

APPENDIX AD

Borrow Pits—Supporting Technical Information

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT

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1 Introduction

1.1 Purpose and scope

This report presents a summary of supporting technical for relevant environmental matters and approval requirements associated with the proposed borrow pits sites for the Inland Rail—Border to Gowrie project (the Project), as described in Chapter 5: Project Description of this revised draft EIS. The relevant chapters of the revised draft EIS inclusive of the Draft Outline Environmental Management Plan (OEMP) cover all components of the Project including the borrow pits as described in this report and the Project Description.

TABLE 1-1 CHAPTERS THAT ADDRESS BORROW PITS

REVISED DRAFT EIS CHAPTERS	BORROW PITS ADDRESSED IN CHAPTERS
Chapter 3: Legislation and Project Approvals Process	Yes
Chapter 5: Project Description	Yes
Chapter 6: Stakeholder Engagement	Yes
Chapter 7: Sustainability	Yes
Chapter 8: Land Use and Tenure	Yes
Chapter 9: Land Resources	Yes
Chapter 10: Landscape and Visual Impact Assessment	Yes
Chapter 11: Flora and Fauna	Yes—Borrow pit survey information in Appendix B
Chapter 12: Air Quality	Yes—Borrow pit air quality analysis in Appendix E
Chapter 13: Surface Water	Yes
Chapter 14: Flooding and Geomorphology	Yes
Chapter 15: Groundwater	Yes—Borrow pit groundwater bore data in Appendix C
Chapter 16: Noise and Vibration	Yes
Chapter 17: Social	Yes
Chapter 18: Economics	Yes
Chapter 19: Cultural Heritage	Yes—Borrow pit Aboriginal CH searches in Appendix D
Chapter 20: Traffic, Transport and Access	Yes
Chapter 21: Hazard and Risk	Yes
Chapter 22: Waste and Resource Management	Yes
Chapter 23: Cumulative Impacts	Yes
Chapter 24: Draft Outline EMP	Yes

1.2 Description of borrow pits

Earthwork assessment for the revised reference design confirms a material deficit associated with the various components of the Project, necessitating the sourcing of suitable fill from a number of borrow pit sites to support Project construction. In accordance with the *Waste Reduction and Recycling Act 2011* (Qld) (WRR Act) hierarchy for waste and resource management preferences, the Project's material deficit and reliance on imported material has been reduced by maximising cut-to-fill opportunities, the application of earthwork efficiencies and the approach to spoil treatment, as presented in Appendix AB: Earthworks Strategy and Draft Soil Management Plan. Following the reuse of suitable structural fill material from cuts, the fill deficit for the Project will be met through the importation of appropriate material types from existing operational, licensed quarries or from seven borrow pits at six borrow pit locations (one site with two nominated pits) proposed to be established for the Project. The seven borrow pits will supply an estimated 298,000 cubic metres (m³) of the Project's fill deficit over approximately three years. The borrow pit locations and configurations were selected based on structural suitability, environmental constraints to avoid or minimise impacts, landowner feedback and proximity to Project fill requirements during construction to minimise haulage.

The seven borrow pits are located between Goondiwindi and Millmerran, targeting known fill requirements based on design and earthwork planning, with borrow pit locations 1 to 4 within the Goondiwindi Regional Council (GRC) local government area (LGA) and borrow pit locations 5 and 6 in the Toowoomba Regional Council (TRC) LGA. The borrow pit locations are identified in Table 1-2 and shown in Appendix A.

The borrow pit locations and configuration (including depth and area) were selected based on the following factors:

- ▶ Suitability of material
- ▶ Proximity to rail alignment—to reduce haulage distances
- ▶ Proximity to road access and accessibility—to reduce ground disturbance through road construction
- ▶ Minimal-to-no vegetation clearing—to minimise impacts to flora and fauna
- ▶ Minimal impact to groundwater resources and groundwater dependent ecosystems (GDEs)—maximum excavation depth of each pit has been selected to avoid intercepting groundwater inclusive of a separation buffer
- ▶ Outcomes of consultation with landowners
- ▶ Minimal impacts to the surrounding environment.

In this report, the land parcels on which the borrow pits are located are referred to as the 'borrow pit location(s)'. The extent of the borrow pit and any access tracks proposed within each borrow pit location are referred to as the 'borrow pit footprint'.

The establishment of the borrow pits will involve the use of standard earthmoving equipment to undertake:

- ▶ Clearing and grubbing of the borrow pit footprint
- ▶ Stripping and stockpiling of topsoil
- ▶ Set up of environmental and safety controls, e.g. erosion and sediment control, barricading, access road construction.

Excavation operations will involve use of heavy machinery, such as dozers (with ripping tyne), excavators and loaders, to systematically loosen and excavate the materials from the pit. Excavation will proceed in horizontal layers with careful consideration for maintenance of stable pit walls. Excavated material will be sorted and classified, which may involve onsite crushing and screening of materials. Suitable material will be hauled directly to the Project construction site and unloaded, in accordance with relevant Project conditions and protocols for material handling including those outlined in the Draft Soil Management Plan (Appendix AB Earthworks Strategy and Draft Soil Management Plan). Site establishment and disturbance at each location will be based on Project construction sequencing to avoid unnecessary material double handling and stockpiling, and to minimise the total duration of disturbance at the borrow pit sites.

The two pits at the Heckendorf Road borrow pit location will be developed and operated sequentially, i.e. not at the same time.

The location, size and tenure of each of the borrow pits are described in Table 1-2 and shown on the Figure series in Appendix A.

TABLE 1-2 BORROW PIT DETAILS

Site ID	Borrow pit location	Property details	Fill (m ³)	Maximum depth of excavation in pit (m)	Tonnes	Tenure
1	Mooroobie Lane	Lot 2 on SP229051	33,900	3 m	58,000	Freehold
2	Taits Red Ridge	Lot 53 on MH233	33,900	3 m	58,000	Freehold
3	Mosquito Creek Road	Lot 116 on BNT467	38,500	3 m	65,000	Freehold
4	Millmerran-Inglewood Road	Segment parcel (segspar) 45662020	38,500	5 m	65,000	Road Type Parcel (local GRC)
5	Kooroongarra-Andersons Road	Lot 33 on MA3499	38,500	3 m	65,000	Freehold
6A	Heckendorf Road	Lot 98 on DY182	26,900	10 m	45,000	Freehold
6B		Lot 111 on DY182	87,844	10 m	150,000	Freehold

2. Regulatory environment

Chapter 3: Legislation and Approvals Process provides a description of legislation and approvals for all aspects of the Project including borrow pits. The following information summarises information specific to the borrow pits.

2.1 Commonwealth

2.1.1 *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*

The establishment, use and rehabilitation of the borrow pits is part of the Inland Rail Border to Gowrie Project (2018/8165).

The siting of the proposed borrow pits has avoided areas with potential value to matters of national environmental significance (MNES). This includes providing appropriate buffers to waterways, and areas of regrowth or remnant vegetation, which may be suitable habitat for MNES.

2.2 Queensland

The Project is not seeking Stated Conditions from the Coordinator-General for secondary approvals under the *Planning Act 2016* (Qld) or *Environmental Protection Act 1994* (Qld) for borrow pits, and all secondary approvals required for borrow pits will be obtained following the revised draft EIS process.

2.2.1 *Environmental Protection Act 1994 (Qld)*

The *Environmental Protection Act 1994* (Qld) (EP Act), together with the Planning Act, provides a licensing regime for ERAs. ERAs are prescribed under Schedule 2 of the Environmental Protection Regulation 2019 (Qld) (EP Regulation). Approval in the form of an Environmental Authority (EA) is required to lawfully undertake a prescribed ERA. Where a prescribed ERA is listed as a Concurrence ERA in Schedule 2, a development permit for a Material Change of Use under the Planning Act is also required where a change of land use occurs. The relevant ERA for the borrow pits is ERA 16 Extractive and screening activities.

Table 2-1 sets out the thresholds for ERA 16.

Table 2-2 lists the estimated volume to be extracted at each borrow pit location. The proposed borrow pits require an extraction rate of less than 100,000 tonnes per year and, as such, do not trigger concurrence ERAs.

ERA 16(2a) will be applicable to the borrow pits.

TABLE 2-1 THRESHOLD FOR EXTRACTIVE AND SCREENING ACTIVITIES

Threshold	Aggregate score	Concurrence
Extracting, other than by dredging, in a year, the following quantity of material		
5,000–100,000t	22	No
100,000–1,000,000t	39	Concurrence
>1,000,000t	57	Concurrence
Screening, in a year, the following quantity of material		
5,000t to 100,000t	13	No
more than 100,000t –1,000,000t	29	No
>1,000,000t	47	No

TABLE 2-2 VOLUME PER BORROW PIT LOCATION

Borrow pit location	Fill (m ³)	Tonnes (Total across 3-year period)	Tonnage extraction per year	Estimated haulage volume (m ³)
1- Moorroobie Lane	33,900	58,000	19,333	47,460
2- Taits Red Ridge	33,900	58,000	19,333	47,460
3- Mosquito Creek Road	38,500	65,000	21,666	53,900
4- Millmerran-Inglewood Road	38,500	65,000	21,666	53,900
5- Kooroongarra-Andersons Road	38,500	65,000	21,666	53,900
6- Heckendorf Road 98DY182	26,900	45,000	15,000	37,660
Heckendorf Road 111DY182)	87,844	150,000	50,000	123,000

2.2.2 Planning Act 2016 (Qld)

Chapter 3: Legislation and Project Approvals Process discusses the potential approval requirements for the Project, including for the borrow pit activities. There are no approvals identified as required specifically for the borrow pits under the *Planning Act 2016* (Qld) (Planning Act).

As discussed in Chapter 3: Legislation and Project Approvals Process, Section 3.4.20.1, the Project (including the borrow pits) is government-supported transport infrastructure (Schedule 6, Part 5, Section 26 of the Planning Regulation), and cannot be made assessable by a local government planning scheme.

Schedule 21 of the Planning Regulation also identifies vegetation clearing work that is exempt clearing work, for which development approval is not required. Schedule 21, Part 1, Section 14 defines exempt clearing work as clearing vegetation for the construction or maintenance of infrastructure if the infrastructure is government supported transport infrastructure.

2.3 Local

The borrow pits are within the LGAs of Goondiwindi and Toowoomba and access to and from the pits will require the use of local government-controlled roads (Chapter 20: Traffic, Transport and Access). Where required, permits will be obtained in accordance with relevant local laws, along with matters relating to each council's role as a road authority.

As discussed in Chapter 3: Legislation and Project Approvals Process, Section 3.4.20, Inland Rail is government-supported transport infrastructure and is not assessable under the relevant planning schemes. Accordingly, the Project does not require any approvals under the local government planning schemes.

3. Environmental assessment

3.1 Methodology

3.1.1 Overview

The information in this report presents supporting technical information for the environmental assessment of the six borrow pit locations and summarises the assessments presented in the chapters and technical reports of the revised draft EIS.

3.1.2 Ecology

Vegetation field surveys were undertaken on the borrow pits in September 2023 as described in Appendix B. The methodology included:

- ▶ Review of databases, literature and previous studies
- ▶ Ground-truthing regional ecosystems
- ▶ Biocondition assessments
- ▶ Targeted and incidental flora surveys
- ▶ Incidental fauna surveys
- ▶ Documentation of survey results.

3.1.3 Watercourses, drainage and flooding

The approach for the assessment and management of borrow pits is consistent with the Project wide approach for temporary disturbance areas (the temporary footprint) during the Project's construction phase as described in Chapter 14: Flooding and Geomorphology. The assessment approach involves undertaking a Flood Risk Assessment (FRA) prior to the commencement of work to determine any potential changes in flood risk as a result of the site disturbance activities and to assess the potential impacts on local and regional flooding behaviour.

Information on watercourses, drainage and flooding relevant to the borrow pits was sourced from the Queensland Globe Database and, where available, local council flood risk information. The Toowoomba Region—Flood Risk Information Portal was reviewed to determine the potential impact on the borrow pit by flood waters and the degree of inundation the borrow pit footprint would be affected by; 1% annual exceedance probability (AEP) floodplain and probable maximum flood (PMF) without dam failure. The PMF extent without a dam failure (PMFNF) occurs during a wet weather event for the referable dams in Queensland and does not refer to a dam-break situation from any of the borrow pit infrastructure. It's shown on Figures 1b–6b of this report. The potential impact resulting from dam breaks was also included as a risk assessment layer and it describes the PMF extent with a dam failure (PMFF) that occurs during a wet weather event for the referable dams in Queensland.

3.1.4 Groundwater

In addition to the information described in Chapter 15: Groundwater a hydrogeological desktop assessment was carried out to determine potential short- and long-term impacts to groundwater users from the establishment and use of the borrow pits.

The risk assessment used publicly available groundwater information, including the Department of Regional Development, Manufacturing and Water (DRDMW) groundwater database, as well as additional information about unregistered or newly constructed bores. The assessment identified groundwater users firstly at the borrow pit locations, and within 1 km of the borrow pit footprints; where none existed the search area was extended to locate the nearest bores to assist in understand an approximate depth of underlying aquifer levels.

The assessment also reviewed the following information:

- ▶ Existing bores located on and surrounding the borrow pit locations
- ▶ Groundwater utilisation in the area, e.g. stock, domestic
- ▶ Aquifers underlying the borrow pit locations
- ▶ Groundwater levels and chemistry of the underlying aquifers
- ▶ Identification of GDEs on and in the vicinity of all borrow pit locations.

Available groundwater data in the vicinity of the borrow pit locations, including bore usage, depths drilled, bore construction details, groundwater quality, drilling and pump testing reports were reviewed. The analysis and interpretation of the bore report data allowed for a high-level groundwater risk assessment to be carried out.

The individual bore reports obtained from the groundwater database and used in the risk assessment have been included in Appendix C of this report.

3.1.5 Aboriginal cultural heritage

Searches of the Queensland Government Aboriginal and Torres Strait Islander Cultural Heritage Database and Register were undertaken for each of the borrow pit locations, with a 500 m buffer. The results of the searches were used to confirm the presence of any registered sites.

In line with the Part 7 process of the *Aboriginal Cultural Heritage Act 2003* (Qld) (ACH Act) a CHMP will be developed for these new areas. This will serve to meet requirements under the ACH Act. Database search results are contained in Appendix D.

3.1.6 Air quality

Potential dust impacts on surrounding sensitive receptors were determined through a combined qualitative and quantitative risk assessment. Sensitive receptors located within 1 km of the alignment were considered in the assessment. Detailed dispersion modelling of construction is not typically undertaken as construction activities are difficult to forecast accurately and emissions are typically well controlled by standard construction dust mitigation practices. The qualitative assessment method applied for the assessment of the construction works stage impacts is considered appropriate for the Project at this time and is consistent with industry standard methodology.

It is noted that further quantitative assessment of potential dust deposition at sensitive receptors resulting from construction activity will be completed in future stages (prior to construction), when more detailed construction information is available.

The main pollutant of concern during the establishment and use of the borrow pits is particulates, predominantly airborne PM₁₀ and deposited dust (TSP).

As described in Chapter 12: Air Quality, the Project air quality goals for PM₁₀ and dust deposition are as follows:

- ▶ PM₁₀:
 - ▶ 24-hour average—50µg/m³
 - ▶ Annual average—25µg/m³
- ▶ Dust deposition:
 - ▶ Monthly average—120 mg/m²/day.

A baseline air quality monitoring program was conducted for the B2G Project to inform the revised draft EIS; this included establishment of an air quality monitoring station (AQMS). The AQMS was set up at Millmerran on a private property associated with the Millmerran Power Station and near the Commodore Mine (located 1 km north of the mine) (Figure 3-1). The results of the monitoring are presented in Chapter 12: Air Quality and Appendix R: Air Quality Technical Report and are referred to in this assessment.

In addition to the Millmerran AQMS, two dust deposition gauges were established on Lot 111 Plan DY182, on Heckendorf Road, Millwood QLD on borrow pit site 6B. The location of these gauges is shown on Figure 3-2. The sites were selected as there are no nearby sources of dust, making it a suitable representative of the other borrow pit locations.



FIGURE 3-1 LOCATION OF MILLMERRAN AIR QUALITY MONITORING STATION

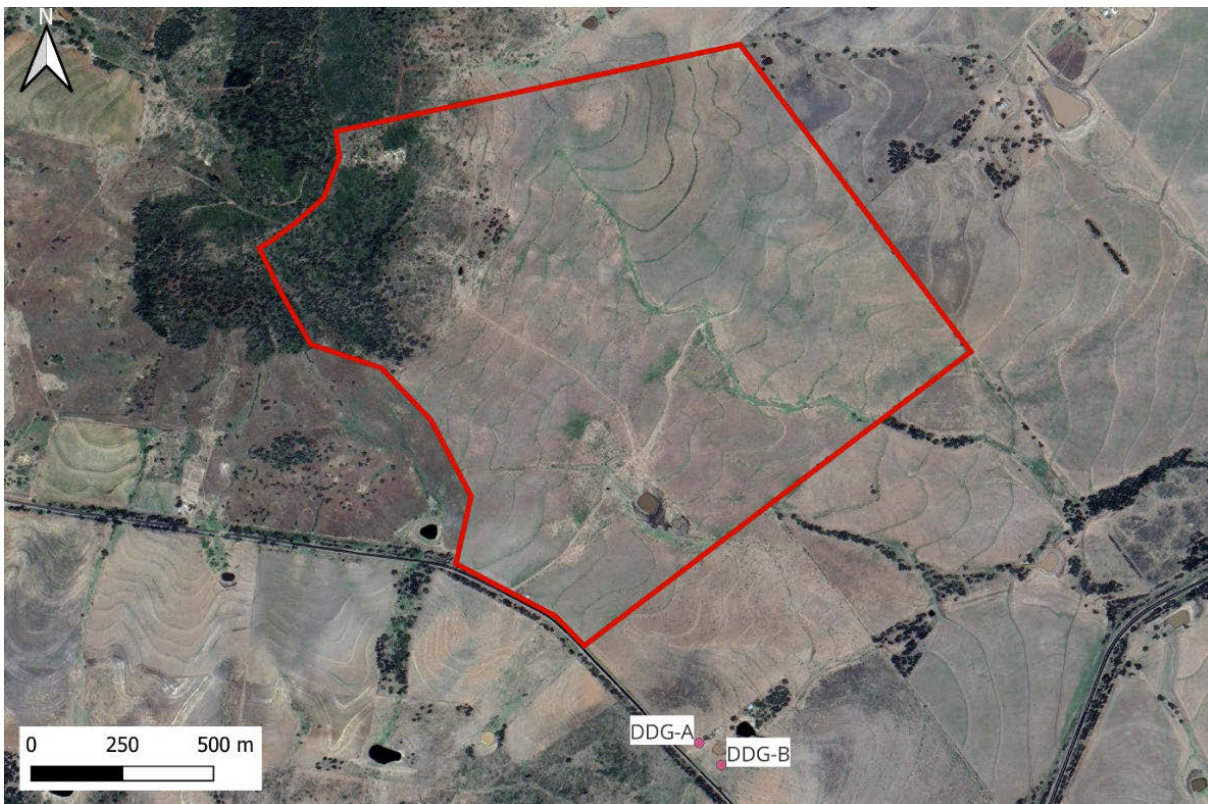


FIGURE 3-2 LOCATION OF DUST DEPOSITION GAUGES (DDG-A AND DDG-B) ON LOT 111 PLAN DY182 NEAR HECKENDORF ROAD

The Millmerran AQMS included two beta-attenuation particulate monitors (BAMs) measuring PM₁₀ and PM_{2.5} particle size fractions.

3.2 Potential Impacts

This section provides a description of borrow pit-specific impact assessment. It starts with an air quality assessment across all sites and then provides an assessment of specific issues for each borrow pit site.

3.2.1 Air quality

This section describes the quantitative air quality results. During the monitoring period, no instances of PM₁₀ air quality exceeding the 24-hour goal of 50 µg/m³ were recorded at the Millmerran AQMS. As shown in Table 3-1, the highest measured 24-hour average at the Millmerran AQMS was 49.3 µg/m³, which occurred on October 15, 2021. It was determined through analysis that this elevated concentration was due to a regional dust storm that affected South-East Queensland.

TABLE 3-1 24 HOUR AND ANNUAL AVERAGE PM10 CONCENTRATION STATISTICS (µG/M³) FOR MILLMERRAN AQMS

Monitoring station	Monitoring period	Air quality goals (µg/m ³)		Annual average (µg/m ³)	24-hour maximum (µg/m ³)	24-hour 70th percentile	Number of exceedances of 24-hour goal	Data capture rate
		Annual	24 hour					
Millmerran AQMS	1st April 2021 – 31 March 2022	25	50	10.3	49.3	11.7	0	87%

In addition to the Millmerran AQMS, two dust deposition gauges were established on Lot 111 Plan DY182, on Heckendorf Road, Millwood QLD on borrow pit site 6B. The results of dust deposition monitoring at Heckendorf Road undertaken between 15 November 2022 to 16 February 2023 are presented in Table 3-2. The adopted goal of 120 mg/m²/day was exceeded in January and February 2023. The average deposition rate was 169.8 mg/m²/day, ranging from 56.6 to 369.6 mg/m²/day, indicating that there is considerable month-to-month variation in dust deposition. The background deposition level for the air environment of the region in which the Project's borrow pits are located may be influenced by bushfires, back burning, and/or localised events that have potential to surpass the air quality objective without borrow pit activities.

TABLE 3-2 MEASURED DEPOSITED DUST LEVELS (MG/M²/DAY)

Locations	Dust deposition rate (mg/m ² /day)		
Monitoring period	15/11/22–15/12/22	15/12/22 16/01/23	16/01/23–16/02/23
DDG-A (27.986° S, 151.214° E)	56.6	50.0	369.6
DDG-B (27.987° S, 151.248° E)	116.5	143.2	283.1
Average deposition rate for all samples	169.8		
Air quality goal	120		

Copies of the laboratory certificate of analysis for the dust deposition monitoring are provided in Appendix E of this appendix.

3.2.1 Borrow pit site assessments

This section provides an assessment of potential impact from each of the borrow pit site locations. The revised reference design mitigation measures have been considered in this assessment of potential impacts.

3.2.1.1 Moorroobie Lane—Site ID 1

The borrow pit location details for Site 1 Moorroobie Lane are presented in Table 3-3. The borrow pit location is shown in the figures in Appendix A of this appendix.

TABLE 3-3 MOORROOBIE LANE BORROW PIT LOCATION INFORMATION

Borrow pit location	Property details	Fill (m ³)	Tonnes	Maximum pit depth (m)	LGA
1- Moorroobie Lane	Lot 2 on SP229051	33,900	58,000	3	GRC

A summary of the environmental attributes for the borrow pit at Moorroobie Lane are listed in Table 3-4.

TABLE 3-4 MOOROOBIE LANE SUMMARY OF ENVIRONMENTAL ATTRIBUTES

Environmental attribute	Mooroobie Lane borrow pit location
Flora and fauna	The borrow pit site comprises a flat, cropped field devoid of remanent vegetation. An access track has been selected to avoid the few scattered mature trees. On-ground survey confirmed that no MNES or MSES will be impacted by the selected borrow pit location. The detailed report is available in Appendix B.
Sensitive receptors	There are no sensitive receptors within 1 km of the borrow pit footprint. The nearest receptor is approximately 1.6 km west of the borrow pit footprint.
Topography	Flat land, cleared for agriculture.
Waterways and flood risk	<p>The borrow pit location is within the Macintyre and Weir rivers drainage sub-basin of the Border Rivers basin. Brigalow Creek intersects the southern section of the borrow pit location and flows in an east to west direction.</p> <p>The borrow pit footprint is located approximately 100 m north of Brigalow Creek.</p> <p>At the borrow pit location, Brigalow Creek is mapped as a Flood Hazard Area (FHA) in the Goondiwindi Region Planning Scheme, upstream of the large floodplain of the Weir and Macintyre rivers. Brigalow Creek is consequently impacted by bank overflow events and shorter durations of inundation, as water temporarily stored outside of the bank area drains back into the creek.</p> <p>The borrow pit location is potentially impacted by the flood hazard area (Figure 1b, Appendix A). The southern portion of the borrow pit location is potentially impacted, leaving the upper two-thirds not impacted by flood hazard area, based on publicly available data.</p>
Groundwater	<p>The borrow pit footprint is on the southern portion of the borrow pit location near Brigalow Creek. No known groundwater bores are located within 1 km of the borrow pit footprint. An extended search indicated the closest bore, RN13601, is located approximately 1.8 km to the north west. The bore RN13601 is an artesian bore drilled to completed depth 262.13 m into shales and sandstone of the Kumberilla Beds formation.</p> <p>The bore report indicates the geology intersected during the drilling comprised of clays to a depth of 62.8 metres below ground level (mbgl), where after a number of sandstone aquifers were intersected between 62.8 m to 68.9 mbgl, 85.34 m to 106.7 mbgl, 181.4 m to 182.9 mbgl and 193.9 m to 262.1 mbgl. Standing water levels were recorded at four depths; 13.5 m, 10.3 m, 8.2 m and 8.3 m.</p> <p>Based on analysis of hydrogeological information for the area and the proposed shallow excavation depth (max 3 m) it is highly unlikely that the groundwater table will be intercepted during site disturbance activities associated with the borrow pit, which would lead to groundwater inflows or lead to impacts on the local groundwater resource.</p> <p>Geotechnical investigations will be undertaken prior to commencement of proposed borrow pits to verify groundwater levels within the borrow pit footprint, with proposed borrow pit depths adjusted (if required) to avoid any interception or inflows of groundwater.</p> <p>The information on the GWDB bores close to the borrow pit location have been tabulated in Appendix C.</p> <p>The nearest Groundwater Dependent Ecosystem (GDE) is approximately 500 m southeast from the borrow pit footprint.</p>
Aboriginal Cultural heritage	<p>A search of the Aboriginal and Torres Strait Islander Cultural Heritage Database and Register (Ref. #118557) was undertaken on 24 August 2022. The search included the borrow pit location with a 500 m buffer. There were no registered Aboriginal cultural heritage sites identified within this search.</p> <p>Aboriginal cultural heritage searches are included in Appendix D.</p>
Air quality	<p>The highest proportion of construction emissions are generated by mechanical activity (e.g. material movement or mobile equipment activity), which typically generate coarser particulate emissions (PM₁₀ and TSP). Airborne PM₁₀ and deposited dust (TSP) are the main pollutants of concern generated from construction activities.</p> <p>The nearest receptor to the borrow pit footprint is approximately 1.6 km to the west of this site. It is expected that, with effective implementation of the proposed mitigation measures outlined in Chapter 12: Air Quality, the impacts to air quality with respect to dust deposition will not be significant.</p>

3.2.1.2 Taits Red Ridge—Site ID 2

The borrow pit location details for Site 2 Taits Red Ridge are presented in Table 3-5. The borrow pit location is presented within Appendix A.

