	32.1	0.3	0.2	<0.01	<0.01	< 1	< 1	<0.01	<0.01	836.07	601.17	<0.1	<0.1	0.3	0.270	<0.1	<0.1	3.0	6.4	0.0004	too low	0.63	0.41
RN037673	Vanderlin	1/11/18	AnthonyLagoon	0.5	1.6	<0.1	0.2	56.545	60.845	<0.1	<0.1	320.1	138.8	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	5.5	139.6	1623.9	0.3	1.6	50.50	52.56	6.1	8.5	0.2	1.2	<0.01	<0.01	< 1	< 1	<0.01	0.19	574.18	602.53	<0.1	<0.1	1.6	1.648	0.6	<0.1	303.1	416.7	0.0014	too low	0.13	0.12
RN038159	RN038159	25/10/18	AnthonyLagoon	<0.50	4.4	0.2	0.3	49.631	49.233	<0.1	<0.1	121.0	109.9	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	0.5	<0.1	2889.6	2361.6	0.3	0.5	58.63	61.44	44.2	44.4	0.4	0.3	<0.01	<0.01	< 1	< 1	<0.01	0.21	587.89	616.33	<0.1	<0.1	1.3	1.294	0.5	<0.1	462.2	453.3	0.0033	too low	0.13	0.14
RN038179	Taskers Bore	24/10/18	AnthonyLagoon	0.5	0.6	1.1	0.9	72.056	70.352	<0.1	<0.1	87.6	121.9	<0.01	<0.01	0.4	<0.1	<0.1	<0.1	<0.1	0.5	4346.7	3485.2	0.8	1.7	56.77	57.57	46.8	46.1	0.5	0.2	<0.01	<0.01	< 1	< 1	<0.01	0.82	616.68	757.02	<0.1	<0.1	4.9	4.698	0.1	<0.1	496.9	504.9	0.3797	-85.6	0.46	0.29
RN038580	RN038580	26/10/18	Gum Ridge	0.6	0.6	0.4	0.5	41.209	44.259	<0.1	<0.1	237.3	123.6	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	2680.0	2784.0	0.2	0.2	65.02	67.15	33.5	36.2	0.3	1.4	<0.01	<0.01	< 1	< 1	<0.01	<0.01	766.23	705.29	<0.1	<0.1	1.2	1.134	0.3	<0.1	2.6	2.6	0.0204	too low	0.75	0.45
RN038630	Container Bore	30/10/18	AnthonyLagoon	<0.50	<0.50	<0.1	0.1	51.616	54.564	<0.1	<0.1	160.0	143.3	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	0.2	86.3	90.9	0.3	0.3	49.89	50.85	2.7	2.4	0.3	0.2	<0.01	<0.01	< 1	< 1	<0.01	0.08	698.12	1146.10	<0.1	<0.1	1.7	1.765	0.5	<0.1	33.2	32.9	0.0012	too low	0.10	<0.10
RN038817	Barkly Stock Route	3/11/18	Gum Ridge	<0.50	11.0	0.4	0.5	44.620	47.271	<0.1	<0.1	273.6	473.5	<0.01	<0.01	0.2	<0.1	<0.1	<0.1	1.3	1.0	65.1	170.7	0.1	0.5	34.96	36.70	7.9	18.0	1.4	1.4	<0.01	<0.01	< 1	< 1	<0.01	2.37	1118.07	1055.32	<0.1	<0.1	8.4	8.111	3.5	2.5	12.7	14.9	0.0002	too low	0.44	0.19
RN039080	Helen Springs	2/11/18	AnthonyLagoon	<0.50	2.1	<0.1	0.1	22.532	22.787	<0.1	<0.1	451.9	573.3	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	81.1	37.9	0.2	0.3	37.11	37.08	3.7	3.9	5.1	0.2	<0.01	<0.01	< 1	< 1	<0.01	1.31	1067.55	1100.71	<0.1	<0.1	12.6	12.224	1.6	0.9	28.7	30.0	0.0003	too low	0.68	0.28
Amungee NW1	BET-LB025	30/10/18	Gum Ridge Formation	19.6	6.6	0.2	0.3	76.790	35.029	<0.1	<0.1	126.3	289.8	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	0.4	0.8	84.8	104.3	<0.1	0.4	36.89	49.22	36.2	41.0	0.3	1.2	<0.01	<0.01	< 1	< 1	<0.01	0.99	670.55	745.66	<0.1	<0.1	2.1	10.168	0.8	1.7	12.9	22.5	0.0011	too low	0.30	0.34
Shenandoah 1 WB1	BET-LB062	1/11/18	Gum Ridge	0.6	0.6	0.2	<0.1	58.082	6.699	<0.1	<0.1	232.6	144.5	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	392.3	<0.5	0.1	0.1	28.28	29.20	28.0	27.5	1.1	0.3	<0.01	<0.01	< 1	< 1	<0.01	<0.01	461.33	969.83	<0.1	<0.1	1.0	1.226	0.7	<0.1	2.6	2.1	0.0010	too low	0.10	0.13
Sturt Plains Homestead Bore	BET-LB052	1/11/18	AnthonyLagoon	<0.50	27.1	0.2	0.2	50.506	63.267	<0.1	<0.1	346.7	226.6	<0.01	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	0.4	155.8	<0.5	<0.1	0.3	37.39	45.83	19.0	20.4	0.3	0.3	<0.01	<0.01	< 1	< 1	<0.01	<0.01	829.37	799.53	<0.1	<0.1	6.0	6.268	1.6	0.5	14.2	2.6	0.0004	too low	0.47	0.28
Rain Water					75		<0.021		41		<0.211				<0.01		0.4		<0.1		27		32.0		0.7		<1.165		16						2		<0.551		183		<0.042		0.4		16		985				
Mean Value				2.52	56.11	0.37	0.27	58.06	93.25	<0.1	<0.1	259.99	270.69	<0.01	<0.01	0.23	0.29	0.94	1.53	1.38	2.47	517.29	1104.69	0.38	0.80	37.96	65.98	12.98	21.64	0.81	0.71	<0.01	<0.01	< 1	< 1	<0.01	0.72	547.51	628.87	0.15	0.15	2.41	3.51	1.78	8.98	84.66	124.35	0.06	-80.10	0.30	0.25
Median				0.72	2.10	0.24	0.16	53.93	53.09	<0.1	<0.1	237.28	226.56	<0.01	<0.01	0.20	0.14	0.94	2.03	1.04	0.82	73.10	128.11	0.28	0.47	29.47	52.13	3.68	8.46	0.35	0.45	<0.01	<0.01	< 1	< 1	<0.01	0.67	587.89	705.29	0.15	0.15	1.36	2.14	0.87	2.13	13.55	25.17	0.00	-80.10	0.26	0.21
25th Percentile				0.56	0.69	0.21	0.09	40.67	39.84	<0.1	<0.1	127.99	141.06	<0.01	<0.01	0.116	0.12	-	0.06	0.42	0.49	3.59	101.04	0.19	0.31	18.25	35.84	0.90	2.47	0.31	0.30	<0.01	<0.01	< 1	< 1	<0.02	0.21	242.99	295.39	0.13	0.12	1.08	1.26	0.58	0.56	6.86	6.88	0.00	-	0.10	0.14
50th Percentile				0.79	2.36	0.24	0.15	55.24	51.16	<0.1	<0.1	237.28	232.92	<0.01	<0.01	0.198	0.148	0.13	1.04	0.92	0.80	81.14	116.20	0.28	0.45	28.88	51.98	4.74	7.33	0.34	0.43	<0.01	<0.01	< 1	< 1	<0.03	0.67	581.04	660.81	0.16	0.13	1.45	2.00	0.87	2.13	12.89	23.82	0.00	-80.10	0.22	0.25