TABLE 3-5 TAITS RED RIDGE BORROW PIT LOCATION INFORMATION

Borrow pit location	Property details	Fill (m ³)	Tonnes	Maximum pit depth (m)	LGA
2- Taits Red Ridge	Lot 53 on MH233	33,900	58,000	3	GRC

A summary of the environmental attributes for the borrow pit at Taits Red Ridge Road are listed in Table 3-6.

TABLE 3-6 TAITS RED RIDGE SUMMARY OF ENVIRONMENTAL ATTRIBUTES

Environmental attribute	Taits Red Ridge borrow pit location
Flora and fauna	The borrow pit site comprises flat, cleared paddock dominated by exotic grass such as <i>Eragrostis curvulua</i> (African lovegrass) and forbs (<i>Sclerolaena spp</i> , <i>Calotis spp</i>). The borrow pit and access track has been located to avoid scattered mature paddock trees present in the region. On-ground survey determined that no MNES or MSES will be impacted by the selected borrow pit footprint. The detailed report is available in Appendix B.
Sensitive receptors	Two sensitive receptors (homesteads) are located within 1 km of borrow pit footprint; being 910 m southeast and 940 m west. The receptor to the southeast is located in the borrow pit location.
Topography	Flat land, cleared for agriculture.
Waterways and flood risk	<p>The borrow pit location is within the Macintyre Brook drainage sub-basin of the Borders River basin, outside of the Macintyre Brook floodplain. No watercourses are within 1 km of the borrow pit footprint.</p> <p>There are three watercourses within the 5 km radius of the borrow pit location—Wondalli Creek, Macintyre Brook, and Kippenbung Creek.</p> <p>Review of available flooding data indicates that the borrow pit footprint is not currently impacted by floodwaters from the 1% AEP or PMF without dam failure flood events.</p>
Groundwater	<p>Two groundwater bores are located within a 1 km radius of the borrow pit footprint.</p> <p>Bore RN77106 is located approximately 910 m southeast of the borrow pit footprint at the farm homestead. The bore report provides no information on the current status of the bore.</p> <p>Bore RN11994 is in the Kumbarella Beds formation and located approximately 930 m west of the borrow pit footprint, in close proximity to the farm homestead. The bore report indicates the water supply bore was drilled in 1952 to a completed depth of 60.70 mbgl. It intersected Red Rock between 1.83 mbgl and 16.15 mbgl and, below that, the sandstone from 16.15 mbgl to 52.12 mbgl, which the bore report recorded the aquifer between 52 mbgl and 60 mbgl. The standing water level was recorded at 7 mbgl at the time of the drilling in 1952.</p> <p>Based on analysis of hydrogeological information for the area and the proposed shallow excavation depth (max 3 m) it is highly unlikely that the groundwater table will be intercepted during site disturbance activities associated with the borrow pit, which would lead to groundwater inflows or impacts on the local groundwater resource.</p> <p>Geotechnical investigations will be undertaken prior to commencement of proposed borrow pits to verify groundwater levels within the borrow pit footprint, with proposed borrow pit depths adjusted (if required) to avoid any interception or inflows of groundwater.</p> <p>The information on the GWDB bores in proximity to the borrow pit location has been tabulated Appendix C.</p> <p>The nearest GDE is approximately 1 km south/southeast of the borrow pit footprint.</p>
Aboriginal Cultural heritage	<p>A search of the Aboriginal and Torres Strait Islander Cultural Heritage Database and Register (Ref. #118557) was undertaken on 24 August 2022. The search included the borrow pit footprint with a 500m buffer. There were no registered Aboriginal cultural heritage sites identified within this search.</p> <p>Aboriginal cultural heritage searches are included in Appendix D.</p>
Air quality	<p>The highest proportion of construction emissions are generated by mechanical activity (e.g. material movement or mobile equipment activity), which typically generate coarser particulate emissions (PM₁₀ and TSP). Airborne PM₁₀ and deposited dust (TSP) are the main pollutants of concern for construction activities.</p> <p>There are two receptors located within 1 km of the borrow pit footprint; both located over 900 m from the borrow pit footprint.</p> <p>It is expected that, with effective implementation of the proposed mitigation measures outlined in Chapter 12: Air Quality, the impacts to air quality with respect to dust deposition will not be significant.</p>

3.2.1.3 Mosquito Creek Road—Site ID 3

The borrow pit location details are presented in Table 3-7. The borrow pit location is presented in Appendix A.

TABLE 3-7 MOSQUITO CREEK ROAD BORROW PIT LOCATION INFORMATION

Borrow pit location	Property details	Fill (m ³)	Tonnes	Maximum pit depth (m)	LGA
3- Mosquito Creek Road	Lot 116 on BNT467	38,500	65,000	3	GRC

A summary of the environmental attributes for the borrow pit at Mosquito Creek Road are listed in Table 3-8.

TABLE 3-8 MOSQUITO CREEK ROAD SUMMARY OF ENVIRONMENTAL ATTRIBUTES

Environmental attribute	Mosquito Creek Road borrow pit location
Flora and fauna	The borrow pit site is predominantly cleared land with shrubby non-remnant ground cover. Clearing of native vegetation featuring Eucalyptus species present in the area has been avoided by selecting a pre-cleared area and utilising an existing access track from the entrance gate to the borrow pit. On-ground survey determined that no MNES or MSES will be impacted by the borrow pit location. The detailed report is available in Appendix B.
Sensitive receptors	There are no sensitive receptors located on the borrow pit location or within 1 km of the borrow pit footprint. The closest sensitive receptor is approximately 2.5 km to the north of the borrow pit footprint.
Topography	The borrow pit location existing ground elevation varies between 310 m and 330 m AHD and is gently sloping down to the northwest.
Waterways and flood risk	The borrow pit location is within the Macintyre Brook sub-drainage basin of the Border Rivers basin. Weir Creek is located approximately 2.7 km from the borrow pit footprint. A minor, unnamed watercourse or drainage line is located approximately 150 m north of the borrow pit footprint. No flood data is available for the borrow pit location.
Groundwater	No groundwater bores are located within 1 km of the borrow pit footprint. An extended search found three bores located within 2.5 km of the borrow pit location. Bore RN 15481 is a sub-artesian bore located approximately 1.5 km to the west of the borrow pit footprint in the northern section of borrow pit location and completed to a total depth of 76.80 mbgl in 1960. Water was described between 43.59 and 44.5 mbgl in the bore report, the aquifer wasn't reported but the strata was described as clay and sandstone. No indication of the bore use was provided in the dataset. Bore RN 64684, is a sub-artesian bore located 2.1 km to the southwest of the borrow pit location, was drilled in 1983 to a completed depth of 37 m into the Walloon Coal Measures. The borehole was screened across the quartz sandstone located between 26.9 mbgl and 29.9 mbgl after intersecting water at 28 mbgl. The standing water level was measured at 22.6 mbgl and the pump test carried out indicated a yield of 0.4 L/s. A water quality analysis carried out in 1983 indicated a pH of 8.3 and a conductivity of 1800 µS/cm. Bore RN 15301 is located on an adjacent property, 2.5 km south of the borrow pit location. Records indicate the bore was completed to a total depth of 91.44 mbgl into the Texas Beds, with perforated casing at 45.1 m and 68.6 mbgl. The standing water level measured in 1961 was located 39.01 mbgl after completing a bailer test suggesting a yield of 0.375 L/s. Based on analysis of hydrogeological information for the area and the proposed shallow excavation depth (max 3 m), it is highly unlikely that the groundwater table will be intercepted during site disturbance activities associated with the borrow pit, which would lead to groundwater inflows or lead to impacts on the local groundwater resource. Geotechnical investigations will be undertaken prior to commencement of proposed borrow pits to verify groundwater levels within the borrow pit footprint, with proposed borrow pit depths adjusted (if required) to avoid any interception or inflows of groundwater. The information on the GWDB bores in close proximity to the borrow pit location has been tabulated in Appendix C. The nearest GDE is approximately 350 m south of the borrow pit footprint.
Aboriginal cultural heritage	A search of the Aboriginal and Torres Strait Islander Cultural Heritage Database and Register (Ref. #118557) was undertaken on 24 August 2022. The search included the borrow pit location with a 500 m buffer. There were no registered Aboriginal cultural heritage sites identified within this search. Aboriginal cultural heritage searches are included in Appendix D.

Environmental attribute	Mosquito Creek Road borrow pit location
Air quality	<p>The highest proportion of construction emissions are generated by mechanical activity (e.g. material movement or mobile equipment activity), which typically generate coarser particulate emissions (PM₁₀ and TSP). Airborne PM₁₀ and deposited dust (TSP) are the main pollutants of concern for construction activities.</p> <p>There are no receptors located within 1 km of the borrow pit footprint, with the closest receptor over 2.5 km to the north.</p> <p>It is expected that, with effective implementation of the proposed mitigation measures outlined in Chapter 12: Air Quality, the impacts to air quality with respect to dust deposition will not be significant.</p>

3.2.1.4 Millmerran-Inglewood Road—Site ID 4

The borrow pit location details are presented in Table 3-9. The borrow pit location is presented in Appendix A.

TABLE 3-9 MILLMERRAN-INGLEWOOD ROAD BORROW PIT LOCATION INFORMATION

Borrow pit location	Property details	Fill (m ³)	Tonnes	Maximum Pit depth (m)	LGA
4- Millmerran-Inglewood Road	Segpar in 45662020 Road Reserve	38,500	65,000	5	GRC

A summary of the environmental attributes for the borrow pit at Millmerran-Inglewood Road is provided in Table 3-10.

TABLE 3-10 MILLMERRAN-INGLEWOOD ROAD SUMMARY OF ENVIRONMENTAL ATTRIBUTES

Environmental attribute	Millmerran-Inglewood Road borrow pit location
Flora and fauna	The borrow pit site comprises mostly cleared land. Clearing of scattered natives including mature Eucalyptus and Acacia shrubs present in the greater area have been avoided by selecting a pre-cleared area for the pit. An existing track has been selected for borrow pit access however will require clearing of a small amount of non-remnant Eucalyptus woodland (Category X) to widen the track to a suitable safe width.
Sensitive receptors	There are no sensitive receptors located in the borrow pit location or within 1 km of the borrow pit footprint. The closest receptors are over 1.8 km to the north and another to the east.
Topography	The borrow pit location existing ground elevation varies between 300 m AHD in the north and up to 320 m AHD in the central portion of the site.
Waterways and flood risk	<p>The borrow pit location is within the Macintyre Brook sub-drainage basin of the Border Rivers basin.</p> <p>No watercourses are located within the borrow pit location; however, the neighbouring site features four tributaries that drain into the Canning Creek, approximately 1.2 km to the east of the borrow pit footprint.</p> <p>The borrow pit footprint is not impacted by the 1% AEP or PMF without dam failure flood event.</p>

Environmental attribute	Millmerran-Inglewood Road borrow pit location
Groundwater	<p>The borrow pit footprint is located on the eastern boundary of the borrow pit location and bore RN77815 was installed as part of the B2G groundwater monitoring and management program (GMMP) MW112 in 2023, on the western edge of the proposed borrow pit within seapar 45662020. No water level was identified but it was installed to 9 mbgl in siltstone strata and is described as Condamine alluvium. There are other no bores located within the 1 km radius.</p> <p>A single bore is located on the northern boundary of the borrow pit location, approximately 1.6 km NNW of the borrow pit footprint (RN41640009). Two additional bores were identified south of the borrow pit footprint and located on an adjacent property directly south of Canning Creek, approximately 2.3 km (RN77309) and 1.45 km (RN16200) respectively.</p> <p>The groundwater levels of the northern bore RN41640009 and southern bore RN16200, have groundwater levels located at 12.20 mbgl and 13.93 mbgl, respectively. The borrow pit elevations are approximately 15 m above Canning Creek; therefore, in the order of 27 m above the groundwater levels in the bores, based on the historic groundwater level information available.</p> <p>The reported groundwater quality data from 1978 indicates the groundwater quality of bore RN16200, located in the Canning Creek Alluvium, to be slightly saline. The bore RN77309, located in the same area but completed into a deeper aquifer, indicated the groundwater is used for water supply and is potable.</p> <p>The water quality analysis from monitoring bore RN41640009 dated May 2011, completed into the Marburg Subgroup and screened across gravelly sand and clay, indicates that the groundwater quality is highly saline.</p> <p>Based on analysis of hydrogeological information for the area and the proposed shallow excavation depth (max 5 m), it is highly unlikely that the groundwater table will be intercepted during site disturbance activities associated with the borrow pit, which would lead to groundwater inflows or lead to impacts on the local groundwater resource.</p> <p>Geotechnical investigations will be undertaken prior to commencement of proposed borrow pits to verify groundwater levels within the borrow pit footprint, with proposed borrow pit depths adjusted (if required) to avoid any interception or inflows of groundwater.</p> <p>Given that the depth of the proposed borrow pit is 5 m, no interaction with groundwater is anticipated. The information on the GWDB bores in close the proximity to the borrow pit location has been tabulated in Appendix C.</p> <p>The nearest GDE is approximately 550 m south-west from the borrow pit location.</p>
Aboriginal cultural heritage	<p>A search of the Aboriginal and Torres Strait Islander Cultural Heritage Database and Register (Ref. #118557) was undertaken on 24 August 2022. The search included the borrow pit location footprint with a 500 m buffer. There were no registered Aboriginal cultural heritage sites identified within this search.</p> <p>Aboriginal cultural heritage searches are included within Appendix D.</p>
Air quality	<p>The highest proportion of construction emissions are generated by mechanical activity (e.g. material movement or mobile equipment activity), which typically generate coarser particulate emissions (PM₁₀ and TSP). Airborne PM₁₀ and deposited dust (TSP) are the main pollutants of concern for construction activities.</p> <p>There are no receptors located within 1 km of the borrow pit footprint, with the closest receptors over 1.8 km to the north and east.</p> <p>It is expected that, with effective implementation of the proposed mitigation measures outlined in Chapter 12: Air Quality, the impacts to air quality with respect to dust deposition will not be significant.</p>

3.2.1.5 Kooroongarra-Andersons Road—Site ID 5

The borrow pit location details are presented in Table 3-13. The borrow pit location is presented in Appendix A.

TABLE 3-11 KOOROONGARRA-ANDERSONS ROAD BORROW PIT LOCATION INFORMATION

Borrow pit location	Property details	Fill (m ³)	Tonnes	Maximum pit depth (m)	LGA
5- Kooroongarra-Andersons Road	Lot 33 on MA3499	38,500	65,000	3	TRC

A summary of the environmental attributes for the borrow pit at Kooroongarra-Andersons Road is provided in Table 3-12.

TABLE 3-12 KOOROONGARRA-ANDERSONS ROAD SUMMARY OF ENVIRONMENTAL ATTRIBUTES

Environmental attribute	Kooroongarra-Andersons Road borrow pit location
Flora and fauna	The borrow pit location is within a cleared paddock devoid of vegetation. On-ground survey determined that no MNES or MSES will be impacted by the borrow pit location. The detailed report is available in Appendix B.
Sensitive receptors	There are no sensitive receptors located in the borrow pit location. The nearest sensitive receptor is located approximately 1.1 km northeast of the borrow pit footprint.
Topography	The borrow pit footprint is located at a ground elevation of approximately 340 m AHD. The borrow pit location is flat and cleared land.
Waterways and flood risk	<p>The borrow pit location is within the Macintyre Brook sub-drainage basin of the Border Rivers basin. Back Creek is approximately 850 m north of the borrow pit footprint.</p> <p>Back Creek joins Bringalily Creek approximately 1.2 km downstream from the borrow pit location, and Native Dog Creek is located approximately 1.1 km south of the borrow pit location.</p> <p>The TRC Flood Risk Information Portal identified that the proposed borrow pit footprint is shown as balance (mixed) flood risk, meaning the land is affected by the 1% AEP event in primarily rural areas where flood hazard is known to exist but detailed studies and mapping are not available to define the risk for a particular area.</p> <p>Despite no available flood mapping, Back Creek has the potential to exceed bank full flow conditions and discharge to temporary storage on the floodplain adjacent to the creek. This is unlikely to impact the borrow pit footprint.</p> <p>The borrow pit location and the borrow pit footprints are potentially impacted by the 1% AEP but not from the PMF without dam failure flood events.</p>
Groundwater	<p>No groundwater bores are located within 1 km of the borrow pit footprint. An extended search found three bores located within 2.7 km of the borrow pit location but one which is no longer in use and had no bore data, RN77804.</p> <p>Bore RN64849 recorded a standing water level of 115.8 mbgl and was installed to 128 mbgl. The strata was described as unknown and not identified. Bore RN33881 was drilled to a depth of 16.8 mbgl and has a standing water level of 13.9 mbgl.</p> <p>Based on analysis of hydrogeological information for the area and the proposed shallow excavation depth (max 3 m, it is highly unlikely that the groundwater table will be intercepted during site disturbance activities associated with the borrow pit, which would lead to groundwater inflows or lead to impacts on the local groundwater resource. Geotechnical investigations will be undertaken prior to commencement of proposed borrow pits to verify groundwater levels within the borrow pit footprint, with proposed borrow pit depths adjusted (if required) to avoid any interception or inflows of groundwater.</p> <p>The information on the GWDB bores in close the proximity to the borrow pit location has been tabulated in Appendix C.</p> <p>The nearest GDEs are approximately 900 m north of the pit and approximately 250 m to the south of the pit, and adjacent to the access track, on the southern side of Kooroongarra Andersons Road.</p>
Aboriginal cultural heritage	<p>A search of the Aboriginal and Torres Strait Islander Cultural Heritage Database and Register (Ref. #118557) was undertaken on 24 August 2022. The search included the borrow pit location with a 500 m buffer. There were no registered Aboriginal cultural heritage sites identified within this search.</p> <p>Aboriginal cultural heritage searches are included within Appendix D.</p>

Environmental attribute	Kooroongarra-Andersons Road borrow pit location
Air quality	<p>The highest proportion of construction emissions are generated by mechanical activity (e.g. material movement or mobile equipment activity), which typically generate coarser particulate emissions (PM₁₀ and TSP). Airborne PM₁₀ and deposited dust (TSP) are the main pollutants of concern for construction activities.</p> <p>There are no receptors located within 1 km of the borrow pit footprint, with the closest receptor approximately 1.1 km to the northeast.</p> <p>It is expected that, with effective implementation of the proposed mitigation measures outlined in Chapter 12: Air Quality, the impacts to air quality with respect to dust deposition will not be significant.</p>

3.2.1.6 Heckendorf Road—Site ID 6A and 6B

The borrow pit location details are presented in Table 3-13. The borrow pit location is presented in Appendix A.

TABLE 3-13 HECKENDORF ROAD BORROW PIT LOCATION INFORMATION

Borrow pit location	Property details	Fill (m ³)	Tonnes	Maximum pit depth (m)	LGA
6A Heckendorf Road	Lot 98 on DY182	26,900	45,000	10	TRC
6B Heckendorf Road	Lot 111 on DY182	87,844	150,000	10	TRC

A summary of the environmental attributes for the borrow pit at Heckendorf Road are listed in Table 3-14.

TABLE 3-14 HECKENDORF ROAD SUMMARY OF ENVIRONMENTAL ATTRIBUTES

Environmental attribute	Heckendorf Road borrow pit location
Flora and fauna	The borrow pit is a cleared paddock comprising exotic grasses and some native forbs. An on-ground survey determined that no MNES or MSES will be impacted by the borrow pit location. The detailed report is available in Appendix B.
Sensitive receptors	Three sensitive receptors (homesteads) are located within 1 km of the borrow pit extents; being 190 m, and 540 m from the south-eastern pit and 760 m from the northern pit.
Topography	Generally flat floodplain cleared for irrigated horticulture. The western boundary of 98DY182 is located on the crest of a hill at approximately 610 m AHD, falling approximately 100 m and draining east towards Back Creek.
Waterways and flood risk	<p>The borrow pit location is located within the Condamine River sub-drainage basin and drains east towards Back Creek.</p> <p>The western boundary of northern property 98DY182 is located on the crest of a hill, rising steeply from 510 m to 620 m AHD, approximately 100 m above the base of the hill, and drains to the east along Back Creek.</p> <p>The southwestern boundary of the southern property 111DY182 is along Heckendorf Road, intersecting the Millmerran-Inglewood Road, forming the south-eastern boundary.</p> <p>The TRC flood risk information portal identified that the proposed borrow pit footprint within borrow pits 6A (98DY182) and 6B (111DY182) is not impacted by any flood risk. Notwithstanding that, a portion of both borrow pits' locations were found to have a balance (mixed) flood risk, meaning the land is affected by the 1% AEP event in primarily rural areas where flood hazard is known to exist but detailed studies and mapping are not available to define the risk for a particular area.</p> <p>The location of the borrow pit footprints within the borrow pit location is potentially impacted by the 1% AEP but not the PMF without dam failure.</p>

Environmental attribute	Heckendorf Road borrow pit location
Groundwater	<p>No bores were identified as being located on either of the borrow pit location properties.</p> <p>Property 98DY182:</p> <ul style="list-style-type: none"> ▶ The database search results indicated no bores are located within the 1 km assessment radius around the borrow pit location ▶ A total of three bores are located at distances in excess of 1.5 km from the borrow pit location, bore RN172706 (BH2355 B2G monitoring bore) that recorded an aquifer between 17 m and 20 m deep in the Main Range Volcanics (MRV) formation according to the bore report and no standing water levels were recorded. In 2023 this bore was decommissioned. <p>Property 111DY182:</p> <ul style="list-style-type: none"> ▶ RN172706, was located 150 m to the south of the borrow pit location ▶ A bore RN87843, is located approximately 700 m east of the borrow pit location and near the homestead across the Millmerran-Inglewood Road in the Kumbarilla Beds. The bore report indicates the bore water level is located at 133 mbgl and yields 1.9 L/s. <p>Based on analysis of hydrogeological information for the area and the proposed shallow excavation depth (max 10 m), it is highly unlikely that the groundwater table will be intercepted during site disturbance activities associated with the borrow pits, which would lead to groundwater inflows or lead to impacts on local groundwater resources. Geotechnical investigations will be undertaken prior to commencement of proposed borrow pits to verify groundwater levels within the borrow pit footprint, with proposed borrow pit depths adjusted (if required) to avoid any interception or inflows of groundwater.</p> <p>The information on the GWDB bores in close the proximity to the borrow pit location has been tabulated in Appendix C.</p> <p>The nearest GDEs are approximately 100 m to the west of borrow pit 6A and approximately 600 m south east of borrow pit 6B.</p>
Aboriginal cultural heritage	<p>A search of the Aboriginal and Torres Strait Islander Cultural Heritage Database and Register (Ref. #118557) was undertaken on 24 August 2022. The search included the borrow pit location with a 500 m buffer. There were no registered Aboriginal cultural heritage sites identified within this search.</p> <p>Aboriginal cultural heritage searches are included in Appendix D.</p>
Air quality	<p>The highest proportion of construction emissions are generated by mechanical activity (e.g. material movement or mobile equipment activity), which typically generate coarser particulate emissions (PM₁₀ and TSP). Airborne PM₁₀ and deposited dust (TSP) are the main pollutants of concern for construction activities.</p> <p>The closest receptor is approximately 190 m west of the borrow pit footprint.</p> <p>It is expected that, with effective implementation of the proposed mitigation measures outlined in Chapter 12: Air Quality, the impacts to air quality with respect to dust deposition will not be significant.</p>

4. Conclusions and recommendations

Sourcing of fill from seven borrow pits is required to meet the material deficit associated with the construction of the Project. Based on the availability of suitably located fill, the borrow pit, and access track locations and configurations, have been selected to avoid or minimise impacts to the environment and community. The mitigation measures and controls required for the management of potential impacts at the seven borrow pit sites at six borrow pit locations are as described in the various technical chapters associated with the revised draft EIS, consistent with the approach for the Project's temporary disturbance components and subject to the compliance framework as presented in Chapter 24: Draft Outline EMP.

Ecological survey and assessment has informed the site selection and configurations of the borrow pits and access tracks to ensure the suitability of locations and avoidance of impacts to remnant vegetation. Vegetation field survey has confirmed the absence of impacts to MNES and MSES at the proposed borrow pit and access track disturbance locations.

The excavation depth of the borrow pits are shallow in nature with the maximum pit depth selected to avoid interception of the groundwater table based on known hydrogeological information closest to each borrow pit. There is a low risk of the groundwater table being intercepted during site disturbance activities leading to groundwater inflows or potential impacts to local or regional groundwater resources. Geotechnical investigations will be undertaken prior to commencement of the proposed borrow pits to verify groundwater levels within the borrow pit footprint, with proposed borrow pit depths adjusted, if required, to avoid any interception or inflows of groundwater given the geotechnical and constructability constraints also associated with below aquifer excavation. In the unlikely scenario that site works intersect the water table, works would be halted while the potential impacts are assessed by a hydrogeologist and additional management measures implemented as required should the works proceed.

The assessment and management of flooding at the borrow pits will be consistent with the Project's approach to temporary construction disturbance areas. Site-specific FRAs will be completed prior to construction activities to determine any potential changes in flood risk as a result of the activities based on detailed construction methods and sequencing. The FRA will include frequency of design storms on a risk-based approach appropriate for the level of disturbance for each borrow pit as determined during construction planning however will nominally include 2 exceedances per year (EY), 1 EY, 39% AEP (1 in 2-year average recurrence interval (ARI)), 20% AEP and 10% AEP event) given the temporary and short nature of construction activities.

To ensure works at borrow pit are undertaken in a manner that minimises the potential for adverse impacts to the surrounding environment and community, and due to the segregated and differentiated nature of the disturbance works associated with the various borrow pits during the construction phase, a Borrow Pit Management Plan will be prepared for each borrow pit site with site-specific management measures for each site in line with the overall Project approvals and compliance framework as described in the Draft Outline EMP. The Borrow Pit Management Plan will be finalised prior to commencement of any relevant Project works and provide the structured approach to the management of environmental issues for the relevant phases associated with the borrow pits and access tracks including establishment, excavation and haulage and decommissioning. It will be consistent with the Final Outline EMP and incorporate construction planning and all relevant approval and permit conditions.

Earthwork activities will be guided by the Borrow Pit Management Plan based on the outcomes of the FRA and confirmed construction methodologies and sequencing to ensure:

- ▶ The impacts to flood regimes and natural overland flow from construction activities are localised and temporary in nature
- ▶ No re-direction of flood water flow
- ▶ No increases to flood levels leading to adverse outcomes to flood sensitive receptors
- ▶ Erosion and sediment control is managed in accordance with the Project-wide approach and approved plans.

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APPENDIX AD

Borrow Pits—Supporting Technical Information

Appendix A Figures

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT



Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 2a: Tait's Red Ridge Proposed Borrow Pit Constraints

0 100 200
m

Coordinate System: GDA 1994 MGA Zone 56
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Date: 3/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:13,410
Data Sources: QLD DNR 2017, ESRI

LEGEND

- Groundwater Bore
- Private Monitoring Bore
- Sensitive Receptor
- Site Boundary
- Cadastre
- Terrestrial Groundwater Dependent Ecosystems
- Permanent Footprint
- Temporary Footprint
- Chainage
- B2G Alignment
- Waterway
- Elevation Contour

Note: Pit Footprint calculated on assumption of 10m depth borrow pit.



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 3a: Mosquito Road Proposed Borrow Pit Constraints

0 100 200
m

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Date: 3/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:12,940
Data Sources: QLD DNRM 2017, ESRI

LEGEND

- | | |
|--|---------------------|
| ● Groundwater Bore | Permanent Footprint |
| ○ Private Monitoring Bore | Temporary Footprint |
| ⬆ Sensitive Receptor | Chainage |
| Site Boundary | B2G Alignment |
| Cadastre | Waterway |
| Terrestrial Groundwater Dependent Ecosystems | Elevation Contour |

Note: Pit Footprint calculated on assumption of 3m depth borrow pit.



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 4a: Millmerran-Inglewood Road Proposed Borrow Pit Constraints

0 100 200
m

Coordinate System: GDA 1994 MGA Zone 56

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Date: 3/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:12,070
Data Sources: QLD DNRM 2017, ESRI

LEGEND

- Groundwater Bore
- Private Monitoring Bore
- Sensitive Receptor
- Site Boundary
- Cadastre
- Terrestrial Groundwater Dependent Ecosystems
- Permanent Footprint
- Temporary Footprint
- Chainage
- B2G Alignment
- Waterway
- Elevation Contour

Note: Pit Footprint calculated on assumption of 5m depth borrow pit.



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 5a: Koorongarra-Andersons Road Proposed Borrow Pit Constraints

0 100 200
m

Coordinate System: GDA 1994 MGA Zone 56
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Date: 3/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:12,270
Data Sources: QLD DNRM 2017, ESRI

LEGEND

- | | |
|---|---------------------|
| ● Groundwater Bore | Permanent Footprint |
| ○ Private Monitoring Bore | Temporary Footprint |
| 🏠 Sensitive Receptor | ● Chainage |
| ▭ Site Boundary | — B2G Alignment |
| ▭ Cadastre | — Waterway |
| ▭ Terrestrial Groundwater
Dependent Ecosystems | — Elevation Contour |

Note: Pit Footprint calculated on assumption of 3m depth borrow pit.



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 6a: Heckendorfs Road Proposed Borrow Pit Constraints

0 150 300
m

Coordinate System: GDA 1994 MGA Zone 56
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Date: 3/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:18,090
Data Sources: QLD DNRM 2017, ESRI

LEGEND

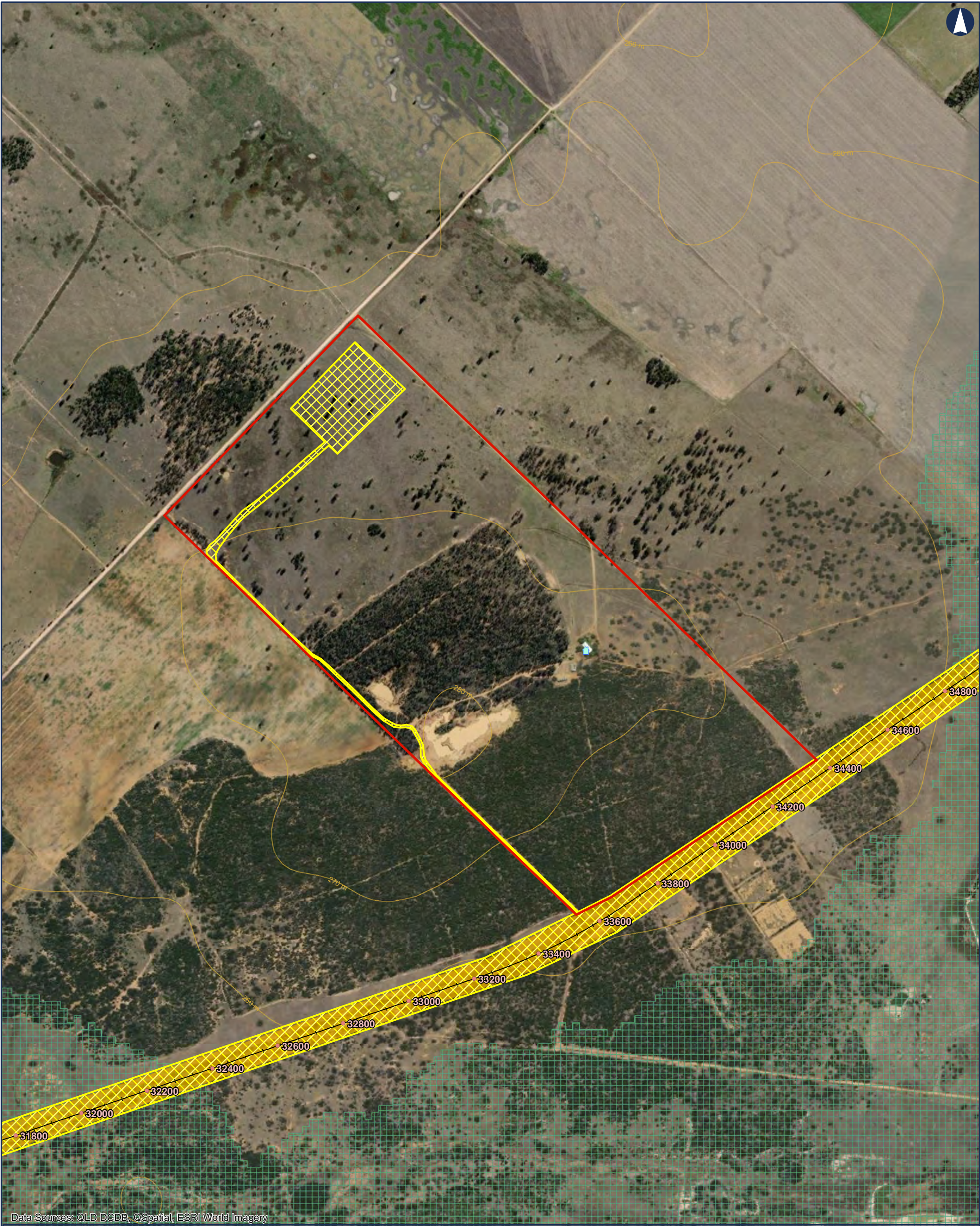
- Groundwater Bore
- Private Monitoring Bore
- Sensitive Receptor
- Site Boundary
- Cadastre
- Terrestrial Groundwater Dependent Ecosystems
- Permanent Footprint
- Temporary Footprint
- Chainage
- B2G Alignment
- Waterway
- Elevation Contour

Note: Pit Footprint calculated on assumption of 10m depth borrow pit.



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 2b: Tait's Red Ridge Flood Risk

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 56

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Date: 12/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:10,170
Data Sources: QLD DNR 2017, ESRI

- LEGEND**
- Dwelling
 - Site Boundary
 - Cadastre
 - Temporary Footprint
 - Permanent Footprint
 - Chainage
 - B2G Alignment
 - Waterway
 - Elevation Contour
 - Potential Flood Hazard Area (Source: Queensland Floodplain Assessment Overlay, QSpatial)
 - PMF - without dam failure



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 3b: Mosquito Road Flood Risk

0 100 200
m

Coordinate System: GDA 1994 MGA Zone 56

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Date: 12/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:12,950
Data Sources: QLD DNRM 2017, ESRI

LEGEND

- Dwelling
- Site Boundary
- Cadastre
- Temporary Footprint
- Permanent Footprint
- Chainage
- B2G Alignment
- Waterway
- Elevation Contour
- Potential Flood Hazard Area (Source: Queensland Floodplain Assessment Overlay, QSpatial)
- PMF - without dam failure



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 4b: Millmerran-Inglewood Road Flood Risk

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 56

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Date: 12/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:9,540
Data Sources: QLD DNRM 2017, ESRI

- LEGEND**
- Dwelling
 - Site Boundary
 - Cadastre
 - Temporary Footprint
 - Permanent Footprint
 - Chainage
 - B2G Alignment
 - Waterway
 - Elevation Contour
 - Potential Flood Hazard Area (Source: Queensland Floodplain Assessment Overlay, QSpatial)
 - PMF - without dam failure



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 5b: Koorongarra-Andersons Road Flood Risk

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 56
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Date: 12/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:7,670
Data Sources: QLD DNRM 2017, ESRI

LEGEND

- Dwelling
- Site Boundary
- Cadastre
- Temporary Footprint
- Permanent Footprint
- Chainage
- B2G Alignment
- Waterway
- Elevation Contour
- Balanced (mixed) Flood Overlay (Source: TRC)*
- Potential Flood Hazard Area (Source: Queensland Floodplain Assessment Overlay, QSpatial)
- PMF - without dam failure



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 6b: Heckendorfs Road Flood Risk

0 50 100
m

Coordinate System: GDA 1994 MGA Zone 56

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Date: 12/07/2024 Paper: A3
Author: ERM - VN / MB Scale: 1:11,400
Data Sources: QLD DNRM 2017, ESRI

LEGEND

- Dwelling
- Site Boundary
- Cadastre
- Temporary Footprint
- Permanent Footprint
- Chainage
- B2G Alignment

- Waterway
- Elevation Contour
- Balanced (mixed) Flood Overlay (Source: TRC)*
- Potential Flood Hazard Area (Source: Queensland Floodplain Assessment Overlay, QSpatial)
- PMF - without dam failure



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Data Sources: QLD DCDB, QSpatial, ESRI World Imagery

Border to Gowrie

Figure 7 – Project Location Plan

0 5,000 10,000
m

Coordinate System: GDA 1994 MGA Zone 56

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Date: 12/07/2024 Paper: A3
Author: ERM - MB Scale: 1:350,000
Data Sources: QLD DNRM 2017, ESRI

- LEGEND**
- Site Boundary
 - Borrow Pit
 - B2G Alignment
 - Chainage



INLAND RAIL **ARTC**

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APPENDIX AD

Borrow Pits—Supporting Technical Information

Appendix B Ausecology Ecological Assessment Report

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT



B2G Borrow Pit Ecological Surveys

Prepared for:
ARTC

Report issued:
September 2024

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Glossary of Terms

Acronym	Description
ARTC	Australian Rail and Track Corporation
B2G	Border to Gowrie
cm	Centimetres
EDL	Ecologically Dominant Layer
Ha	Hectare
m	Metres
MNES	Matters of National Environmental Significance
MSES	Matters of State National Environmental Significance
NC Act	<i>Nature Conservation Act 1992 (Qld)</i>
RE	Regional Ecosystem
sp.	Species (singular)
spp.	Species (plural)
sub sp.	Sub species

1 Introduction

1.1 Background

The Inland Rail Program (Inland Rail) involves the design and construction of a new inland rail connection between Melbourne and Brisbane approximately 1,700 kilometres (km) in length. The Australian Rail Track Corporation (ARTC) is the proponent for Inland Rail. The Inland Rail has been divided into 13 separate projects, five of which are located in Queensland (QLD):

- Border to Gowrie (B2G)
- Gowrie to Helidon (G2H)
- Helidon to Calvert (H2C)
- Calvert to Kagaru (C2K)
- Kagaru to Acacia Ridge and Bromelton (K2ARB)

The Border to Gowrie (B2G) section comprises approximately 176 km of new dual gauge track and 78 km of upgraded track from the New South Wales/Queensland border to Gowrie - northwest of Toowoomba.

Formation of the track requires construction materials, which will be extracted from areas outside of the proposed rail corridor, referred to as borrow pits.

1.2 Project Scope

Ausecology was engaged by ARTC to conduct ecological surveys of the proposed borrow pits associated with the B2G alignment to assess potential ecological impacts to Matters of National Environmental Significance (MNES) and Matters of State National Environmental Significance (MSES).

2 Methodology

2.1 Survey Methodology

Field surveys were conducted at ten proposed borrow pit sites between the 5th and 6th of September 2023. Appendix A provides a mapped overview of the sites. Following initial surveys, three of the sites were removed by ARTC to avoid potential impacts and are therefore not included in this report, leaving seven pits in consideration. At each proposed borrow pit site, a general vegetation assessment was conducted, along with brief searches for threatened flora and fauna.

2.2 Review of databases, literature and previous studies

Desktop searches and a review of existing information was undertaken as part of the initial ecological assessment. These searches were undertaken to help inform and identify the presence of potential threatened species, habitat and vegetation communities prescribed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Nature Conservation Act 1992* (NC Act).

2.3 Ground-truthing Regional Ecosystems

For select sites where general observation was not sufficient to inform on the potential impacts of the proposed pit, quaternary surveys using the methodology outlined within *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland* (Neldner et al., 2022) were undertaken. The location of the quaternary sites is indicated in the individual site maps presented in the results.

2.4 BioCondition assessments

BioCondition assessments were only conducted if additional REs were identified that had not been previously assessed as part of Ausecology B2G survey efforts (Ausecology, 2022). No additional REs were identified and therefore no BioCondition assessments were undertaken as part of this supplementary assessment.

2.5 Targeted flora surveys

Formal protected plant surveys in accordance with the *Qld Protected Plants – Flora Survey Guidelines* (DES, 2020) were not undertaken for the present report. However, random meander transects were undertaken across the site targeting likely threatened flora species habitat.

2.6 Incidental fauna surveys





Targeted threatened fauna surveys were outside the scope of this supplementary assessment. However, incidental sightings of threatened fauna were logged, and opportunistic habitat searches were conducted at locations deemed to have an increased likelihood of occurrence for particular threatened species.

3 Results

The results of the borrow pit ecological surveys are presented for each site by Lot Plan in the section below.

3.1 Site ID 1 - 2SP229051 – Moorroobie Lane

Table 3-1 Monitoring results for 2SP229051

SITE SUMMARY 2SP229051	
	
	
KEY OBSERVATIONS AND FIELD NOTES	
The site comprises a cropped field. Scattered mature trees are present along the access track but can easily pick a path without clearing. No MNES or MSES were recorded. See Appendix 1B for mapping of this site.	
RECOMMENDATIONS	
<ul style="list-style-type: none">▪ Use existing gate and track to enter access pit site.▪ Suitable borrow pit with no impact to MSES or MNES.	





3.2 Site ID 2 - 53MH233 – Tait's Red Ridge

Table 3-2 Monitoring results for 53MH233

SITE SUMMARY 53MH233	
	
	
KEY OBSERVATIONS AND FIELD NOTES	
<p>The site is a cleared non-remnant (Category X) paddock dominated by exotic grass such as <i>Eragrostis curvulua</i> (African lovegrass) and forbs including <i>Sclerolaena</i> spp., <i>Calotis</i> spp. along with scattered <i>Eucalyptus populnea</i>. Restricted invasive species <i>Opuntia tomentosa</i> (velvety tree pear) and <i>Harissia martinii</i> (harissia cactus) were also recorded at the site. No MNES or MSES were recorded. See Appendix 1C for mapping of this site.</p>	
RECOMMENDATIONS	
<ul style="list-style-type: none"> No impacts to MSES or MSES noting that scattered mature paddock trees that may provide dispersal function for Koala will be avoided. 	




3.3 Site ID 3 - 116BNT467 – Mosquito Creek Road

Table 3-3 Monitoring results for 116BNT467

SITE SUMMARY 116BNT467	
	
	
KEY OBSERVATIONS AND FIELD NOTES	
<p>The site contains shrubby non-remnant RE 11.9.13 (Category X), dominated by <i>Allocasuarina leuhmanii</i>, <i>Acacia polybotrya</i>, <i>Daviesia ulicifolia</i>, and <i>Leptospermum</i> sp. The ground layer consists predominantly of the native grass <i>Aristida caput-medusae</i>, with some cover of exotic forb species <i>Gladularia aristigera</i>.</p> <p>The section between the road and the proposed borrow pit contains RE 11.9.9a dominated by mature <i>Eucalyptus tereticornis</i>, <i>Eucalyptus crebra</i>, <i>Angophora leiocarpa</i>, and <i>Eucalyptus woollsiana</i>. This may also qualify as White Box TEC under the EPBC Act. Avoiding this area should be a priority. This has been avoided by using the existing access track from the entrance gate to access the borrow pit and avoid all impacts to potential MSES and MNES. This track is sufficiently wide the no additional clearing will be required. See Appendix 1D for mapping of this site.</p>	
RECOMMENDATIONS	
<ul style="list-style-type: none"> Nil – suitable borrow pit using existing access and no impact to MSES or MNES 	

3.4 Site ID 4 - Road Parcel Against Millmerran-Inglewood Rd

Table 3-4 Monitoring results for Road Parcel

SITE SUMMARY Road Parcel	
	
	
KEY OBSERVATIONS AND FIELD NOTES	
<p>The site is mostly cleared, with scattered mature <i>Eucalyptus crebra</i> and <i>Eucalyptus woollsiana</i>, and sparse shrubs including <i>Acacia shirleyi</i>, and <i>Acacia decora</i>.</p> <p>The track to the proposed pit site (bottom right image) contains non-remnant RE 11.5.20 (Category X) dominated by <i>Callitris glaucophylla</i>, <i>Eucalyptus microcarpa</i>, and <i>Eucalyptus crebra</i>. The track is ~4m wide and likely requires widening to access the proposed borrow pit. See Appendix 1E for mapping of this site.</p>	
RECOMMENDATIONS	
<ul style="list-style-type: none"> Clear and widen track along a 15m section to enable access to the proposed pit site. No impacts to MSES or MSES noting that scattered mature paddock trees that may provide dispersal function for Koala will be avoided. 	





3.5 Site ID 5 - 33MA3499 – Kooroongarra-Andersons Road

Table 3-5 Monitoring results for 33MA3499

SITE SUMMARY 33MA3499	
	
	
KEY OBSERVATIONS AND FIELD NOTES	
<p>The site is a cleared paddock filled mainly with <i>Chloris gayana</i>. A mix of native forbs such as <i>Sclerolaena muricata</i> and <i>Wahlenbergia gracilis</i> were also recorded. No MNES or MSES were recorded. See Appendix 1F for mapping of this site.</p>	
RECOMMENDATIONS	
N/A	

3.6 Site ID 6A - 98DY182 – Heckendorfs Road

Table 3-6 Monitoring results for 98DY182

SITE SUMMARY 98DY182	
	
	
KEY OBSERVATIONS AND FIELD NOTES	
<p>The site is a grazed non-remnant (Category X) cleared paddock comprising of mainly exotic pasture grasses including <i>Chloris gayana</i> with a mix of native forbs such as <i>Sclerolaena muricata</i> and <i>Wahlenbergia gracilis</i>. No MNES or MSES were recorded. One specimen of <i>Santalum lanceolatum</i>, listed as Special Least Concern under the <i>Nature Conservation Act 1992</i> (NC Act) was recorded at the site. See Appendix 1G for mapping of this site.</p>	
RECOMMENDATIONS	
<ul style="list-style-type: none"> Nil – suitable borrow pit with existing access and no impacts to MSES or MNES 	

3.7 Site ID 6B - 111DY182 – Heckendorfs Road

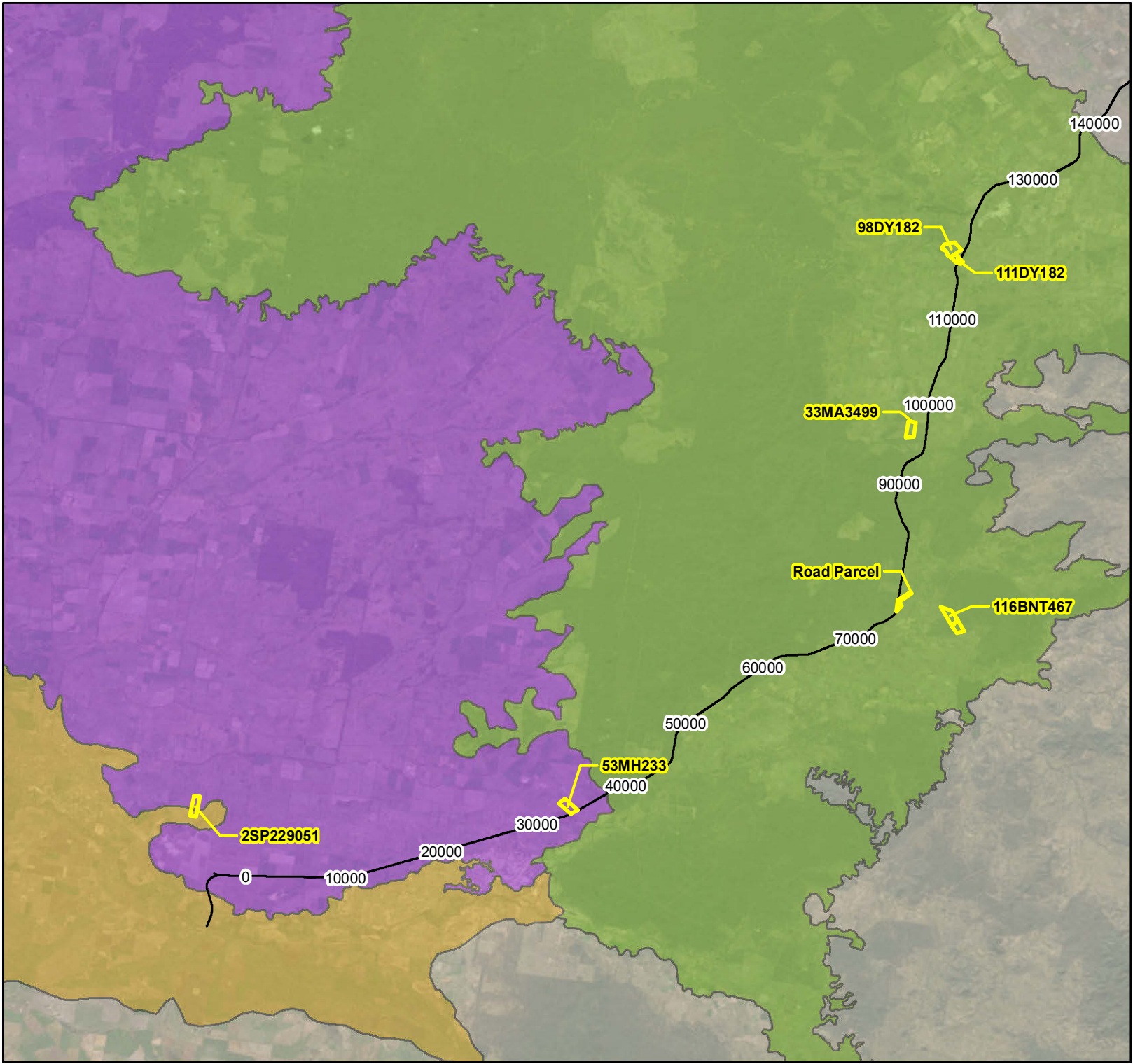
Table 3-7 Monitoring results for 111DY182

SITE SUMMARY 111DY182	
	
	
KEY OBSERVATIONS AND FIELD NOTES	
<p>The site is a heavily grazed non-remnant (Category X) paddock of <i>Chloris gayana</i>. Scattered exotic shrubs include the restricted invasive species <i>Lycium ferocissimum</i> (African boxthorn) and <i>Gomphocarpus physocarpus</i> (balloon cotton bush). The site is located on the property adjacent to the previous site 98DY192. No MNES or MSES were recorded. See Appendix 1H for mapping of this site.</p>	
RECOMMENDATIONS	
<ul style="list-style-type: none"> Nil – suitable borrow pit with existing access and no impacts to MSES or MNES 	

4 References

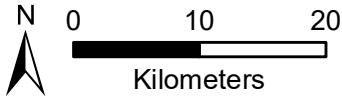
Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S., Butler, D.W., McDonald, W.J.F., Richter, D., Addicott, E.P. and Appelman, C.N. (2022) Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland. Version 6.0. Updated April 2022. Queensland Herbarium, Queensland Department of Environment and Science, Brisbane.