90th Percentile				16.21	366.31	1.04	0.70	83.71	169.56	<0.1	<0.1	503.02	555.94	<0.01	<0.01	0.43	-	-	-	2.10	7.17	2826.72	3134.61	0.68	1.60	62.47	200.28	44.25	45.79	2.51	1.54	<0.01	<0.01	< 1	< 1	<0.04	1.94	1046.93	1082.55	-	-	7.43	9.65	3.85	-	414.46	438.69	0.24	-	0.67	0.43

				Phenolic Compounds												Polynuclear Aromatic Hydrocarbons																		Total Petroleum Hydrocarbons				
			Formation	Phenol	2-Chlorophenol	2-Methylphenol	3- & 4-Methylphenol	2-Nitrophenol	2,4-Dimethylphenol	2,4-Dichlorophenol	2,6-Dichlorophenol	4-Chloro-3-methylphenol	2,4,6-Trichlorophenol	2,4,5-Trichlorophenol	Pentachlorophenol	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benz(a)anthracene	Chrysene	Benzo(b+j)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3,cd)pyrene	Dibenz(a,h)anthracene	Benzo(g,h,i)perylene	Sum of polycyclic aromatic hydrocarbons	Benzo(a)pyrene TEQ (zero)	C6 - C9 Fraction	C10 - C14 Fraction	C15 - C28 Fraction	C29 - C36 Fraction	C10 - C36 Fraction (sum)
Units				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit of Reporting				1	1	1	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	0.5	1	1	1	0.5	0.5	20	50	100	50	50
Australian Driking Water Guidelines (2011) Aesthetic					0.1					0.3			2																									
Australian Driking Water Guidelines (2011) Health					300					200			20		10													0.01										
ANZECC & ARMCANZ Water Quality Guidelines for Livestock 2000					490					160																												
World Health Organisation Drinking Water Guidelines 2017																																						
Technique used																																						
Bore_ID	Alternative_Name	Sampled_Date																																				
RN007658	No 3	24/10/18	Gum Ridge	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN024616	Birdum Station	19/10/18	Tindall	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN029027	Replacement bore for RN007659	24/10/18	Gum Ridge	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN031243	Buchanan Downs - Wendy's	27/10/18	Montijinni	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN031382	Konkaberry Berry	18/10/18	Tindall	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN031397	Cow Creek Scrubby Bore	18/10/18	Tindall	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN032961	Tarlee Station Railway Bore	19/10/18	Tindall	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN033135	Cow Creek House Bore	18/10/18	Tindall	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN033608	No 1/02	26/10/18	AnthonyLagoon	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN033671	No 4/02	24/10/18	Gum Ridge	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN034660	Helen Springs	2/11/18	Proterozoic sandstone and siltstone	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN035130	Avago Station	19/10/18	Tindall	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN035146	Tarlee Station House Bore	19/10/18	Tindall	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN036654	Buchanan Downs - 4X	27/10/18	Montijinni	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN037654	RN037654	25/10/18	Gum Ridge	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN037673	Vanderlin	1/11/18	AnthonyLagoon	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN038159	RN038159	25/10/18	AnthonyLagoon	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN038179	Taskers Bore	24/10/18	AnthonyLagoon	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN038580	RN038580	26/10/18	Gum Ridge	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN038630	Container Bore	30/10/18	AnthonyLagoon	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN038817	Barkly Stock Route	3/11/18	Gum Ridge	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
RN039080	Helen Springs	2/11/18	AnthonyLagoon	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
Amungee NW1	BET-LB025	30/10/18	Gum Ridge Formation	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
Shenandoah 1 WB1	BET-LB062	1/11/18	Gum Ridge	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
Sturt Plains Homestead Bore	BET-LB052	1/11/18	AnthonyLagoon	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
Rain Water																																						