Appendix A – Mapping



Appendix 1A:

Overview Map B2G
Borrow Pits



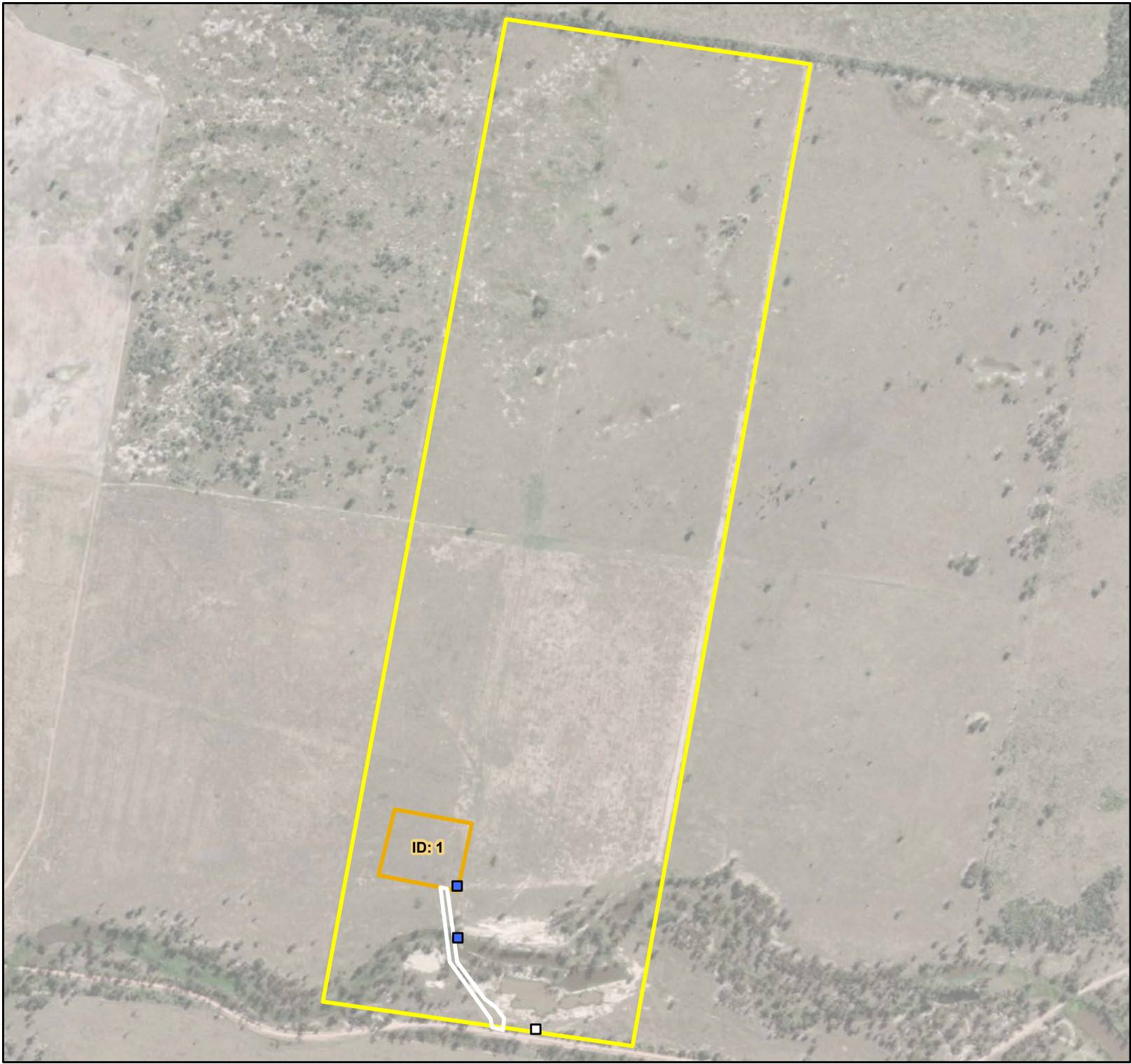
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Coordinate System: GCS GDA 1994
Datum: GDA 1994

Legend

- B2G
- Property
- IBRA -**
 - Castlereagh-
 - Inglewood
 - Moonie-Commonon



Document History:				
Rev	Reason for Issue	Author	Approver	Date
0	Issued for Information	NC	LG	13/09/2023

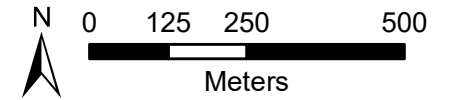


Appendix 1B:

SITE ID 1 - 2SP229051

Moorroobie Lane

B2G Proposed Borrow Pits








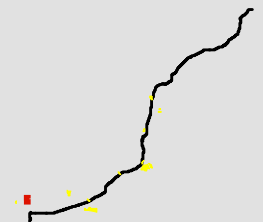
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Coordinate System: GCS GDA 1994

Datum: GDA 1994

Legend

-  Photo point
-  Existing gate
-  Access Tracks
-  Borrow Pit Extent
-  Property boundary



Document History:

Rev	Reason for Issue	Author	Approver	Date
1	Issued for Information	JS	LG	01/02/2024
2	Issued for Information	NC	LG	05/02/2024

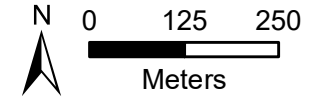


Appendix 1C:

Site ID 2 - 53MH233

Taits Red Ridge

B2G Proposed Borrow Pits








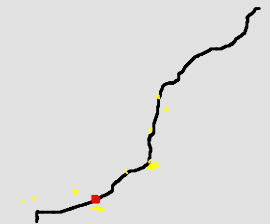
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Coordinate System: GCS GDA 1994

Datum: GDA 1994

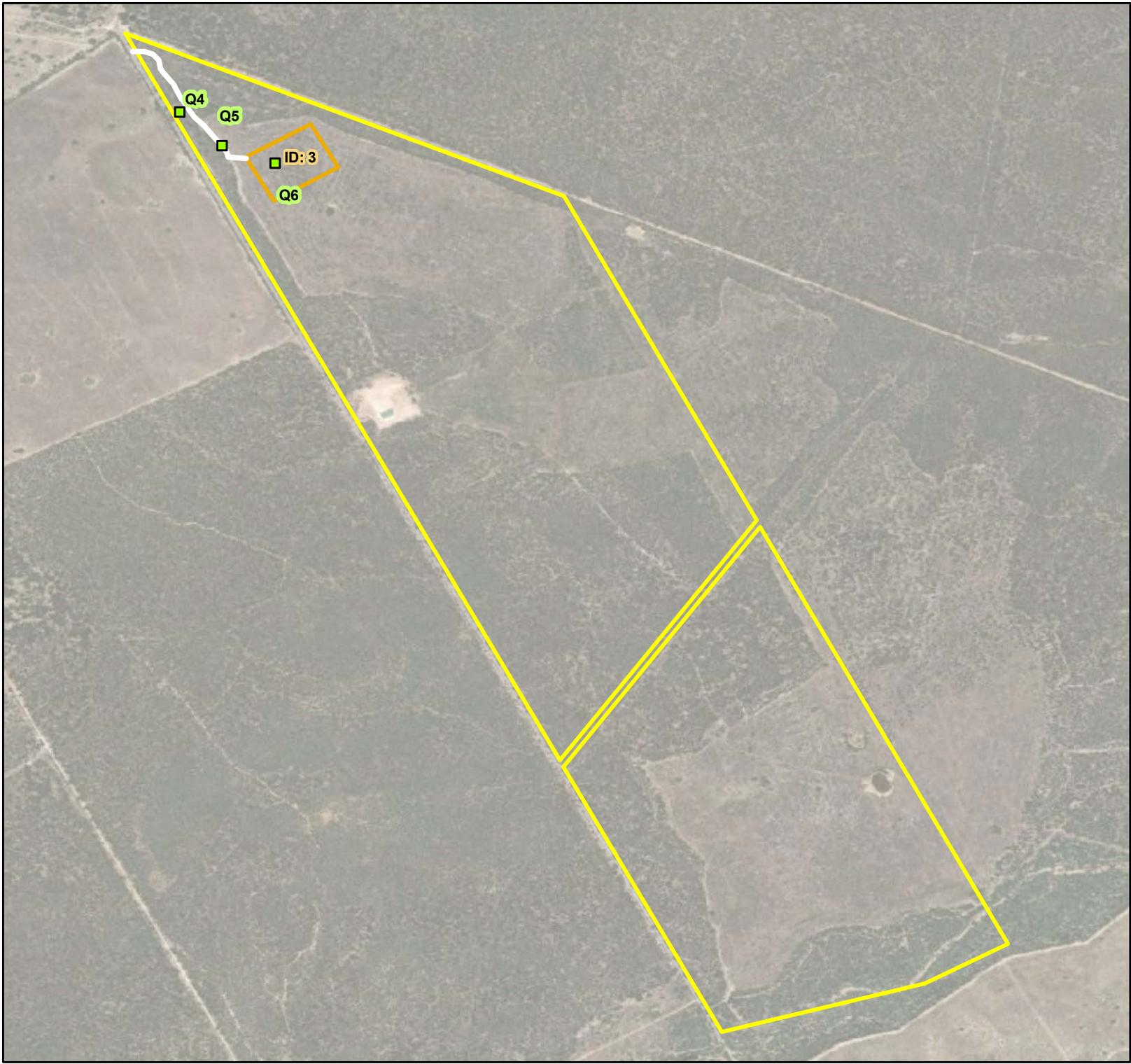
Legend

-  Photo point
-  Quaternary point
-  Access Tracks
-  Borrow Pit Extent
-  Property boundary



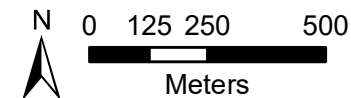
Document History:

Rev	Reason for Issue	Author	Approver	Date
1	Issued for Information	JS	LG	01/02/2024
2	Issued for Information	NC	LG	05/02/2024



Appendix 1D:

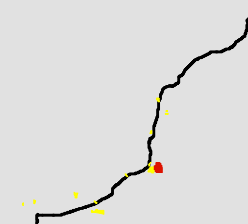
Site ID 3 - 116BNT467
Mosquito Creek Road
B2G Proposed Borrow Pits



Scale: 1:16,000
Coordinate System: GCS GDA 1994
Datum: GDA 1994

Legend

- Quaternary point
- Existing Track (Current Track)
- Borrow Pit Extent
- Property boundary

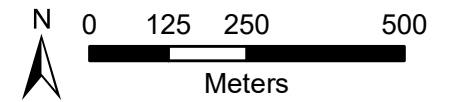


Document History:				
Rev	Reason for Issue	Author	Approver	Date
1	Issued for Information	JS	LG	01/02/2024
2	Issued for Information	NC	LG	05/02/2024



Appendix 1E:

Site ID 4 - Road Parcel
Against Millmerran-
Inglewood Road B2G
Proposed Borrow Pits

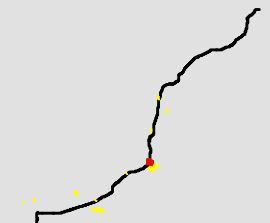


Scale: 1:12,000

Coordinate System: GCS GDA 1994
Datum: GDA 1994

Legend

- Quaternary point
- Photo point
- Quaternary point
- Access Tracks
- Borrow Pit Extent
- Property boundary



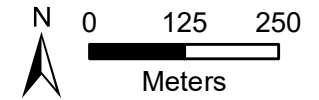
Document History:

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1	Issued for Information	JS	LG	01/02/2024
2	Issued for Information	NC	LG	05/02/2024



Appendix 1F:

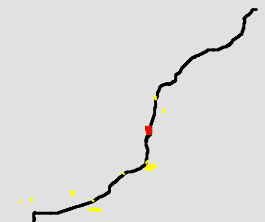
Site ID 5 - 33MA3499
Kooroongarra Road
B2G Proposed Borrow Pits



Scale: 1:10,000
Coordinate System: GCS GDA 1994
Datum: GDA 1994

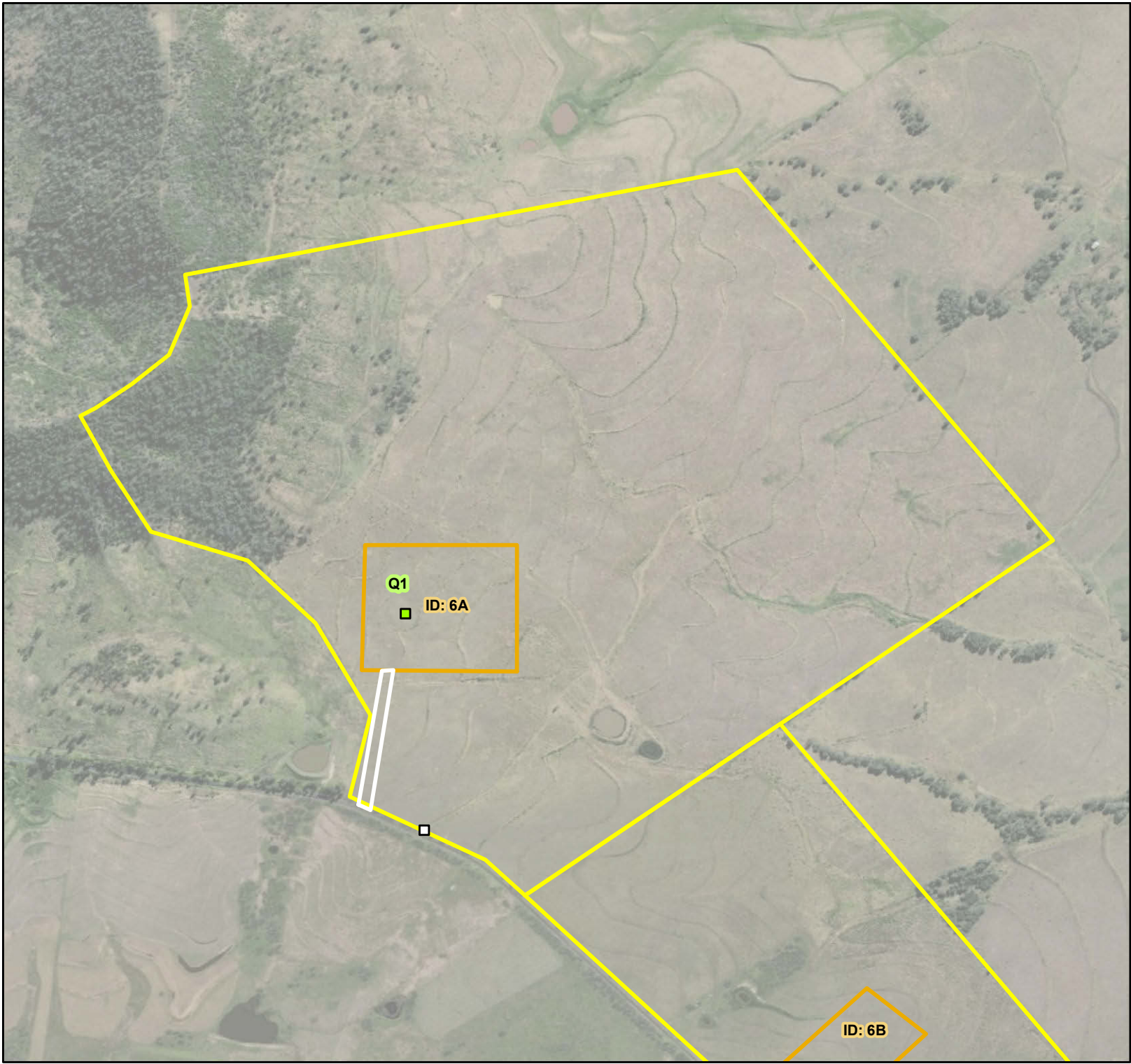
Legend

- Photo point
- Access Tracks
- Borrow Pit Extent
- Property boundary



Document History:

Rev	Reason for Issue	Author	Approver	Date
1	Issued for Information	JS	LG	01/02/2024
2	Issued for Information	NC	LG	05/02/2024

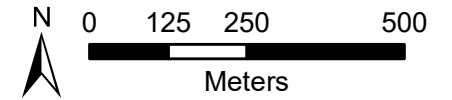


Appendix 1G:

Site ID 6A - 98DY182

Heckendorfs Road

B2G Proposed Borrow Pits








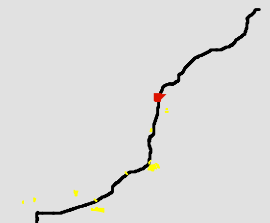
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Coordinate System: GCS GDA 1994

Datum: GDA 1994

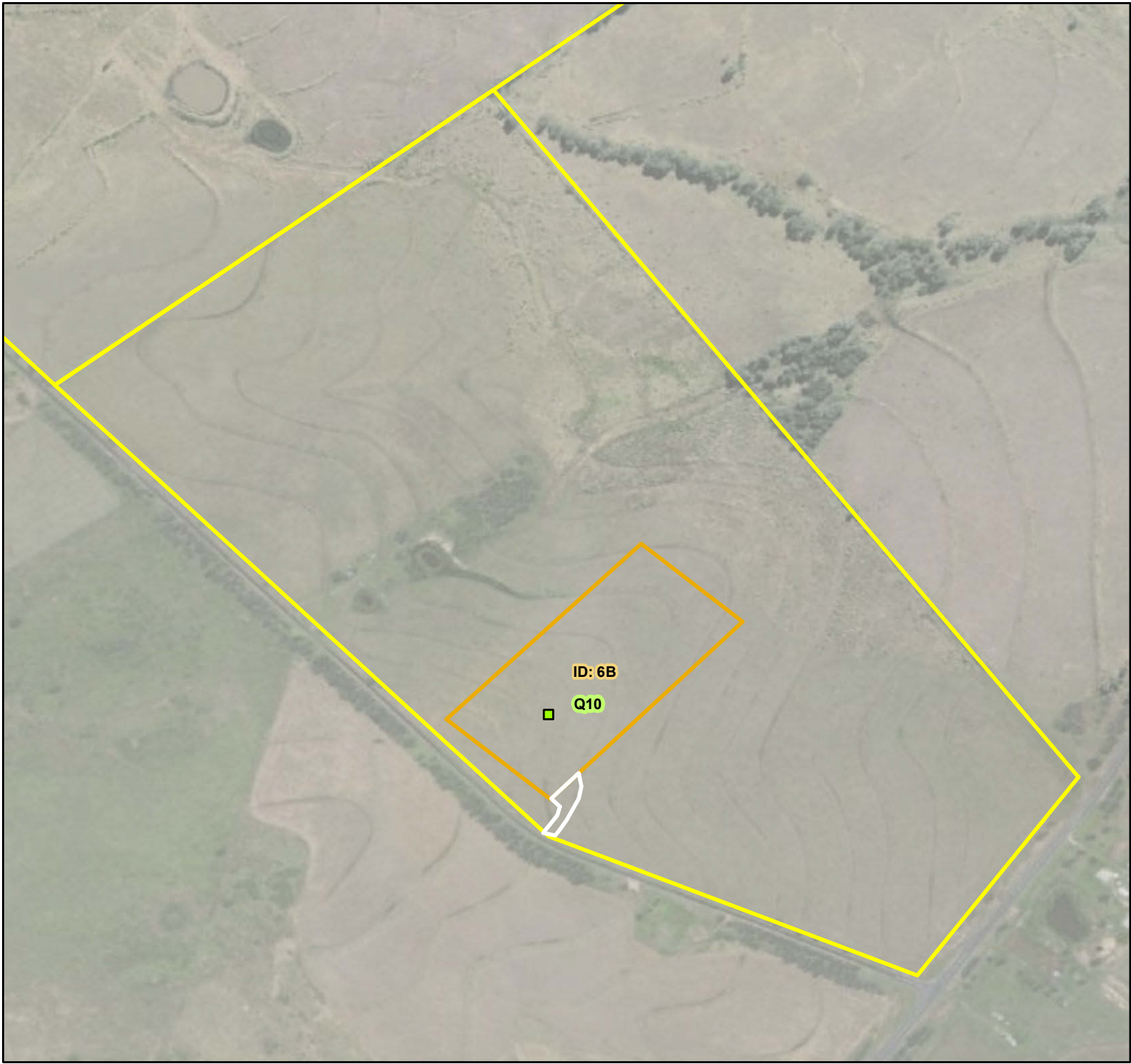
Legend

-  Quaternary point
-  Existing gate
-  Access Tracks
-  Borrow Pit Extent
-  Property boundary



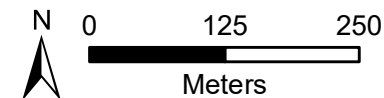
Document History:

Rev	Reason for Issue	Author	Approver	Date
1	Issued for Information	JS	LG	01/02/2024
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Appendix 1H:





Site ID 6B - 111DY182
Heckendorfs Road
B2G Proposed Borrow Pits

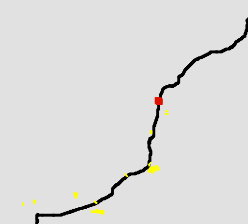


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Datum: GDA 1994

Legend

-  Quaternary point
-  Access Tracks
-  Borrow Pit Extent
-  Property boundary



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AD

Borrow Pits—Supporting Technical Information

Appendix C Groundwater bore data

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT

Appendix C Groundwater Bore Data

C.1 Moorroobie Lane

TABLE C-1 GWDB BORE DATA REPORT – MOORROOBIE LANE

Reg No	Bore Use	Status	Geology	Depth (mbgl)	Construction Details	Water Level (mbgl)	Bore Yield (L/s)	Date drilled	Comments
13601	Water Supply	Existing	Kumbarilla Beds	262.10	0 - 147.2 Steel Casing 147.2 - 262.1 Open hole 0 - 142 Grout	Artesian	1.35	22/12/1958	Pump test and Water quality analysis pH 8.6, Cond 1219 µS/cm dated 26/03/1998

C.2 Tait's Red Ridge Road

TABLE C-2 GWDB BORE REPORT DATA – TAIT'S RED RIDGE ROAD

Reg No	Bore Use	Status	Geology	Depth (mbgl)	Construction Details	Water Level (mbgl)	Bore Yield (L/s)	Date drilled	Comments
77106	-	Water supply	-	-	-	-	-	01/01/1994	
11994	-	Water supply	Kumbarilla Beds	60.70	0 - 52.7 Steel casing 52.7 - 60.7 Open hole	7.00	1.79	05/04/1952	

C.3 Mosquito Creek Road

TABLE C-3 GWDB BORE REPORT DATA – MOSQUITO CREEK ROAD

Reg No	Bore Use	Status	Geology	Depth (mbgl)	Construction Details	Water Level (mbgl)	Bore Yield (L/s)	Date drilled	Comments
15481	-	Existing	-	76.80	0 - 76.8 Steel Casing 43.5 - 44.5 Slotted Casing	-	0.75	1/01/1960	Located offsite
15301	-	Existing	Texas Beds	87.50	0 - 87.5 Steel Casing 45.1 Slotted Casing 68.6 Slotted Casing 87.5 - 91.4 Open Hole	39.10	0.375	6/02/1961	Located offsite Construction details unclear
64684	-	Existing	Walloon Coal Measures-	37.00	0 - 13.6 Steel Casing 13.6 - 30.10 Steel Casing 26.9 - 29.9 Slotted Casing 31.1 - 37 Open Hole	22.60	0.4	15/04/1983	Located offsite Groundwater quality pH - 8.3 Cond 1800 µS/cm

C.4 Millmerran-Inglewood Road

TABLE C-4 GWDB BORE REPORT DATA – HECKENDORF ROAD

Reg No	Bore Use	Status	Geology	Depth (mbgl)	Construction Details	Water Level (mbgl)	Bore Yield (L/s)	Date drilled	Comments
16200	-	Existing	Canning Creek Alluvium	48.76	-	12.20	1.69	16/02/1965	Water Analysis April 1978 indicates pH - 8.3 Cond - 5300 µS/cm
77309	Water Supply	Existing	Marburg Subgroup	72.00	0 - 54 Plastic Casing 54 - 72 Slotted Casing 0 - 72 Gravel Pack	-	3.9	11/09/2002	Potable water quality
41640009	Monitoring	Existing	Marburg Subgroup	24.00	0 - 4 Cement Plug 4 - 15.5 Gravel Pack 15.5 - 16.5 Bentonite Seal 16.5 - 24 Gravel Pack 23 - 24 PVC Screen	12.93	-	10/04/2000	Bore Report contains water level from 2000 to Nov 2022 Water Analysis May 2011 indicates pH - 7.4, Cond - 37500 µS/cm. Analysis in Appendix D

C.5 Kooroongarra-Andersons Road

TABLE C-5 GWDB BORE REPORT DATA – KOOROONGARRA-ANDERSONS ROAD

Reg No	Bore Use	Status	Geology	Depth (mbgl)	Construction Details	Water Level (mbgl)	Bore Yield (L/s)	Date drilled	Comments
64849 (2.3km)	-	Existing	-	128	0 - 128 Steel casing	115.8	-	1/01/1948	
18543 (2.7km)	-	Existing	-	44.8	0 - 15.20 Steel casing 15.2 - 23.8 Open hole	33.7	-	1/01/1936	

C.6 Heckendorf Road

TABLE C-6 GWDB BORE REPORT DATA – HECKENDORF ROAD

Reg No	Bore Use	Status	Geology	Depth (mbgl)	Construction Details	Water Level (mbgl)	Bore Yield (L/s)	Date drilled	Comments
18682		Existing	-	-	-	-	-	1/01/1942	
18803	-	Existing	-	182.9	0 - 182.8 Steel casing	-	-	1/01/1932	
18782	-	Existing	-	189	0 - 182.9 Steel casing 182.9 - 189 Open hole	-	-	1/01/1933	Geology indicated as sandstone and Shale
172706	Monitoring	Existing	Main Range Volcanics	27	0 - 17 PVC 17 - 20 Slotted casing 0 - 11 Grout 11 -12 Bentonite seal 12 - 20 Cuttings	-	-	3/12/2018	
87843	-	Existing	Kumbarilla Beds	187	0 – 187 Steel casing 145 - 152 slotted casing 171 - 184.5 slotted casing	133	1.9	11/09/1993	Slotted sections across course sandstone

From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
11994	Sub-Artesian Facility	Existing	05/04/1952	Goondiwindi	3610 - GOONDIWINDI REGIONAL
Details			Location		
Description	P48		Latitude	28-32-14	Basin4162
Parish	6000 - NO LONGER USED		Longitude	150-48-25	Sub-area
Original Name			GIS Latitude	-28.5371027016	Lot48
			GIS Longitude	150.8069071938	PlanMH233
			Easting	285419	
Driller Name			Northing	6841335	Map Scale104 - 1: 100 000
Drill Company			Zone	56	Map SeriesM - Metric Series
Const Method	CABLE TOOL		Accuracy	PHOT	Map No9040
Bore Line			GPS Accuracy	10	Map NameYETMAN
D/O File No	091	Polygon	Checked	Yes	Prog Section
R/O File No	W802	Equipment			
H/O File No	L12442B	RN of Bore Replaced			
Log Received Date		Data Owner			
Roles	Water Supply				

Casing									2 records for RN 11994
Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)	
A	05/04/1952	1	0.00	52.70	Steel Casing	5.000	WT - Wall Thickness	127	
A	05/04/1952	2	52.70	60.70	Open Hole				

Strata Logs					8 records for RN 11994
Rec	Top (m)	Bottom (m)	Strata Description		

From Year:

Rec	Top (m)	Bottom (m)	Strata Description	
1	0.00	1.83	TOP SOIL	
2	1.83	16.15	RED ROCK	
3	16.15	27.13	SANDSTONE	
4	27.13	52.12	POROUS SANDSTONE	
5	52.12	56.39	SANDSTONE (WATER)	
6	56.39	60.66	SANDSTONE	
902			05/04/1952 SWL -7.00 M TMP NUL C	
903			05/04/1952 DISCH 155.5 M3D BAILER	

Stratigraphies

1 records for RN 11994

Source	Rec	Top (m)	Bottom (m)	Strata Description	
DNR	1			KUMBARILLA BEDS	

Aquifers

1 records for RN 11994

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name	
1	52.00	60.00	SDST - Sandstone							PS	KUMBARILLA BEDS	

Pump Tests Part 1

0 records for RN 11994

Pump Tests Part 2

0 records for RN 11994

Bore Conditions

0 records for RN 11994

Elevations

0 records for RN 11994

Water Analysis Part 1

0 records for RN 11994

From Year:

Water Analysis Part 2	0 records for RN 11994
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Water Levels	1 records for RN 11994
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Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
X	05/04/1952		-7.00	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130 Data is of unknown quality

Wire Line Logs	0 records for RN 11994
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Field Measurements	0 records for RN 11994
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Special Water Analysis	0 records for RN 11994
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From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
13601	Artesian - Controlled Flow	Existing	22/12/1958	Goondiwindi	3610 - GOONDIWINDI REGIONAL
Details			Location		
Description	L77 MH52		Latitude	28-32-03	Basin 4162
Parish	6000 - NO LONGER USED		Longitude	150-25-56	Sub-area AB
Original Name	MICKLEGATE BORE		GIS Latitude	-28.5342257639	Lot 77
			GIS Longitude	150.4322762813	Plan MH52
			Easting	248739	
Driller Name			Northing	6840932	Map Scale 40C - 40 Chain
Drill Company			Zone	56	Map Series N - New Series
Const Method	CABLE TOOL DRILLER S MAJOR 19		Accuracy	GPS	Map No 5930
Bore Line			GPS Accuracy	15	Map Name
D/O File No	005	Polygon	Checked	Yes	Prog Section
R/O File No	W879	Equipment			
H/O File No	L17467B	RN of Bore Replaced			
Log Received Date		Data Owner			
Roles	Water Supply				

Casing									4 records for RN 13601
Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)	
A	22/12/1958	1	0.00	142.00	Steel Casing	4.700	WT - Wall Thickness	152	
A	22/12/1958	2	0.00	147.20	Steel Casing	4.700	WT - Wall Thickness	127	
A	22/12/1958	3	147.20	262.10	Open Hole				
X	22/12/1958	1	0.00	142.00	Grout				

Strata Logs	24 records for RN 13601
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From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	0.91	TOP SOIL
2	0.91	12.19	RED CLAY
3	12.19	22.25	SANDY CLAY
4	22.25	43.59	GREY & YELLOW CLAY
5	43.59	62.79	YELLOW CLAY
6	62.79	68.88	SAND (WATER)
7	68.88	85.34	YELLOW SANDY CLAY
8	85.34	106.68	SAND (WATER)
9	106.68	131.67	GREY SHALE
10	131.67	140.82	GREY SANDY SHALE
11	140.82	141.73	ROCK
12	141.73	146.00	SANDSTONE
13	146.00	147.83	BROWN SHALE
14	147.83	161.24	SANDSTONE
15	161.24	164.90	BROWN SHALE
16	164.90	175.26	GREY SHALE
17	175.26	181.36	BROWN SHALE
18	181.36	182.88	SANDSTONE (WATER SWL-5.5M)
19	182.88	193.24	BROWN SHALE
20	193.24	193.85	ROCK
21	193.85	262.13	SANDSTONE (WATER SWL SURFACE)
902			SWL 6/9/1989 +11.54M TEMP 26C
903			22/12/58 F/F 123M3D 6/9/89 F/F 68M3D
910			QUALITY DESCRIPT COND : 1200

From Year:

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	3			KUMBARILLA BEDS

Aquifers

3 records for RN 13601

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	62.00	68.00	SAND - Sand							UC	
2	85.00	106.00	SAND - Sand							UC	
3	196.00	262.00	SDST - Sandstone							PS	KUMBARILLA BEDS

Pump Tests Part 1

7 records for RN 13601

Pipe	Date	Rec	RN of Pumped 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 (mins)	Pres on Arriv (m)	Q on Arriv (l/s)
A	27/06/1958	1	13601					FR						1.14
A	22/12/1958	2	13601			0.95	ART	DT ST					18.31	1.43
A	03/02/1967	3	13601					FR						1.21
A	06/09/1989	4	13601			0.90	ART	FR ST					11.54	0.00
A	20/03/1998	1	13601			1.04	ART	ST FR ST					0.51	
A	20/03/1998	5	13601				F/F	FR ST			0.00	25	8.17	0.00
A	26/03/1998	1	13601			0.84	F/F				0.00	20	8.17	0.00

Pump Tests Part 2

7 records for RN 13601

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	27/06/1958	1		13.48				2.21		2.21						

From Year:

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	22/12/1958	2	235					1.43		2.02	17.80				2	
A	03/02/1967	3						1.21		1.21						
A	06/09/1989	4	240	10.32			11.54	0.79	1	1.67	11.45				3	
A	20/03/1998	1	260	8.17			8.17	0.62	1	1.35	8.70				3	
A	20/03/1998	5	240				8.17	0.62	1	1.35						
A	26/03/1998	1	240	8.33			8.17	0.62	1	1.35	8.61				4	

Bore Conditions

1 records for RN 13601

Date	Drain Details			Headworks												
	Tot Len (km)	Max Run (km)	Cond	Ret Len (km)	Cond	Ctrl	Leak	Flow Irreg	Precip	Est Use (ML/yr)	Num of Cattle	Num of Sheep	Comments			
20/03/1998				4.00	Good	F		GAS		5.7	250	500	WATER SAMPLE AFTER 90 MINOF FR TEST			

Elevations

0 records for RN 13601

Water Analysis Part 1

3 records for RN 13601

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	19/03/1987	1	GCL	118851	0.00	PU	GB	1200	8.6	15	1080.00	760.00	6	570	0.0	54.7	11.50
A	06/09/1989	1	GCL	131808		PU	GB	1050	8.6	14	1040.00	730.00	6	550	0.0	51.0	11.00
A	26/03/1998	1	GCL	177424		PG	GB	1219	8.9	15	1060.26	761.71	5	567	0.0	59.1	11.22

Water Analysis Part 2

3 records for RN 13601

Bore Report

From Year:

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	19/03/1987	1	310.0	1.5	2.1	0.2	0.00	660.0	0.04	18.0	80.0	0.60	0.0	10.5				
A	06/09/1989	1	290.0	1.3	2.3	0.1	0.01	640.0	0.03	16.5	77.0	0.60	1.3	10.5				
A	26/03/1998	1	316.0	1.3	2.0	0.1	0.00	616.7	0.00	36.7	76.9	0.59	0.0	9.8	0.00	0.01	0.10	0.01

Water Levels

1 records for RN 13601

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
X	22/12/1958		18.50	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130 Data is of unknown quality

Wire Line Logs

0 records for RN 13601

Field Measurements

2 records for RN 13601

Pipe	Date	Depth (m)	Conduct (uS/cm)	pH	Temp (C)	NO3 (mg/L)	DO2 (mg/L)	Eh (mV)	Alkalinity (mV)	Samp	Method	Samp	Source
A	06/09/1989				26.0					PU	Pump - Other or Flowing Bore	GB	Groundwater - from Bore
A	20/03/1998				26.3					PU	Pump - Other or Flowing Bore		

Special Water Analysis

0 records for RN 13601

From Year:

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Strata Logs 20 records for RN 15301

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	3.05	SOIL & CLAY
2	3.05	7.62	SANDSTONE
3	7.62	9.14	GRAVELLY CLAY
4	9.14	12.19	SANDSTONE
5	12.19	15.54	CLAY & STONE
6	15.54	18.29	SANDSTONE
7	18.29	20.42	CLAY & STONE
8	20.42	22.86	CLAY
9	22.86	26.52	BROWN SHALE
10	26.52	32.61	WHITE SANDSTONE
11	32.61	35.05	CLAY & STONE
12	35.05	41.76	COLOURED CLAYS
13	41.76	45.11	GREY & BROWN SLATE
14	45.11	55.78	CRUMBLY CLAY (WATER)
15	55.78	59.74	SLATE
16	59.74	70.41	PINK & YELLOW SLATE (WATER)
17	70.41	73.15	BROWN SLATE
18	73.15	91.44	BROWN ROCK
902			06/02/1961 SWL -39.01 M TMP NUL C
903			BAILER TEST 0.375 L/S D/D 12.2 M

Stratigraphies

3 records for RN 15301

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			TEXAS BEDS
DNR	2			TEXAS BEDS

From Year:

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	3			TEXAS BEDS

Aquifers	3 records for RN 15301
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Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	41.00	45.00	GNSS - Gneiss SCHT - Schist SLAT - Slate							FR	TEXAS BEDS
2	68.00	70.00	GNSS - Gneiss SCHT - Schist SLAT - Slate							FR	TEXAS BEDS
3	87.00	91.00	GNSS - Gneiss SCHT - Schist SLAT - Slate							FR	TEXAS BEDS

Pump Tests Part 1	0 records for RN 15301
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Pump Tests Part 2	0 records for RN 15301
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Bore Conditions	0 records for RN 15301
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Elevations	0 records for RN 15301
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Water Analysis Part 1	0 records for RN 15301
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Water Analysis Part 2	0 records for RN 15301
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Water Levels	0 records for RN 15301
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Wire Line Logs	0 records for RN 15301
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Field Measurements	0 records for RN 15301
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From Year:

Special Water Analysis	0 records for RN 15301
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From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
15481	Sub-Artesian Facility	Existing	01/01/1960	Goondiwindi	3610 - GOONDIWINDI REGIONAL
Details			Location		
Description	L2 BNT1117		Latitude	28-20-43	Basin 4164
Parish	1512 - DEVINE		Longitude	151-11-25	Sub-area
Original Name			GIS Latitude	-28.3452086	Lot 2
			GIS Longitude	151.1903545	Plan BNT1117
			Easting	322625	
			Northing	6863226	Map Scale 104 - 1: 100 000
Driller Name			Zone	56	Map Series M - Metric Series
Drill Company			Accuracy		Map No 9141
Const Method			GPS Accuracy		Map Name INGLEWOOD
Bore Line			Checked	Yes	Prog Section
D/O File No	235	Polygon			
R/O File No	W1166	Equipment	WL		
H/O File No	L24697B	RN of Bore Replaced			
Log Received Date	Data Owner				
Roles					

Casing								2 records for RN 15481
Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/01/1960	1	0.00	76.80	Steel Casing	5.000	WT - Wall Thickness	127
A	01/01/1960	2	43.50	44.50	Perforated or Slotted Casing			

Strata Logs				9 records for RN 15481
Rec	Top (m)	Bottom (m)	Strata Description	

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	4.57	CLAY
2	4.57	20.12	SANDSTONE
3	20.12	30.18	SANDY CLAY
4	30.18	43.59	CRUMBLY CLAY - SOAK
5	43.59	44.50	WATER
6	44.50	63.70	SLIPPERY BACK CLAY
7	63.70	64.01	SAND
8	64.01	74.68	SANDSTONE
9	74.68	76.81	BROWN ROCK

Stratigraphies	0 records for RN 15481
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Aquifers	0 records for RN 15481
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Pump Tests Part 1	0 records for RN 15481
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Pump Tests Part 2	0 records for RN 15481
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Bore Conditions	0 records for RN 15481
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Elevations	0 records for RN 15481
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Water Analysis Part 1	0 records for RN 15481
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Water Analysis Part 2	0 records for RN 15481
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Water Levels	0 records for RN 15481
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Wire Line Logs	0 records for RN 15481
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From Year:

Field Measurements	0 records for RN 15481
Special Water Analysis	0 records for RN 15481

From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
16200	Sub-Artesian Facility	Existing	16/02/1965	Goondiwindi	3610 - GOONDIWINDI REGIONAL
Details			Location		
Description	P32		Latitude	28-21-48	Basin4164
Parish	1232 - COOLMUNDA		Longitude	151-09-18	Sub-area
Original Name			GIS Latitude	-28.3632924	Lot32
			GIS Longitude	151.1549006	PlanBNT184
			Easting	319180	
Driller Name			Northing	6861169	Map Scale104 - 1: 100 000
Drill Company			Zone	56	Map SeriesM - Metric Series
Const Method	ROTARY RIG		Accuracy		Map No9141
Bore Line			GPS Accuracy		Map NameINGLEWOOD
D/O File No	265	Polygon	Checked	Yes	Prog Section
R/O File No	W0591	Equipment			
H/O File No	L09427B	RN of Bore Replaced			
Log Received Date		Data Owner			
Roles					

Casing									1 records for RN 16200
Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)	
A	16/02/1965	1	0.00		Steel Casing	5.000	WT - Wall Thickness	152	

Strata Logs					10 records for RN 16200
Rec	Top (m)	Bottom (m)	Strata Description		
1	0.00	7.01	SAND	DRILLER R BOWMAN	

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
2	7.01	27.43	GREY & RED CLAY
3	27.43	39.01	BROWN SAND
4	39.01	39.92	WHITE CLAY
5	39.92	41.14	SAND & WATER SWL 12.2 M
6	41.14	45.11	FINE SAND
7	45.11	48.76	CLAY
902			16/02/1965 SWL -12.20 M TMP NUL C
903			16/02/1965 DISCH 146.8 M3D AIR TST
910	40.00	45.00	QUALITY DESCRIP/CONDUCT: 5300

Stratigraphies

1 records for RN 16200

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			CANNING CREEK ALLUVIUM

Aquifers

1 records for RN 16200

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	40.00	45.00	SAND - Sand							UC	CANNING CREEK ALLUVIUM

Pump Tests Part 1

0 records for RN 16200

Pump Tests Part 2

0 records for RN 16200

Bore Conditions

0 records for RN 16200

Elevations

1 records for RN 16200

From Year:

Pipe	Date	Elevation (m)	Precision	Datum	Meas	Point	Survey Source
X	16/02/1965	288.17	EST	Estimate Using Contours	ASD - Assumed Datum	N	Natural Surface

Water Analysis Part 1

1 records for RN 16200

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	28/04/1978	1	GCL	076879	40.00	PU	GB	5300	8.3	11	3832.80	3410.23	450	699	0.2	24.6	4.98

Water Analysis Part 2

1 records for RN 16200

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	28/04/1978	1	1200.0	16.0	32.0	90.0		853.0		0.0	1540.0	1.80	0.0	100.0				

Water Levels

1 records for RN 16200

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
X	16/02/1965		-12.20	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130 Data is of unknown quality

Wire Line Logs

0 records for RN 16200

Field Measurements

0 records for RN 16200

Special Water Analysis

0 records for RN 16200

From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
33881	Sub-Artesian Facility	Existing	01/01/1944	Biloela	370 - BANANA SHIRE
Details			Location		
Description	P24		Latitude	24-22-17	Basin1303
Parish	3889 - PRAIRIE		Longitude	150-33-09	Sub-area005
Original Name			GIS Latitude	-24.371508737	Lot2
			GIS Longitude	150.552466021	PlanRP618450
			Easting	251728	
Driller Name			Northing	7302452	Map Scale503 - 1: 50 000
Drill Company			Zone	56	Map SeriesM - Metric Series
Const Method			Accuracy		Map No9049-3
Bore Line			GPS Accuracy		Map Name
D/O File No	40-0541	Polygon	Checked	Yes	Prog Section
R/O File No	C1163	EquipmentJP			
H/O File No	L31732B	RN of Bore Replaced			
Log Received Date		Data Owner			
Roles	Water Supply				

Casing									2 records for RN 33881
Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)	
A	01/01/1944	1	0.00	16.80	Steel Casing	4.760	WT - Wall Thickness	127	
A	01/01/1944	2		16.80	Perforated or Slotted Casing		AP - Aperture Size	127	

Strata Logs					4 records for RN 33881
Rec	Top (m)	Bottom (m)	Strata Description		

From Year:

Rec	Top (m)	Bottom (m)	Strata Description																
1	0.00	16.80	NO DETAILS AVAILABLE																
2			WATER AT 12.2 M																
902			20/09/1969 SWL -13.90 M																
903			20/09/1969 DISCH 0.38L/S																
Stratigraphies																	0	records for RN	33881
Aquifers																	0	records for RN	33881
Pump Tests Part 1																	0	records for RN	33881
Pump Tests Part 2																	0	records for RN	33881
Bore Conditions																	0	records for RN	33881
Elevations																	0	records for RN	33881
Water Analysis Part 1																	2	records for RN	33881
Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH		
A	25/02/1973	1	GCL	056307		PU	GB	528	7.6		525.03	0.00	175	135	1.9	1.4	0.00		
A	19/05/1980	1	GCL	084701	17.00		GB	2860	7.4	42	1670.80	1552.18	925	260	2.0	3.1	0.00		
Water Analysis Part 2																	2	records for RN	33881
Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu	
A	25/02/1973	1	42.1		38.0	19.4		164.7			85.0	0.13	164.7	11.0					
A	19/05/1980	1	216.0	1.5	184.0	113.0		316.0		0.6	790.0	0.10	5.6	44.0					

From Year:

Water Levels	1 records for RN 33881
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Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
X	20/09/1969		-13.90	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130 Data is of unknown quality

Wire Line Logs	0 records for RN 33881
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Field Measurements	0 records for RN 33881
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Special Water Analysis	0 records for RN 33881
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From Year:

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Strata Logs 13 records for RN 64684

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.30	SANDY LOAM & CLAY
2	1.30	3.00	SAND
3	3.00	8.40	GREY & RED CLAY
4	8.40	19.00	SOFT YELLOW SANDSTONE
5	19.00	21.50	CLAY
6	21.50	25.50	YELLOW SANDSTONE & CLAY
7	25.50	28.00	GREY CLAY
8	28.00	29.30	GREY ROCK WHITE QUARTZ & WATER AT 28
9	29.30	30.10	GREY CLAY
10	30.10	37.00	SOFT COAL & GREY CLAY
902			15/4/1983 SWL -22.6
903			PUMP TEST 0.4 L/S FROM 28 M (1HR)
910	28.40	29.30	QUALITY DESCRIP/CONDUCT: POTABLE

Stratigraphies

1 records for RN 64684

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1			WALLOON COAL MEASURES

Aquifers

1 records for RN 64684

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	28.40	29.30	SDST - Sandstone							PS	WALLOON COAL MEASURES

Pump Tests Part 1

1 records for RN 64684

Pipe	Date	Rec	RN of	Top (m)	Bottom	Dist	Meth	Test Types	Pump	Suction	Q Prior	Dur of	Pres on	Q on
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From Year:

			Pumped Bore		(m)	(m)		Type	Set (m)	to Test (l/s)	Q PR (mins)	Arriv (m)	Arriv (l/s)
A	15/04/1983	1	64684	28.40	29.30		PUM CD						

Pump Tests Part 2

1 records for RN 64684

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	15/04/1983	1	60	-22.60			28.30	0.40	60							0.00000000

Bore Conditions

0 records for RN 64684

Elevations

0 records for RN 64684

Water Analysis Part 1

1 records for RN 64684

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	15/04/1983	1	GCL	097833			GB	1800	8.3	26	1092.00	975.68	258	236	0.4	7.3	0.00

Water Analysis Part 2

1 records for RN 64684

Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	15/04/1983	1	270.0	11.0	39.0	39.0		280.0		3.7	420.0	0.30	5.0	24.0				

Water Levels

1 records for RN 64684

Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	15/04/1983		-22.60	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded		130 Data is of unknown quality

From Year:

Wire Line Logs	0 records for RN 64684
Field Measurements	0 records for RN 64684
Special Water Analysis	0 records for RN 64684

From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
64849	Sub-Artesian Facility	Existing	01/01/1948	Warwick	6910 - TOOWOOMBA REGIONAL
Details			Location		
Description	POR 170		Latitude	28-09-00	Basin 4164
Parish	3222 - MINGIMARNY		Longitude	151-09-17	Sub-area 710
Original Name			GIS Latitude	-28.149960291	Lot 170
			GIS Longitude	151.154635822	Plan MH361
			Easting	318793	
			Northing	6884809	Map Scale 104 - 1: 100 000
Driller Name			Zone	56	Map Series M - Metric Series
Drill Company			Accuracy		Map No 9141
Const Method	CABLE TOOL		GPS Accuracy		Map Name INGLEWOOD
Bore Line			Checked	Yes	Prog Section
D/O File No	G0803	Polygon			
R/O File No		Equipment			
H/O File No	L24632B	RN of Bore Replaced			
Log Received Date		Data Owner			
Roles					

Casing1 records for RN 64849

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	01/01/1948	1	0.00	128.00	Steel Casing			127

Strata Logs4 records for RN 64849

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	128.02	STRATA UNKNOWN

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
2			CASED 127 MMS TO 128.0 MET
3			SWL 115.8 MET
4			DATE 1948 NO FURTHER DETAILS

Stratigraphies	0 records for RN 64849
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Aquifers	0 records for RN 64849
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Pump Tests Part 1	0 records for RN 64849
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Pump Tests Part 2	0 records for RN 64849
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Bore Conditions	0 records for RN 64849
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Elevations	0 records for RN 64849
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Water Analysis Part 1	0 records for RN 64849
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Water Analysis Part 2	0 records for RN 64849
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Water Levels	1 records for RN 64849
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Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	01/01/1948		-115.80	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded		130 Data is of unknown quality

Wire Line Logs	0 records for RN 64849
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Field Measurements	0 records for RN 64849
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Special Water Analysis	0 records for RN 64849
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From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
77106	Sub-Artesian Facility	Existing	01/01/1994	Goondiwindi	3610 - GOONDIWINDI REGIONAL
Details			Location		
Description	L53 MH233		Latitude	28-32-40	Basin 4162
Parish	6000 - NO LONGER USED		Longitude	150-49-25	Sub-area
Original Name			GIS Latitude	-28.5443863529	Lot 53
			GIS Longitude	150.823644928	Plan MH233
			Easting	287072	
			Northing	6840557	Map Scale
Driller Name			Zone	56	Map Series
Drill Company			Accuracy	PHOT	Map No
Const Method			GPS Accuracy	10	Map Name
Bore Line			Checked	Yes	Prog Section
D/O File No	476	Polygon			
R/O File No		Equipment	WL		
H/O File No		RN of Bore Replaced			
Log Received Date		Data Owner			
Roles	Water Supply				

Casing	0 records for RN 77106
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Strata Logs	0 records for RN 77106
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Stratigraphies	0 records for RN 77106
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Aquifers	0 records for RN 77106
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Pump Tests Part 1	0 records for RN 77106
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Pump Tests Part 2	0 records for RN 77106
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From Year:

Bore Conditions	0 records for RN 77106
Elevations	0 records for RN 77106
Water Analysis Part 1	0 records for RN 77106
Water Analysis Part 2	0 records for RN 77106
Water Levels	0 records for RN 77106
Wire Line Logs	0 records for RN 77106
Field Measurements	0 records for RN 77106
Special Water Analysis	0 records for RN 77106

From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
77804	Sub-Artesian Facility	Existing		Goondiwindi	3610 - GOONDIWINDI REGIONAL
Details			Location		
Description			Latitude	28-11-07	Basin 4164
Parish	6000 - NO LONGER USED		Longitude	151-09-52	Sub-area
Original Name			GIS Latitude	-28.1851562478	Lot 341
			GIS Longitude	151.1644216103	Plan FTY1881
			Easting	319813	
Driller Name			Northing	6880923	Map Scale
Drill Company			Zone	56	Map Series
Const Method			Accuracy	PHOT	Map No
Bore Line			GPS Accuracy	10	Map Name
D/O File No	Polygon		Checked	Yes	Prog Section
R/O File No	Equipment	WL			
H/O File No	RN of Bore Replaced				
Log Received Date	Data Owner				
Roles	Water Supply				