Mean Value				<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
Median				<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
25th Percentile				<1.0	<1.0	<1.0	<2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.6	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
50th Percentile				<1.0	<1.0	<1.0	<2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.7	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50
90th Percentile				<1.0	<1.0	<1.0	<2.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.8	<1.0	<1.0	<1.0	<0.5	<0.5	<20	<50	<100	<50	<50

				Total Recoverable Hydrocarbons - NEPM 2013 Fractions							BTEXN							
			Formation	C6 - C10 Fraction	C6 - C10 Fraction minus BTEX	>C10 - C16 Fraction	>C16 - C34 Fraction	>C34 - C40 Fraction	>C10 - C40 Fraction (sum)	>C10 - C16 Fraction minus Naphthalene	Benzene	Toluene	Ethylbenzene	meta- & para-Xylene	ortho-Xylene	Total Xylenes	Sum of BTEX	Naphthalene
Units				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Limit of Reporting				20	20	100	100	100	100	100	1	2	2	2	2	2	1	5
Australian Driking Water Guidelines (2011) Aesthetic											1	25	3			20		
Australian Driking Water Guidelines (2011) Health											1	800	300			600		
ANZECC & ARMCANZ Water Quality Guidelines for Livestock 2000											950				350			16
World Health Organisation Drinking Water Guidelines 2017																		
Technique used																		
Bore_ID	**Alternative_Name**	**Sampled_Date**																
RN007658	No 3	24/10/18	Gum Ridge	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN024616	Birdum Station	19/10/18	Tindall	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN029027	Replacement bore for RN007659	24/10/18	Gum Ridge	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN031243	Buchanan Downs - Wendy's	27/10/18	Montijinni	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN031382	Konkaberry Berry	18/10/18	Tindall	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN031397	Cow Creek Scrubby Bore	18/10/18	Tindall	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN032961	Tarlee Station Railway Bore	19/10/18	Tindall	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN033135	Cow Creek House Bore	18/10/18	Tindall	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN033608	No 1/02	26/10/18	AnthonyLagoon	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN033671	No 4/02	24/10/18	Gum Ridge	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN034660	Helen Springs	2/11/18	Proterozoic sandstone and siltstone	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN035130	Avago Station	19/10/18	Tindall	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN035146	Tarlee Station House Bore	19/10/18	Tindall	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN036654	Buchanan Downs - 4X	27/10/18	Montijinni	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN037654	RN037654	25/10/18	Gum Ridge	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN037673	Vanderlin	1/11/18	AnthonyLagoon	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN038159	RN038159	25/10/18	AnthonyLagoon	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN038179	Taskers Bore	24/10/18	AnthonyLagoon	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN038580	RN038580	26/10/18	Gum Ridge	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN038630	Container Bore	30/10/18	AnthonyLagoon	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN038817	Barkly Stock Route	3/11/18	Gum Ridge	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
RN039080	Helen Springs	2/11/18	AnthonyLagoon	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
Amungee NW1	BET-LB025	30/10/18	Gum Ridge Formation	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
Shenandoah 1 WB1	BET-LB062	1/11/18	Gum Ridge	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
Sturt Plains Homestead Bore	BET-LB052	1/11/18	AnthonyLagoon	<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
Rain Water																		
Mean Value				<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
Median				<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
25th Percentile				<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
50th Percentile				<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5
90th Percentile				<20	<20	<100	<100	<100	<100	<100	<1	<2	<2	<2	<2	<2	<1	<5

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