Casing	0 records for RN 77804
Strata Logs	0 records for RN 77804
Stratigraphies	0 records for RN 77804
Aquifers	0 records for RN 77804
Pump Tests Part 1	0 records for RN 77804
Pump Tests Part 2	0 records for RN 77804

From Year:

Bore Conditions	0 records for RN 77804
Elevations	0 records for RN 77804
Water Analysis Part 1	0 records for RN 77804
Water Analysis Part 2	0 records for RN 77804
Water Levels	0 records for RN 77804
Wire Line Logs	0 records for RN 77804
Field Measurements	0 records for RN 77804
Special Water Analysis	0 records for RN 77804

From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
77815	Sub-Artesian Facility	Existing	04/05/2023	Goondiwindi	3610 - GOONDIWINDI REGIONAL

Details			Location		
Description	DRILL LOG 89974180		Latitude	28-19-54	Basin 4164
Parish	6000 - NO LONGER USED		Longitude	151-09-27	Sub-area
Original Name	MW112		GIS Latitude	-28.3315918412	Lot
			GIS Longitude	151.1574480183	Plan
			Easting	319376	
			Northing	6864686	Map Scale
Driller Name	HOPKINS, MICHAEL		Zone	56	Map Series
Drill Company	NUMAC DRILLING SERVICES		Accuracy		Map No
Const Method	AUGER		GPS Accuracy		Map Name
Bore Line			Checked	Yes	Prog Section
D/O File No	ARTC MONITORING	Polygon			
R/O File No		Equipment			
H/O File No		RN of Bore Replaced			
Log Received Date	22/06/2023	Data Owner			
Roles	Sub-Artesian Monitoring				

Casing

4 records for RN 77815

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	04/05/2023	1	0.00	3.00	Polyvinyl Chloride	5.000	WT - Wall Thickness	60
A	04/05/2023	2	3.00	9.00	Perforated or Slotted Casing	0.500	AP - Aperture Size	60
X	04/05/2023	3	0.00	2.50	Grout			150
X	04/05/2023	4	2.50	9.00	Gravel Pack			150

From Year:

Strata Logs				1 records for RN 77815
Rec	Top (m)	Bottom (m)	Strata Description	
1	0.00	9.00	SILTSTONE	
Stratigraphies				0 records for RN 77815
Aquifers				0 records for RN 77815
Pump Tests Part 1				0 records for RN 77815
Pump Tests Part 2				0 records for RN 77815
Bore Conditions				0 records for RN 77815
Elevations				0 records for RN 77815
Water Analysis Part 1				0 records for RN 77815
Water Analysis Part 2				0 records for RN 77815
Water Levels				0 records for RN 77815
Wire Line Logs				0 records for RN 77815
Field Measurements				0 records for RN 77815
Special Water Analysis				0 records for RN 77815

From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
87843	Sub-Artesian Facility	Existing	11/09/1993	Toowoomba	6910 - TOOWOOMBA REGIONAL
Details			Location		
Description	P73V		Latitude	27-59-30	Basin 4223
Parish	1555 - DOMVILLE		Longitude	151-13-29	Sub-area
Original Name			GIS Latitude	-27.991668693	Lot 73
			GIS Longitude	151.224622013	Plan DY153
			Easting	325411	
Driller Name			Northing	6902451	Map Scale 40C - 40 Chain
Drill Company			Zone	56	Map Series N - New Series
Const Method	ROTARY DRILLER GEORGE COLE		Accuracy		Map No 5519
Bore Line			GPS Accuracy		Map Name
D/O File No	T 3699	Polygon	Checked	Yes	Prog Section
R/O File No		Equipment			
H/O File No		RN of Bore Replaced			
Log Received Date		Data Owner			
Roles					

Casing4 records for RN 87843

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	27/10/1993	1	0.00	19.00	Steel Casing	3.000	WT - Wall Thickness	168
A	27/10/1993	2	0.00	187.00	Steel Casing	5.000	WT - Wall Thickness	140
A	27/10/1993	3	145.00	152.00	Perforated or Slotted Casing			
A	27/10/1993	4	171.00	184.50	Perforated or Slotted Casing			

Strata Logs34 records for RN 87843

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	TOPSOIL
2	1.00	4.00	CLAY
3	4.00	4.10	GRAVEL
4	4.10	6.00	ASH & CLAY
5	6.00	18.00	WEATHERED SANDSTONE (ASH & CLAY)
6	18.00	19.50	SANDSTONE
7	19.50	50.00	SANDSTONE (BANDS COAL & SHALE)
8	50.00	62.00	SANDSTONE (BURNT COAL)
9	62.00	65.50	COAL
10	65.50	74.00	SANDSTONE SHALE & COAL
11	74.00	75.00	COAL
12	75.00	86.00	GREY SHALE (BANDS SANDSTONE)
13	86.00	92.00	SANDSTONE
14	92.00	93.00	COARSE SANDSTONE (SEEP)
15	93.00	111.00	SANDSTONE
16	111.00	113.00	SANDSTONE (BANDS SHALE)
17	113.00	120.50	CLAYEY SANDSTONE
18	120.50	122.00	SILTSTONE
19	122.00	124.00	COARSE SANDSTONE (SEEP)
20	124.00	128.00	SANDSTONE (BANDS SHALE)
21	128.00	133.00	SANDSTONE
22	133.00	145.00	SANDSTONE
23	145.00	150.00	COARSE SANDSTONE *
24	150.00	156.00	SANDSTONE
25	156.00	159.00	SANDSTONE

From Year:

Rec	Top (m)	Bottom (m)	Strata Description	
26	159.00	168.00	GREY SHALE	
27	168.00	173.00	SANDSTONE (BANDS SHALE)	
28	173.00	178.00	COARSE SANDSTONE *	
29	178.00	181.00	SANDSTONE	
30	181.00	182.00	COARSE SANDSTONE *	
31	182.00	187.00	SANDSTONE (BANDS SHALE)	
902			SWL	133 MET (27/10/1993)
903			(27/10/1993)	1.9 L/SEC AIRLIFT
910			ALL WATER BEDS - POTABLE (DRILLER)	

Stratigraphies

3 records for RN 87843

Source	Rec	Top (m)	Bottom (m)	Strata Description	
DNR	1			KUMBARILLA BEDS	
DNR	2			KUMBARILLA BEDS	
DNR	3			KUMBARILLA BEDS	

Aquifers

3 records for RN 87843

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	145.00	150.00	SDST - Sandstone							PS	KUMBARILLA BEDS
2	173.00	178.00	SDST - Sandstone							PS	KUMBARILLA BEDS
3	181.00	182.00	SDST - Sandstone							PS	KUMBARILLA BEDS

Pump Tests Part 1

0 records for RN 87843

Pump Tests Part 2

0 records for RN 87843

From Year:

Bore Conditions	0 records for RN 87843
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Elevations	1 records for RN 87843
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Pipe	Date	Elevation (m)	Precision		Datum	Meas	Point	Survey Source
X	19/04/2009	476.28	EST	Estimate Using Contours	AHD - Aust. Height Datum	N	Natural Surface	

Water Analysis Part 1	0 records for RN 87843
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Water Analysis Part 2	0 records for RN 87843
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Water Levels	1 records for RN 87843
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Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	27/10/1993		-133.00	N	Natural Surface		ACT	Actual	NR	NR	Not Recorded		130 Data is of unknown quality

Wire Line Logs	0 records for RN 87843
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Field Measurements	0 records for RN 87843
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Special Water Analysis	0 records for RN 87843
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From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
172706	Sub-Artesian Facility	Existing	03/12/2018	Toowoomba	6910 - TOOWOOMBA REGIONAL
Details			Location		
Description			Latitude	27-59-22	Basin 4223
Parish	6000 - NO LONGER USED		Longitude	151-13-10	Sub-area
Original Name	BH 2355		GIS Latitude	-27.9893613805	Lot 111
			GIS Longitude	151.2194626305	Plan DY182
			Easting	324900	
Driller Name	TABERNER, JOSHUA		Northing	6902699	Map Scale
Drill Company	NUMAC		Zone	56	Map Series
Const Method	ROTARY MUD		Accuracy		Map No
Bore Line			GPS Accuracy		Map Name
D/O File No	DRILLING LOG	Polygon	Checked	Yes	Prog Section
R/O File No		Equipment			
H/O File No		RN of Bore Replaced			
Log Received Date	20/12/2018	Data Owner			
Roles	Sub-Artesian Monitoring				

Casing								5 records for RN 172706
Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	03/12/2018	1	0.00	17.00	Polyvinyl Chloride	5.000	WT - Wall Thickness	60
A	03/12/2018	2	17.00	20.00	Perforated or Slotted Casing	0.500	AP - Aperture Size	60
X	03/12/2018	1	0.00	11.00	Grout			150
X	03/12/2018	2	11.00	12.00	Bentonite Seal			116
X	03/12/2018	3	12.00	20.00	Cuttings or other fill between casing and hole wall			116

From Year:

Strata Logs

5 records for RN 172706

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	2.00	SOIL
2	2.00	9.50	CLAYS
3	9.50	10.50	MUDSTONE
4	10.50	12.50	WEATHERSD BASALT
5	12.50	27.00	BASALT

Stratigraphies

0 records for RN 172706

Aquifers

1 records for RN 172706

Rec	Top (m)	Bottom (m)	Lithology	Date	SWL (m)	Flow	Quality	Yield (L/s)	Contr	Cond	Formation Name
1	17.00	20.00	BSLT - Basic Volcanic						Y	FR	MAIN RANGE VOLCANICS

Pump Tests Part 1

0 records for RN 172706

Pump Tests Part 2

0 records for RN 172706

Bore Conditions

0 records for RN 172706

Elevations

1 records for RN 172706

Pipe	Date	Elevation (m)	Precision	Datum	Meas	Point	Survey Source	
X	03/12/2018	475.67	EST	Estimate Using Contours	AHD - Aust. Height Datum	N	Natural Surface	ELV.AUS_SRTM_1SEC_DEM_H_V1

Water Analysis Part 1

0 records for RN 172706

Water Analysis Part 2

0 records for RN 172706

Water Levels

0 records for RN 172706

From Year:

Wire Line Logs	0 records for RN 172706
Field Measurements	0 records for RN 172706
Special Water Analysis	0 records for RN 172706

From Year:

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From Year:

Registered Number	Facility Type	Facility Status	Drilled Date	Office	Shire
41640009	Sub-Artesian Facility	Existing	10/04/2000	Goondiwindi	3610 - GOONDIWINDI REGIONAL
Details			Location		
Description			Latitude	28-19-04	Basin 4164
Parish	6000 - NO LONGER USED		Longitude	151-10-18	Sub-area
Original Name			GIS Latitude	-28.31766957	Lot
			GIS Longitude	151.17169991	Plan
			Easting	320750	
			Northing	6866250	Map Scale
Driller Name	BOB LEDBETER		Zone	56	Map Series
Drill Company	DNR DRILLING RIG		Accuracy	GPS	Map No
Const Method	ROTARY AIR		GPS Accuracy	1	Map Name
Bore Line			Checked	Yes	Prog Section
D/O File No	Polygon				
R/O File No	Equipment	NE			
H/O File No	RN of Bore Replaced				
Log Received Date	Data Owner	DNR			
Roles	WR Investigation				

Casing

6 records for RN 41640009

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	10/04/2000	1	0.00	4.00	Cement or Grout Plug			
A	10/04/2000	2	4.00	15.50	Gravel Pack			
A	10/04/2000	3	15.50	16.50	Bentonite Seal			
A	10/04/2000	4	16.50	24.00	Gravel Pack			
A	10/04/2000	5	23.00	24.00	Screen			

From Year:

Pipe	Date	Rec	Top (m)	Bottom (m)	Material Description	Mat Size (mm)	Size Desc	Outside Diameter (mm)
A	10/04/2000	6	0.00	24.00	Polyvinyl Chloride			50

Strata Logs

36 records for RN 41640009

Rec	Top (m)	Bottom (m)	Strata Description
1	0.00	1.00	MEDIUM BROWN SANDY SILT
2	1.00		LIGHT BROWN ORANGE FINE SAND WITH
3		2.00	MINOR SANDY CLAY
4	2.00		LIGHT GREY MEDIUM TO VERY COARSE SAND
5		3.00	SUB-ANGULAR
6	3.00		BROWN ORANGE SLIGHTLY CLAYEY FINE TO
7		4.00	MEDIUM SAND
8	4.00		LIGHT GREY TO LIGHT BROWN FIRM CLAY,
9		5.00	GRAVEL AT BASE
10	5.00	7.00	LIGHT GREY SOFT SILTY CLAY
11	7.00		LIGHT BROWN ORANGE VERY FINE TO FINE
12		8.00	SAND
13	8.00	9.00	LIGHT BROWN FINE SAND
14	9.00	10.00	RUSTY COLOUR MEDIUM TO COARSE SAND
15	10.00		LIGHT BROWN ORANGE MEDIUM TO COARSE
16		11.00	SAND WITH MINOR GRAVEL
17	11.00		RED BROWN MEDIUM TO VERY COARSE SAND
18		12.00	MOIST
19	12.00		RED BROWN MEDIUM TO VERY COARSE SAND,
20		13.00	SLIGHTLY CLAYEY MINOR CLAY BANDS

From Year:

Rec	Top (m)	Bottom (m)	Strata Description
21	13.00		ORANGE BROWN SLIGHTLY CLAYEY VERY
22		14.00	COARSE SAND
23	14.00		LIGHT GREY AND ORANGE BROWN CLAY
24		15.00	SLIGHTLY SILTY
25	15.00	16.00	LIGHT GREY BROWN SILTY CLAY
26	16.00	17.00	BROWN ORANGE CLAY
27	17.00		LIGHT BROWN CLAY TO SAND, WATER
28		18.00	BEARING AT 17.6
29	18.00		LIGHT GREY BROWN COARSE TO VERY
30		19.00	COARSE SAND WELL ROUNDED
31	19.00		LIGHT BROWN SLIGHTLY CLAYEY COARSE
32			SAND, ROUNDED, MODERATELY SORTED,
33		22.00	ORANGE CLAY BAND AT 21.3-21.5
34	22.00		LIGHT GREY CLAY AND ORANGE CLAY
35		23.00	OCCASIONALLY SANDY
36	23.00	24.00	LIGHT GREY SANDY CLAY, JASPER COBBLES

Stratigraphies

1 records for RN 41640009

Source	Rec	Top (m)	Bottom (m)	Strata Description
DNR	1	0.00	24.00	MARBURG SUBGROUP

Aquifers

0 records for RN 41640009

Pump Tests Part 1

0 records for RN 41640009

Pump Tests Part 2

0 records for RN 41640009

From Year:

Bore Conditions	0 records for RN 41640009
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Elevations	2 records for RN 41640009
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Pipe	Date	Elevation (m)	Precision		Datum	Meas	Point	Survey Source
A	11/04/2000	299.22	SVY	Surveyed	AHD - Aust. Height Datum	R	Reference Point	RTK SURVEY 11/06/2014
X	11/04/2000	298.82	SVY	Surveyed	AHD - Aust. Height Datum	N	Natural Surface	0.400M BELOW RP 11/06/2014

Water Analysis Part 1	1 records for RN 41640009
-----------------------	---------------------------

Pipe	Date	Rec	Analyst	Analysis No	Depth (m)	Meth	Src	Cond (uS/cm)	pH	Si (mg/L)	Total Ions (mg/L)	Total Solids (mg/L)	Hard	Alk	Fig. of Merit	SAR	RAH
A	14/05/2011	1	GCL	306267	22.00	PW	GB	37500	7.4	70	24100.00	23800.00	2810	612	0.2	63.0	0.00

Water Analysis Part 2	1 records for RN 41640009
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Pipe	Date	Rec	Na	K	Ca	Mg	Mn	HCO3	Fe	CO3	Cl	F	NO3	SO4	Zn	Al	B	Cu
A	14/05/2011	1	7700.0	79.0	345.0	473.0	0.03	741.0	<0.01	3.0	14000.0	0.24	<50.0	390.0	0.03	<0.05	1.10	<0.03

Water Levels	45 records for RN 41640009
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Pipe	Date	Time	Measure (m)	Meas	Point	Remark	Meas	Type	Coll Auth	Coll	Method	Project	Quality
A	11/04/2000		-12.94	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130 Data is of unknown quality
A	12/04/2000		-12.66	N	Natural Surface		NR	Not Recorded	NR	NR	Not Recorded		130 Data is of unknown quality
A	30/11/2005		-11.70	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	12/01/2006		-13.02	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	21/04/2006		-13.03	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	27/07/2006		-13.03	R	Reference Point		ACT	Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	10/09/2009		-13.17	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130 Data is of unknown quality
A	15/10/2009		-13.17	R	Reference Point		NR	Not Recorded	NR	NR	Not Recorded		130 Data is of unknown quality

Queensland Government
Groundwater Information
Bore Report

From Year:

Pipe	Date	Time	Measure (m)	Meas Point	Remark	Meas Type	Coll Auth	Coll	Method	Project	Quality
A	16/02/2010		-13.18	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	06/08/2010		-13.13	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	29/11/2010		-13.05	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	11/04/2011		-13.02	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	19/10/2011		-13.15	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	11/04/2012		-13.06	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	10/10/2012		-12.94	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	28/02/2013		-12.99	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	04/02/2014		-12.97	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	26/08/2014		-12.90	R	Reference Point	NR	Not Recorded	NR	NR	Not Recorded	130 Data is of unknown quality
A	16/02/2017		-13.00	R	Reference Point	ACT	Actual	DH	MA	Manual/Hand	1 Good - Actual Manual Measurements
A	12/05/2017		-12.97	R	Reference Point	ACT	Actual	DH	MA	Manual/Hand	1 Good - Actual Manual Measurements
A	24/08/2017		-12.93	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	02/03/2018		-12.94	R	Reference Point	ACT	Actual	DH	MA	Manual/Hand	1 Good - Actual Manual Measurements
A	15/08/2018		-12.99	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	06/11/2018		-12.96	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	19/02/2019		-12.99	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	08/05/2019		-13.07	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	13/08/2019		-13.13	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	28/11/2019		-13.11	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	10/03/2020		-13.10	R	Reference Point	ACT	Actual	DH	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	06/08/2020		-13.09	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	16/11/2020		-13.08	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	02/02/2021		-13.07	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements
A	02/08/2021		-13.38	R	Reference Point	ACT	Actual	DG	MA	Manual/Hand GWAN	1 Good - Actual Manual Measurements

From Year:

Pipe	Date	Time	Measure (m)	Meas Point	Remark	Meas Type	Coll Auth	Coll	Method	Project	Quality
A	23/11/2021		-13.10	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	02/01/2022		-12.93	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	09/02/2022		-13.03	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	24/05/2022		-13.03	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	15/08/2022		-12.97	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	02/11/2022		-12.93	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	17/01/2023		-12.97	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	11/04/2023		-12.92	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	10/07/2023		-12.96	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	17/10/2023		-12.93	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	15/01/2024		-12.90	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements
A	16/03/2024		-12.95	R	Reference Point	ACT Actual	DG	MA	Manual/Hand	GWAN	1 Good - Actual Manual Measurements

Wire Line Logs

0 records for RN 41640009

Field Measurements

1 records for RN 41640009

Pipe	Date	Depth (m)	Conduct (uS/cm)	pH	Temp (C)	NO3 (mg/L)	DO2 (mg/L)	Eh (mV)	Alkalinity (mV)	Samp Method	Samp Source
A	11/04/2000		158		22.0					PU Pump - Other or Flowing Bore	GB Groundwater - from Bore

Special Water Analysis

1 records for RN 41640009

Sample											
Pipe	Sample Date	Analysis No	Depth	Bottle	Coll Auth	Coll	Method	Source	Pres Methods	Received Date	Projects
A	14/05/2011	306267	22.00	E	DG	PW	Pump - WaTerra	GB	FR	14/05/2011	GDEWQ

Comments

From Year:

Results

Variable	Name	Flag	Value	Units	Quality
2343	Nitrate+nitrite as N soluble (FieldFilt)		0.11000	Milligrams/Litre	10 Good
2345	Ammonia as N - soluble (Field filtered)		0.01700	Milligrams/Litre	10 Good
2355	Total Dissolved Nitrogen (Field- Filtered)		0.24000	Milligrams/Litre	10 Good
2365	Total React P (Ortho P) - soluble (FldF)		0.01900	Milligrams/Litre	10 Good
2368	Total Phosphorus- dissolved (Field- filtered)		0.03100	Milligrams/Litre	10 Good
3026	Dissolved Organic Carbon		22.00000	Milligrams/Litre	10 Good

From Year:

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APPENDIX AD

Borrow Pits—Supporting Technical Information

Appendix D Cultural heritage database search results

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT

Cultural Heritage Database and Register Search Report

Search report reference number: 118557

The Aboriginal and Torres Strait Islander Cultural Heritage Database (cultural heritage database) and Aboriginal and Torres Strait Islander Cultural Heritage Register (cultural heritage register) have been searched in accordance with the location description provided, and the results are set out in this report.

The cultural heritage database is intended to be a research and planning tool to help Aboriginal and Torres Strait Islander parties, researchers, and other persons in their consideration of the cultural heritage values of particular areas.

The cultural heritage register is intended to be a depository for information for consideration for land use and land use planning, and a research and planning tool to help people in their consideration of the Aboriginal cultural heritage values of particular objects and areas.

Aboriginal or Torres Strait Islander cultural heritage which may exist within the search area is protected under the [Aboriginal Cultural Heritage Act 2003](#) and the [Torres Strait Islander Cultural Heritage Act 2003](#) (the Cultural Heritage Acts), even if the Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (the Department) has no records relating to it.

The placing of information on the database is not intended to be conclusive about whether the information is up-to-date, comprehensive or otherwise accurate.

Under the Cultural Heritage Acts, a person carrying out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal or Torres Strait Islander cultural heritage. This applies whether or not such places are recorded in an official register and whether or not they are located on private land.

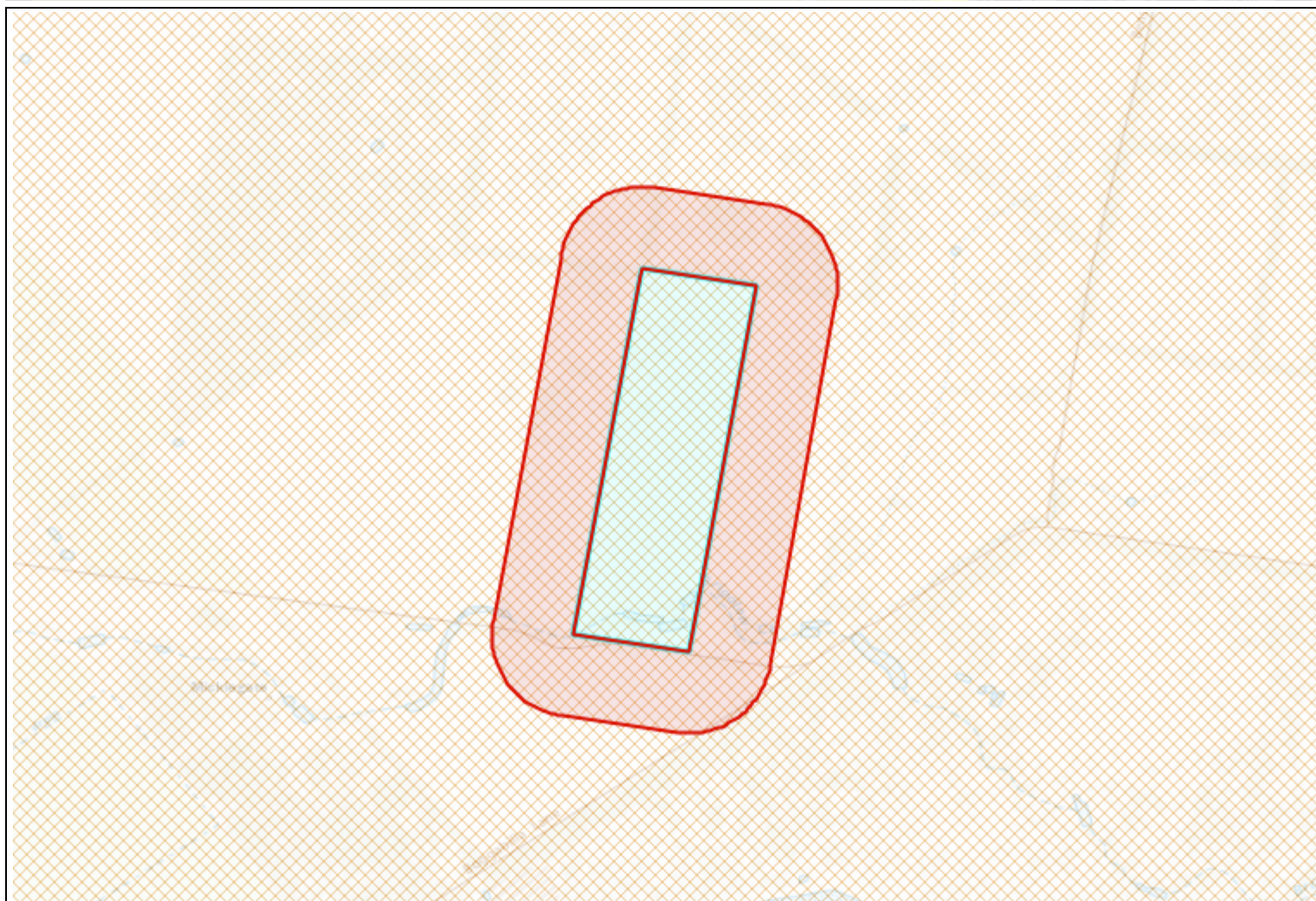
Please refer to the Department website <https://www.qld.gov.au/firstnations/environment-land-use-native-title/cultural-heritage/cultural-heritage-duty-of-care> to obtain a copy of the gazetted Cultural Heritage Duty of Care Guidelines, which set out reasonable and practicable measure for meeting the cultural heritage duty of care.

In order to meet your duty of care, any land-use activity within the vicinity of recorded cultural heritage should not proceed without the agreement of the Aboriginal or Torres Strait Islander Party for the area, or by developing a Cultural Heritage Management Plan under Part 7 of the Cultural Heritage Acts.

The extent to which the person has complied with Cultural Heritage Duty of Care Guidelines and the extent the person consulted Aboriginal or Torres Strait Islander Parties about carrying out the activity – and the results of the consultation – are factors a court may consider when determining if a land user has complied with the cultural heritage duty of care.

Should you have any further queries, please do not hesitate to contact the department via email: cultural.heritage@dssdsip.qld.gov.au or telephone: 1300 378 401.





Cultural Heritage Database and Register Search Report



LEGEND

-  Parties
-  Bodies
-  CHMPs
-  Study Areas
-  DLAs

Cultural Heritage Sites

-  Pre 1/7/2015 points
-  Post 1/7/2015 points
-  Post 1/7/2015 points (mitigated)
-  Area

Reference Number: 118557

Search Type: Lot/Plan

Lot: 2

Plan: SP229051

Shire: Goondiwindi Regional

Buffer Distance: 500m

Map Projection: Geographic Latitude & Longitude (GDA2020).

The Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (DSDSATSIP) is the custodian of spatial data provided by various third parties for inclusion in the Aboriginal and Torres Strait Islander cultural heritage online portal. This includes spatial data provided by the National Native Title Tribunal and Aboriginal and Torres Strait Islander parties.

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Map produced by the Cultural Heritage Unit, DSDSATSIP, Brisbane, Queensland, Australia on 24 August 2022.



1:36,486
Metres 500 1,000 1,500

LOCALITY



Cultural Heritage Database and Register Search Report

There are no Aboriginal or Torres Strait Islander cultural heritage site points recorded in your specific search area.

There are no Aboriginal or Torres Strait Islander cultural heritage site polygons recorded in your specific search area.

Cultural Heritage Party/ies for the area:

Reference No.	Federal Court No.	Name	Contact Details
QCD2017/003 DET	QUD101/2009	Bigambul People Part B	Bigambul Native Title Aboriginal Corporation RNTBC PO Box 603 Cannon Hill QLD 4170 Phone: (07) 3890 2624 Email: enquiries@bigambul.com.au

There are no Cultural Heritage Bodies recorded in your specific search area.

There are no Cultural Heritage Management Plans recorded in your specific search area.

There are no Designated Landscape Areas (DLA) recorded in your specific search area.

There are no Registered Cultural Heritage Study Areas recorded in your specific search area.

There are no National Heritage Areas (Indigenous values) recorded in your specific search area.

Cultural Heritage Database and Register Search Report

Glossary

Cultural Heritage Body: An entity registered under Part 4 of the Cultural Heritage Acts as an Aboriginal or Torres Strait Islander cultural heritage body for an area. The purpose of a cultural heritage body is to:

- identify the Aboriginal or Torres Strait Islander parties for an area
- serve as the first point of contact for cultural heritage matters.

Cultural Heritage Management Plan (CHMP): An agreement between a land user (sponsor) and Traditional Owners (endorsed party) developed under Part 7 of the Cultural Heritage Acts. The CHMP explains how land use activities can be managed to avoid or minimise harm to Aboriginal or Torres Strait Islander cultural heritage.

Cultural Heritage Party: Refers to a native title party for an area. A native title party is defined as:

- Registered native title holders (where native title has been recognised by the Federal Court of Australia).
- Registered native title claimants (whose native title claims are currently before the Federal Court of Australia).
- Previously registered native title claimants (the 'last claim standing') are native title claims that are no longer active and have been removed from the Register of Native Title Claims administered by the National Native Title Tribunal. Previously registered native title claimants will continue to be the native title party for that area providing:
 - o there is no other registered native title claimant for the area; and
 - o there is not, and never has been, a registered native title holder for the area.

The native title party maintains this status within the external boundaries of the claim even if native title has been extinguished.

Cultural heritage site points (pre 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **before** 1 July 2015.

Cultural heritage site points (post 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **after** 1 July 2015.

Cultural heritage site points (post 2015 mitigated): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data after 1 July 2015 where the recorder has advised the department that the site has been mitigated.

Cultural heritage site polygons: Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as a polygon.

Designated Landscape Areas (DLA): Under the repealed *Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987*, an area was declared a 'designated landscape area' (DLA) if it was deemed necessary or desirable for it to be preserved or to regulate access.

Indigenous Protected Areas (IPA): Areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government. For further information about IPAs visit <https://www.environment.gov.au/land/indigenous-protected-areas>

National Heritage Areas (Indigenous values): Places listed on the National Heritage List for their outstanding heritage significance to Australia and are protected under the Environment Protection and Biodiversity Conservation Act 1999. For further information about the National Heritage List visit <https://www.environment.gov.au/heritage/about/national>

Registered Cultural Heritage Study Areas: Comprehensive studies of Aboriginal and or Torres Strait Islander cultural heritage in an area conducted under Part 6 of the Cultural Heritage Acts for the purpose of recording the findings of

Cultural Heritage Database and Register Search Report

the study on the register.

Traditional Use of Marine Resources Agreement (TUMRA): Areas subject to agreement between Great Barrier Reef Traditional Owners and the Australian and Queensland governments on the management of traditional use activities on their sea country. For further information about TUMRAs visit <https://www.gbrmpa.gov.au/our-partners/traditional-owners/traditional-use-of-marine-resources-agreements>

World Heritage Areas: Places inscribed on the World Heritage List pursuant to the World Heritage Convention adopted by the United Nations Education, Scientific and Cultural Organisation (UNESCO) and are protected under the [Environment Protection and Biodiversity Conservation Act 1999](#). For further information about World Heritage places in Queensland visit <https://parks.des.qld.gov.au/management/managed-areas/world-heritage-areas>

Disclaimer: *The Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships is the custodian of spatial data and information provided by various third parties for inclusion in the Aboriginal and Torres Strait Islander cultural heritage online portal. This includes spatial data provided by the National Native Title Tribunal and Aboriginal and Torres Strait Islander parties. Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships is not responsible for the accuracy of information provided by third parties or any errors in this search report arising from such information.*

Cultural Heritage Database and Register Search Report

Search report reference number: 118557

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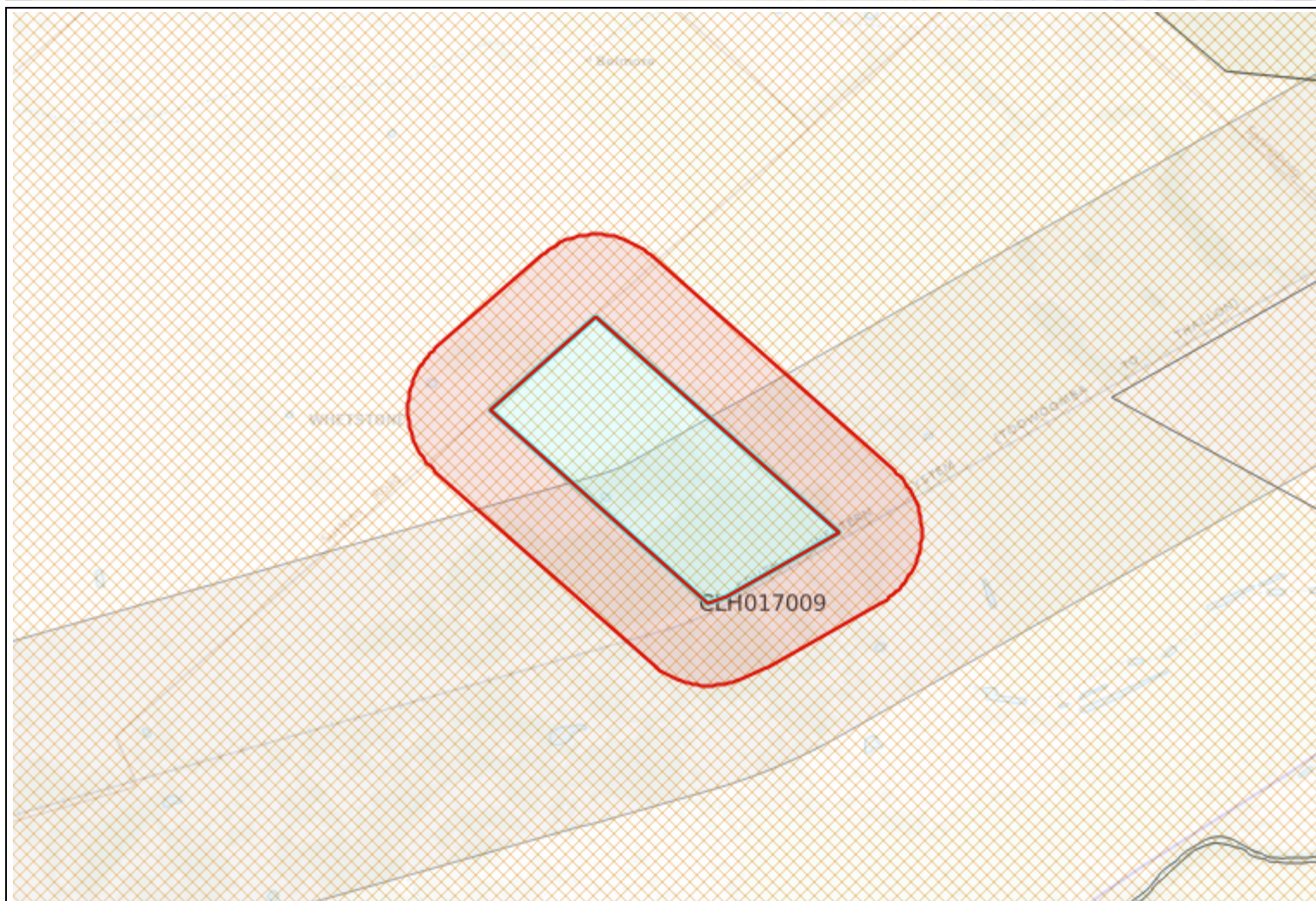
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The extent to which the person has complied with Cultural Heritage Duty of Care Guidelines and the extent the person consulted Aboriginal or Torres Strait Islander Parties about carrying out the activity – and the results of the consultation – are factors a court may consider when determining if a land user has complied with the cultural heritage duty of care.

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Cultural Heritage Database and Register Search Report



LEGEND

-  Parties
-  Bodies
-  CHMPs
-  Study Areas
-  DLAs

Cultural Heritage Sites

-  Pre 1/7/2015 points
-  Post 1/7/2015 points
-  Post 1/7/2015 points (mitigated)
-  Area

Reference Number: 118557

Search Type: Lot/Plan

Lot: 53

Plan: MH233

Shire: Goondiwindi Regional

Buffer Distance: 500m

Map Projection: Geographic Latitude & Longitude (GDA2020).

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1:36,486
Metres 500 1,000 1,500

LOCALITY



Cultural Heritage Database and Register Search Report

There are no Aboriginal or Torres Strait Islander cultural heritage site points recorded in your specific search area.

There are no Aboriginal or Torres Strait Islander cultural heritage site polygons recorded in your specific search area.

Cultural Heritage Party/ies for the area:

Reference No.	Federal Court No.	Name	Contact Details
QCD2017/003 DET	QUD101/2009	Bigambul People Part B	Bigambul Native Title Aboriginal Corporation RNTBC PO Box 603 Cannon Hill QLD 4170 Phone: (07) 3890 2624 Email: enquiries@bigambul.com.au

There are no Cultural Heritage Bodies recorded in your specific search area.

Cultural Heritage Management Plans (CHMPs) for the area:

Departmental Reference No.	Project	Sponsor	Party	Registration Date
CLH017009	ARTC Inland Rail Programme Project	ARTC Inland Rail	Bigambul People	Apr 9, 2018

There are no Designated Landscape Areas (DLA) recorded in your specific search area.

There are no Registered Cultural Heritage Study Areas recorded in your specific search area.

There are no National Heritage Areas (Indigenous values) recorded in your specific search area.

Cultural Heritage Database and Register Search Report

Glossary

Cultural Heritage Body: An entity registered under Part 4 of the Cultural Heritage Acts as an Aboriginal or Torres Strait Islander cultural heritage body for an area. The purpose of a cultural heritage body is to:

- identify the Aboriginal or Torres Strait Islander parties for an area
- serve as the first point of contact for cultural heritage matters.

Cultural Heritage Management Plan (CHMP): An agreement between a land user (sponsor) and Traditional Owners (endorsed party) developed under Part 7 of the Cultural Heritage Acts. The CHMP explains how land use activities can be managed to avoid or minimise harm to Aboriginal or Torres Strait Islander cultural heritage.

Cultural Heritage Party: Refers to a native title party for an area. A native title party is defined as:

- Registered native title holders (where native title has been recognised by the Federal Court of Australia).
- Registered native title claimants (whose native title claims are currently before the Federal Court of Australia).
- Previously registered native title claimants (the 'last claim standing') are native title claims that are no longer active and have been removed from the Register of Native Title Claims administered by the National Native Title Tribunal. Previously registered native title claimants will continue to be the native title party for that area providing:
 - o there is no other registered native title claimant for the area; and
 - o there is not, and never has been, a registered native title holder for the area.

The native title party maintains this status within the external boundaries of the claim even if native title has been extinguished.

Cultural heritage site points (pre 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **before** 1 July 2015.

Cultural heritage site points (post 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **after** 1 July 2015.

Cultural heritage site points (post 2015 mitigated): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data after 1 July 2015 where the recorder has advised the department that the site has been mitigated.

Cultural heritage site polygons: Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as a polygon.

Designated Landscape Areas (DLA): Under the repealed *Cultural Record (Landscapes Queensland and Queensland Estate) Act 1987*, an area was declared a 'designated landscape area' (DLA) if it was deemed necessary or desirable for it to be preserved or to regulate access.

Indigenous Protected Areas (IPA): Areas of land and sea managed by Indigenous groups as protected areas for biodiversity conservation through voluntary agreements with the Australian Government. For further information about IPAs visit <https://www.environment.gov.au/land/indigenous-protected-areas>

National Heritage Areas (Indigenous values): Places listed on the National Heritage List for their outstanding heritage significance to Australia and are protected under the Environment Protection and Biodiversity Conservation Act 1999. For further information about the National Heritage List visit <https://www.environment.gov.au/heritage/about/national>

Registered Cultural Heritage Study Areas: Comprehensive studies of Aboriginal and or Torres Strait Islander cultural heritage in an area conducted under Part 6 of the Cultural Heritage Acts for the purpose of recording the findings of

Cultural Heritage Database and Register Search Report

the study on the register.

Traditional Use of Marine Resources Agreement (TUMRA): Areas subject to agreement between Great Barrier Reef Traditional Owners and the Australian and Queensland governments on the management of traditional use activities on their sea country. For further information about TUMRAs visit <https://www.gbrmpa.gov.au/our-partners/traditional-owners/traditional-use-of-marine-resources-agreements>

World Heritage Areas: Places inscribed on the World Heritage List pursuant to the World Heritage Convention adopted by the United Nations Education, Scientific and Cultural Organisation (UNESCO) and are protected under the [Environment Protection and Biodiversity Conservation Act 1999](#). For further information about World Heritage places in Queensland visit <https://parks.des.qld.gov.au/management/managed-areas/world-heritage-areas>

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Cultural Heritage Database and Register Search Report

Search report reference number: 118557

The Aboriginal and Torres Strait Islander Cultural Heritage Database (cultural heritage database) and Aboriginal and Torres Strait Islander Cultural Heritage Register (cultural heritage register) have been searched in accordance with the location description provided, and the results are set out in this report.

The cultural heritage database is intended to be a research and planning tool to help Aboriginal and Torres Strait Islander parties, researchers, and other persons in their consideration of the cultural heritage values of particular areas.

The cultural heritage register is intended to be a depository for information for consideration for land use and land use planning, and a research and planning tool to help people in their consideration of the Aboriginal cultural heritage values of particular objects and areas.

Aboriginal or Torres Strait Islander cultural heritage which may exist within the search area is protected under the [Aboriginal Cultural Heritage Act 2003](#) and the [Torres Strait Islander Cultural Heritage Act 2003](#) (the Cultural Heritage Acts), even if the Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (the Department) has no records relating to it.

The placing of information on the database is not intended to be conclusive about whether the information is up-to-date, comprehensive or otherwise accurate.

Under the Cultural Heritage Acts, a person carrying out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal or Torres Strait Islander cultural heritage. This applies whether or not such places are recorded in an official register and whether or not they are located on private land.

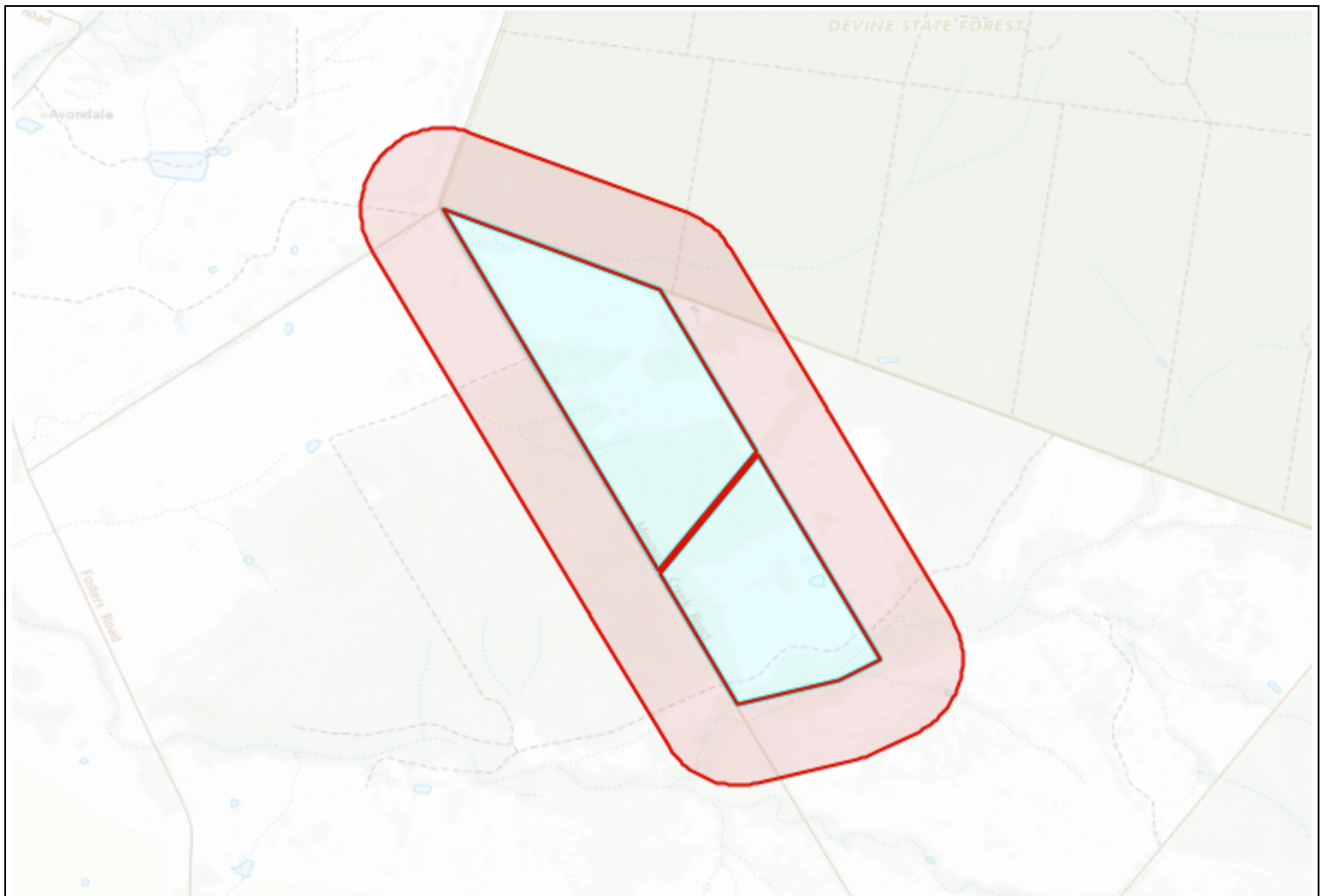
Please refer to the Department website <https://www.qld.gov.au/firstnations/environment-land-use-native-title/cultural-heritage/cultural-heritage-duty-of-care> to obtain a copy of the gazetted Cultural Heritage Duty of Care Guidelines, which set out reasonable and practicable measure for meeting the cultural heritage duty of care.

In order to meet your duty of care, any land-use activity within the vicinity of recorded cultural heritage should not proceed without the agreement of the Aboriginal or Torres Strait Islander Party for the area, or by developing a Cultural Heritage Management Plan under Part 7 of the Cultural Heritage Acts.

The extent to which the person has complied with Cultural Heritage Duty of Care Guidelines and the extent the person consulted Aboriginal or Torres Strait Islander Parties about carrying out the activity – and the results of the consultation – are factors a court may consider when determining if a land user has complied with the cultural heritage duty of care.

Should you have any further queries, please do not hesitate to contact the department via email: cultural.heritage@dssdsip.qld.gov.au or telephone: 1300 378 401.



Cultural Heritage Database and Register Search Report



LEGEND

-  Parties
-  Bodies
-  CHMPs
-  Study Areas
-  DLAs

Cultural Heritage Sites

-  Pre 1/7/2015 points
-  Post 1/7/2015 points
-  Post 1/7/2015 points (mitigated)
-  Area

Reference Number: 118557

Search Type: Lot/Plan

Lot: 116

Plan: BNT467

Shire: Goondiwindi Regional

Buffer Distance: 500m

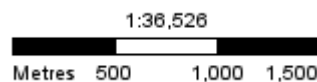
Map Projection: Geographic Latitude & Longitude (GDA2020).

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Map produced by the Cultural Heritage Unit, DSDSATSIP, Brisbane, Queensland, Australia on 24 August 2022.



LOCALITY





Cultural Heritage Database and Register Search Report

There are no Aboriginal or Torres Strait Islander cultural heritage site points recorded in your specific search area.

There are no Aboriginal or Torres Strait Islander cultural heritage site polygons recorded in your specific search area.

There are no Cultural Heritage Parties recorded in your specific search area.

There are no Cultural Heritage Bodies recorded in your specific search area.

There are no Cultural Heritage Management Plans recorded in your specific search area.

There are no Designated Landscape Areas (DLA) recorded in your specific search area.

There are no Registered Cultural Heritage Study Areas recorded in your specific search area.

There are no National Heritage Areas (Indigenous values) recorded in your specific search area.

Cultural Heritage Database and Register Search Report

Glossary

Cultural Heritage Body: An entity registered under Part 4 of the Cultural Heritage Acts as an Aboriginal or Torres Strait Islander cultural heritage body for an area. The purpose of a cultural heritage body is to:

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Cultural heritage site points (post 2015 mitigated): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data after 1 July 2015 where the recorder has advised the department that the site has been mitigated.

Cultural heritage site polygons: Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as a polygon.

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National Heritage Areas (Indigenous values): Places listed on the National Heritage List for their outstanding heritage significance to Australia and are protected under the Environment Protection and Biodiversity Conservation Act 1999. For further information about the National Heritage List visit <https://www.environment.gov.au/heritage/about/national>

Registered Cultural Heritage Study Areas: Comprehensive studies of Aboriginal and or Torres Strait Islander cultural heritage in an area conducted under Part 6 of the Cultural Heritage Acts for the purpose of recording the findings of

Cultural Heritage Database and Register Search Report

the study on the register.

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World Heritage Areas: Places inscribed on the World Heritage List pursuant to the World Heritage Convention adopted by the United Nations Education, Scientific and Cultural Organisation (UNESCO) and are protected under the [Environment Protection and Biodiversity Conservation Act 1999](#). For further information about World Heritage places in Queensland visit <https://parks.des.qld.gov.au/management/managed-areas/world-heritage-areas>

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Cultural Heritage Database and Register Search Report

Search report reference number: 120242

The Aboriginal and Torres Strait Islander Cultural Heritage Database (cultural heritage database) and Aboriginal and Torres Strait Islander Cultural Heritage Register (cultural heritage register) have been searched in accordance with the location description provided, and the results are set out in this report.

The cultural heritage database is intended to be a research and planning tool to help Aboriginal and Torres Strait Islander parties, researchers, and other persons in their consideration of the cultural heritage values of particular areas.

The cultural heritage register is intended to be a depository for information for consideration for land use and land use planning, and a research and planning tool to help people in their consideration of the Aboriginal cultural heritage values of particular objects and areas.

Aboriginal or Torres Strait Islander cultural heritage which may exist within the search area is protected under the [Aboriginal Cultural Heritage Act 2003](#) and the [Torres Strait Islander Cultural Heritage Act 2003](#) (the Cultural Heritage Acts), even if the Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (the Department) has no records relating to it.

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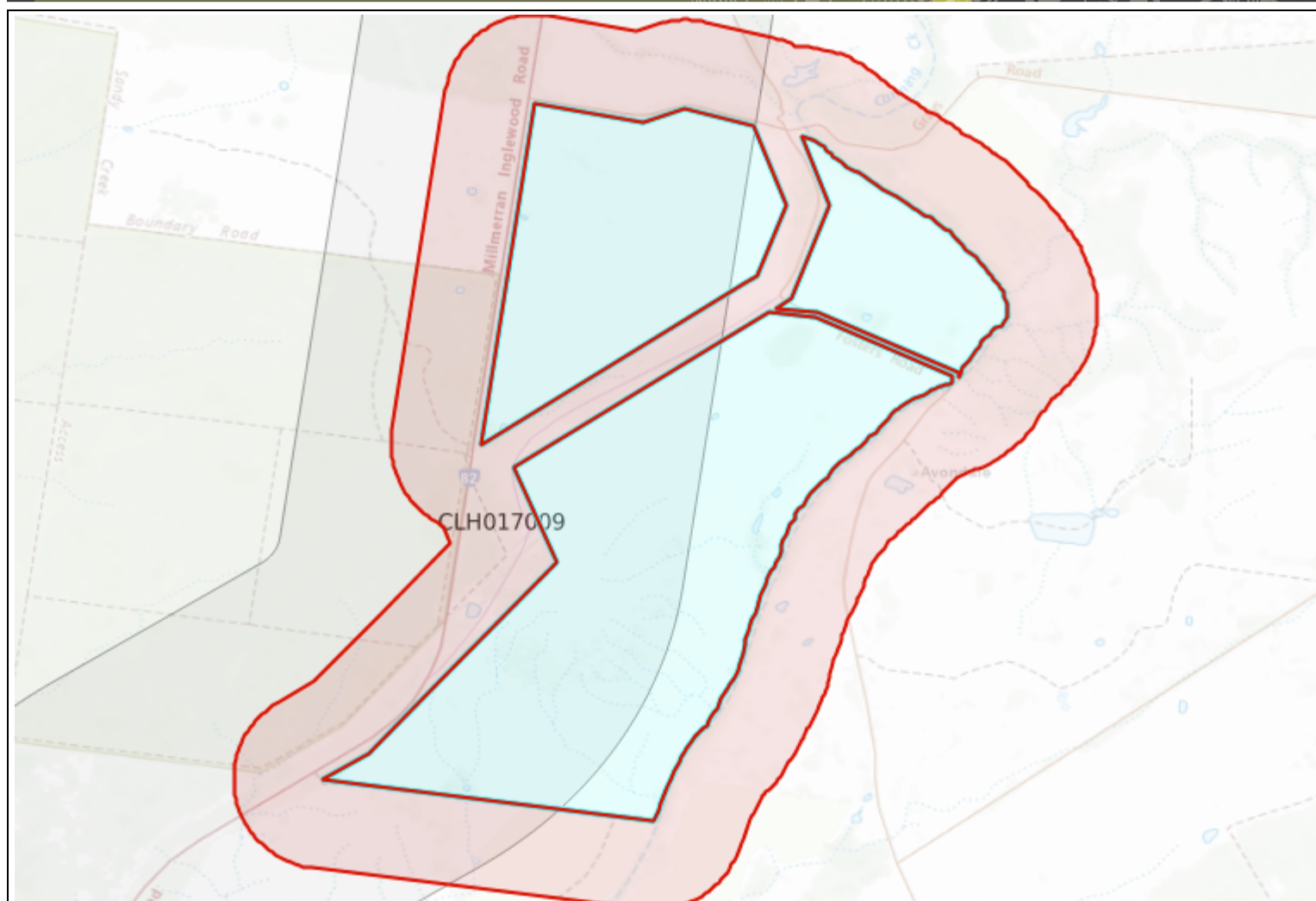
Please refer to the Department website <https://www.qld.gov.au/firstnations/environment-land-use-native-title/cultural-heritage/cultural-heritage-duty-of-care> to obtain a copy of the gazetted Cultural Heritage Duty of Care Guidelines, which set out reasonable and practicable measure for meeting the cultural heritage duty of care.

In order to meet your duty of care, any land-use activity within the vicinity of recorded cultural heritage should not proceed without the agreement of the Aboriginal or Torres Strait Islander Party for the area, or by developing a Cultural Heritage Management Plan under Part 7 of the Cultural Heritage Acts.

The extent to which the person has complied with Cultural Heritage Duty of Care Guidelines and the extent the person consulted Aboriginal or Torres Strait Islander Parties about carrying out the activity – and the results of the consultation – are factors a court may consider when determining if a land user has complied with the cultural heritage duty of care.

Should you have any further queries, please do not hesitate to contact the department via email: cultural.heritage@dssdsatip.qld.gov.au or telephone: 1300 378 401.




Cultural Heritage Database and Register Search Report



LEGEND

-  Parties
-  Bodies
-  CHMPs
-  Study Areas
-  DLAs

Cultural Heritage Sites

-  Pre 1/7/2015 points
-  Post 1/7/2015 points
-  Post 1/7/2015 points (mitigated)
-  Area

Reference Number: 120242

Search Type: Lot/Plan

Lot: 102

Plan: MH643

Shire: Goondiwindi Regional

Buffer Distance: 500m

Map Projection: Geographic Latitude & Longitude (GDA2020).

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Map produced by the Cultural Heritage Unit, DSDSATSIP, Brisbane, Queensland, Australia on 19 September 2022.



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LOCALITY



Cultural Heritage Database and Register Search Report

There are no Aboriginal or Torres Strait Islander cultural heritage site points recorded in your specific search area.

There are no Aboriginal or Torres Strait Islander cultural heritage site polygons recorded in your specific search area.

There are no Cultural Heritage Parties recorded in your specific search area.

There are no Cultural Heritage Bodies recorded in your specific search area.

Cultural Heritage Management Plans (CHMPs) for the area:

Departmental Reference No.	Project	Sponsor	Party	Registration Date
CLH017009	ARTC Inland Rail Programme Project	ARTC Inland Rail	ENDORSED PARTY S35(7)	Oct 4, 2018

There are no Designated Landscape Areas (DLA) recorded in your specific search area.

There are no Registered Cultural Heritage Study Areas recorded in your specific search area.

There are no National Heritage Areas (Indigenous values) recorded in your specific search area.

Cultural Heritage Database and Register Search Report

Glossary

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Cultural Heritage Database and Register Search Report

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Cultural Heritage Database and Register Search Report

Search report reference number: 118557

The Aboriginal and Torres Strait Islander Cultural Heritage Database (cultural heritage database) and Aboriginal and Torres Strait Islander Cultural Heritage Register (cultural heritage register) have been searched in accordance with the location description provided, and the results are set out in this report.

The cultural heritage database is intended to be a research and planning tool to help Aboriginal and Torres Strait Islander parties, researchers, and other persons in their consideration of the cultural heritage values of particular areas.

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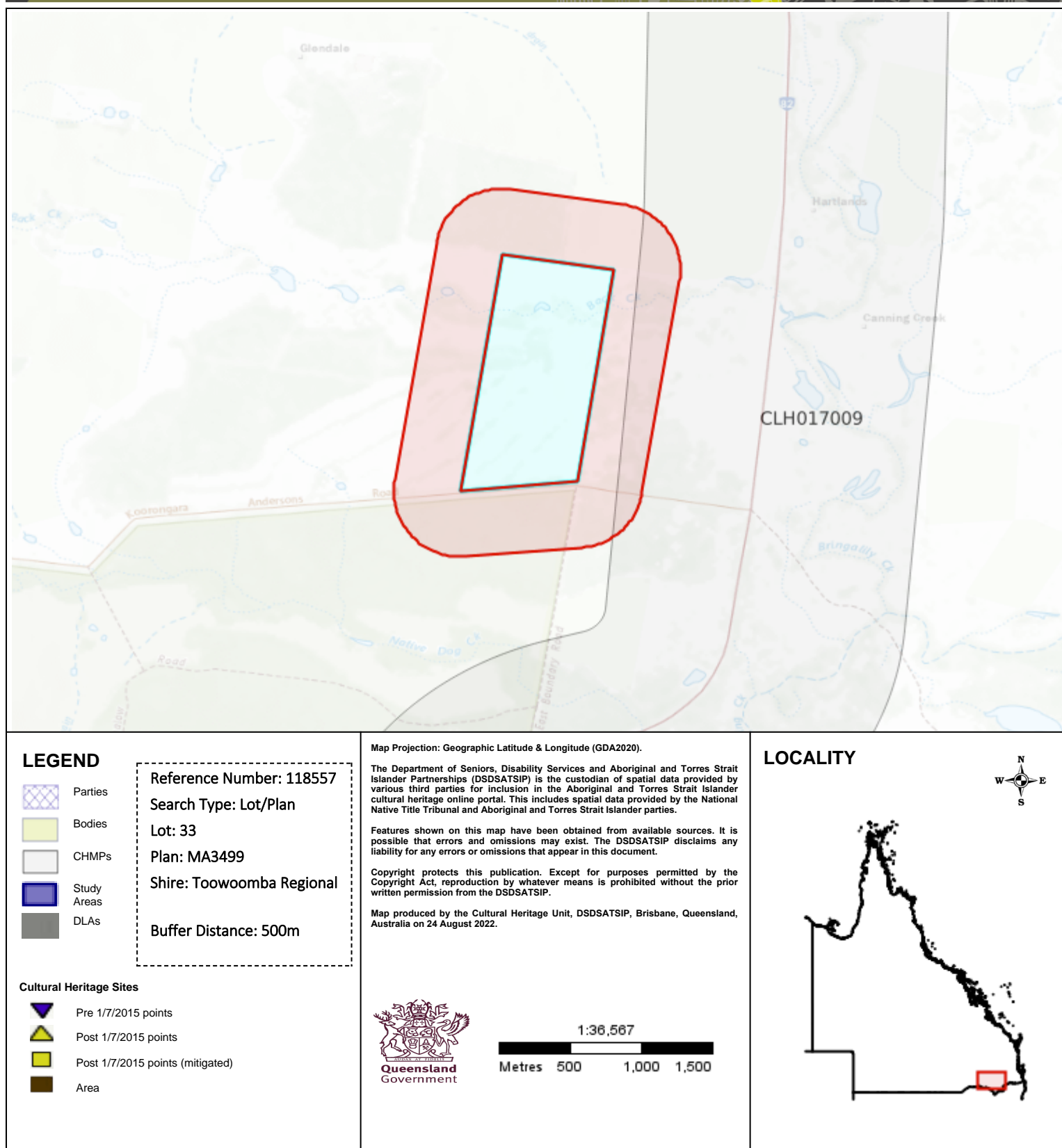
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Cultural Heritage Database and Register Search Report



Cultural Heritage Database and Register Search Report

There are no Aboriginal or Torres Strait Islander cultural heritage site points recorded in your specific search area.

There are no Aboriginal or Torres Strait Islander cultural heritage site polygons recorded in your specific search area.

There are no Cultural Heritage Parties recorded in your specific search area.

There are no Cultural Heritage Bodies recorded in your specific search area.

Cultural Heritage Management Plans (CHMPs) for the area:

Departmental Reference No.	Project	Sponsor	Party	Registration Date
CLH017009	ARTC Inland Rail Programme Project	ARTC Inland Rail	ENDORSED PARTY S35(7)	Oct 4, 2018

There are no Designated Landscape Areas (DLA) recorded in your specific search area.

There are no Registered Cultural Heritage Study Areas recorded in your specific search area.

There are no National Heritage Areas (Indigenous values) recorded in your specific search area.

Cultural Heritage Database and Register Search Report

Glossary

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Cultural Heritage Database and Register Search Report

Search report reference number: 120530

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Aboriginal or Torres Strait Islander cultural heritage which may exist within the search area is protected under the [Aboriginal Cultural Heritage Act 2003](#) and the [Torres Strait Islander Cultural Heritage Act 2003](#) (the Cultural Heritage Acts), even if the Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (the Department) has no records relating to it.

The placing of information on the database is not intended to be conclusive about whether the information is up-to-date, comprehensive or otherwise accurate.

Under the Cultural Heritage Acts, a person carrying out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal or Torres Strait Islander cultural heritage. This applies whether or not such places are recorded in an official register and whether or not they are located on private land.

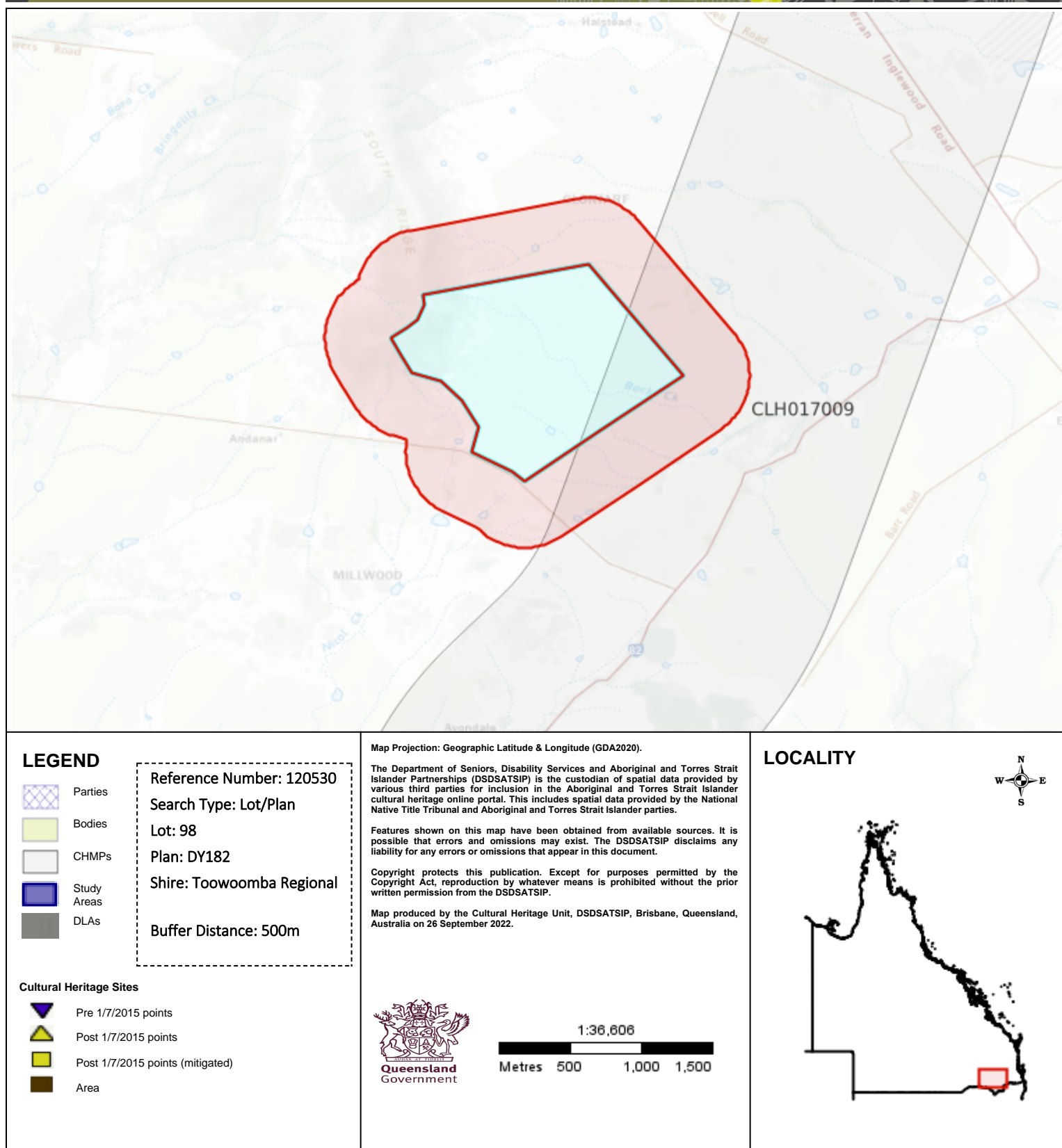
Please refer to the Department website <https://www.qld.gov.au/firstnations/environment-land-use-native-title/cultural-heritage/cultural-heritage-duty-of-care> to obtain a copy of the gazetted Cultural Heritage Duty of Care Guidelines, which set out reasonable and practicable measure for meeting the cultural heritage duty of care.

In order to meet your duty of care, any land-use activity within the vicinity of recorded cultural heritage should not proceed without the agreement of the Aboriginal or Torres Strait Islander Party for the area, or by developing a Cultural Heritage Management Plan under Part 7 of the Cultural Heritage Acts.

The extent to which the person has complied with Cultural Heritage Duty of Care Guidelines and the extent the person consulted Aboriginal or Torres Strait Islander Parties about carrying out the activity – and the results of the consultation – are factors a court may consider when determining if a land user has complied with the cultural heritage duty of care.

Should you have any further queries, please do not hesitate to contact the department via email: cultural.heritage@dssdsip.qld.gov.au or telephone: 1300 378 401.

Cultural Heritage Database and Register Search Report



Cultural Heritage Database and Register Search Report

There are no Aboriginal or Torres Strait Islander cultural heritage site points recorded in your specific search area.

There are no Aboriginal or Torres Strait Islander cultural heritage site polygons recorded in your specific search area.

There are no Cultural Heritage Parties recorded in your specific search area.

There are no Cultural Heritage Bodies recorded in your specific search area.

Cultural Heritage Management Plans (CHMPs) for the area:

Departmental Reference No.	Project	Sponsor	Party	Registration Date
CLH017009	Approved CHMP - ARTC Inland Rail Programme Project	ARTC Inland Rail	ENDORSED PARTY S35(7)	Oct 4, 2018

There are no Designated Landscape Areas (DLA) recorded in your specific search area.

There are no Registered Cultural Heritage Study Areas recorded in your specific search area.

There are no National Heritage Areas (Indigenous values) recorded in your specific search area.

Cultural Heritage Database and Register Search Report

Glossary

Cultural Heritage Body: An entity registered under Part 4 of the Cultural Heritage Acts as an Aboriginal or Torres Strait Islander cultural heritage body for an area. The purpose of a cultural heritage body is to:

- identify the Aboriginal or Torres Strait Islander parties for an area
- serve as the first point of contact for cultural heritage matters.

Cultural Heritage Management Plan (CHMP): An agreement between a land user (sponsor) and Traditional Owners (endorsed party) developed under Part 7 of the Cultural Heritage Acts. The CHMP explains how land use activities can be managed to avoid or minimise harm to Aboriginal or Torres Strait Islander cultural heritage.

Cultural Heritage Party: Refers to a native title party for an area. A native title party is defined as:

- Registered native title holders (where native title has been recognised by the Federal Court of Australia).
- Registered native title claimants (whose native title claims are currently before the Federal Court of Australia).
- Previously registered native title claimants (the 'last claim standing') are native title claims that are no longer active and have been removed from the Register of Native Title Claims administered by the National Native Title Tribunal. Previously registered native title claimants will continue to be the native title party for that area providing:
 - o there is no other registered native title claimant for the area; and
 - o there is not, and never has been, a registered native title holder for the area.

The native title party maintains this status within the external boundaries of the claim even if native title has been extinguished.

Cultural heritage site points (pre 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **before** 1 July 2015.

Cultural heritage site points (post 2015): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data **after** 1 July 2015.

Cultural heritage site points (post 2015 mitigated): Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as point data after 1 July 2015 where the recorder has advised the department that the site has been mitigated.

Cultural heritage site polygons: Aboriginal and Torres Strait Islander cultural heritage sites and places recorded in the database as a polygon.

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Cultural Heritage Database and Register Search Report

the study on the register.

Traditional Use of Marine Resources Agreement (TUMRA): Areas subject to agreement between Great Barrier Reef Traditional Owners and the Australian and Queensland governments on the management of traditional use activities on their sea country. For further information about TUMRAs visit <https://www.gbrmpa.gov.au/our-partners/traditional-owners/traditional-use-of-marine-resources-agreements>

World Heritage Areas: Places inscribed on the World Heritage List pursuant to the World Heritage Convention adopted by the United Nations Education, Scientific and Cultural Organisation (UNESCO) and are protected under the [Environment Protection and Biodiversity Conservation Act 1999](#). For further information about World Heritage places in Queensland visit <https://parks.des.qld.gov.au/management/managed-areas/world-heritage-areas>

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Cultural Heritage Database and Register Search Report

Search report reference number: 118568

The Aboriginal and Torres Strait Islander Cultural Heritage Database (cultural heritage database) and Aboriginal and Torres Strait Islander Cultural Heritage Register (cultural heritage register) have been searched in accordance with the location description provided, and the results are set out in this report.

The cultural heritage database is intended to be a research and planning tool to help Aboriginal and Torres Strait Islander parties, researchers, and other persons in their consideration of the cultural heritage values of particular areas.

The cultural heritage register is intended to be a depository for information for consideration for land use and land use planning, and a research and planning tool to help people in their consideration of the Aboriginal cultural heritage values of particular objects and areas.

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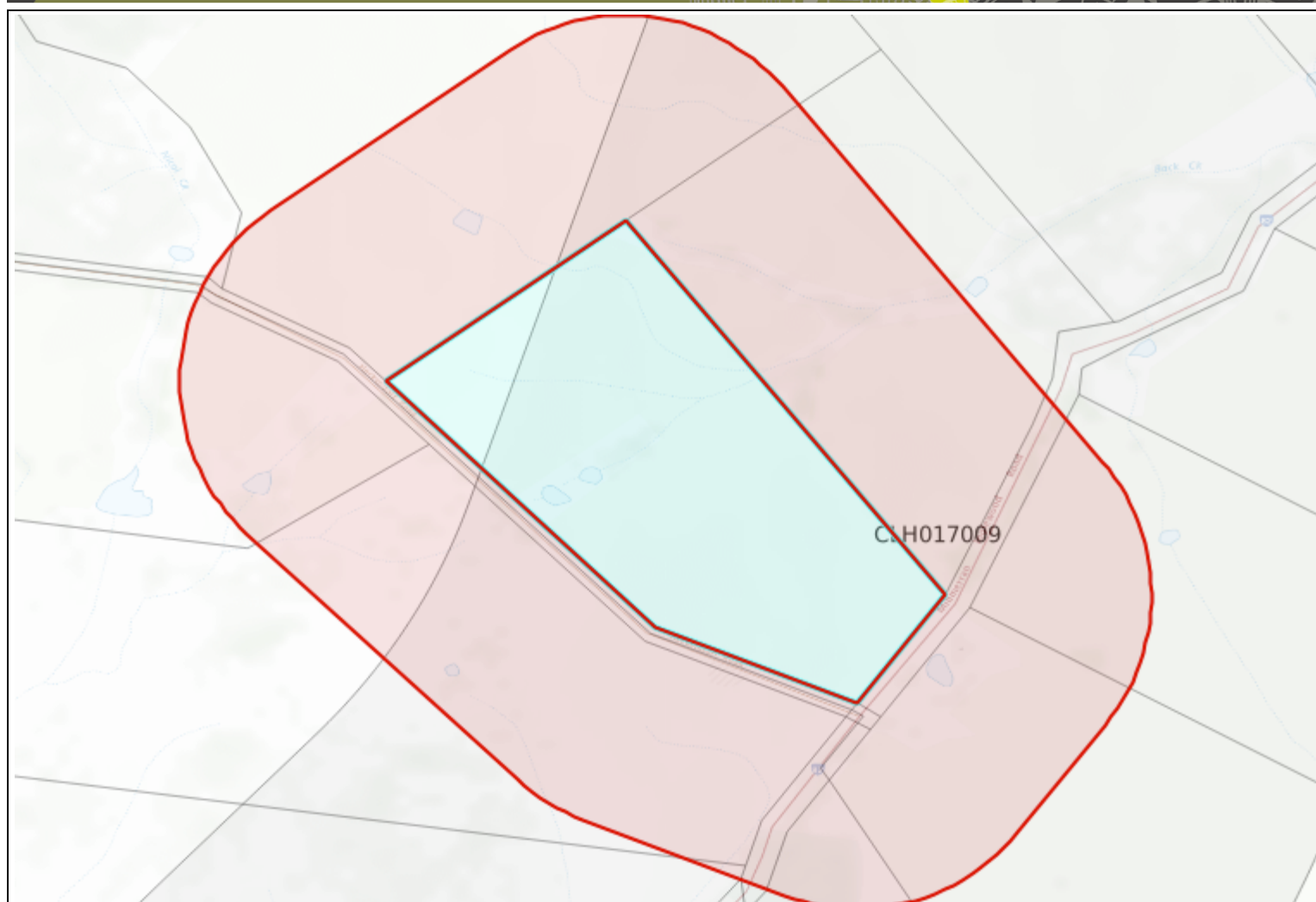
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Cultural Heritage Database and Register Search Report



LEGEND

- Parties
- Bodies
- CHMPs
- Study Areas
- DLAs

Cultural Heritage Sites

- Pre 1/7/2015 points
- Post 1/7/2015 points
- Post 1/7/2015 points (mitigated)
- Area

Reference Number: 118568

Search Type: Lot/Plan

Lot: 111

Plan: DY182

Shire: Toowoomba Regional

Buffer Distance: 500m

Map Projection: Geographic Latitude & Longitude (GDA2020).

The Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (DSDSATSIP) is the custodian of spatial data provided by various third parties for inclusion in the Aboriginal and Torres Strait Islander cultural heritage online portal. This includes spatial data provided by the National Native Title Tribunal and Aboriginal and Torres Strait Islander parties.

Features shown on this map have been obtained from available sources. It is possible that errors and omissions may exist. The DSDSATSIP disclaims any liability for any errors or omissions that appear in this document.

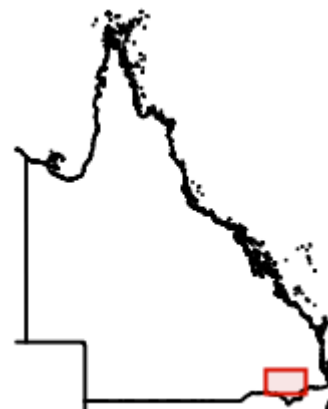
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Map produced by the Cultural Heritage Unit, DSDSATSIP, Brisbane, Queensland, Australia on 24 August 2022.



1:14,561
Metres 200 400 600

LOCALITY



Cultural Heritage Database and Register Search Report

There are no Aboriginal or Torres Strait Islander cultural heritage site points recorded in your specific search area.

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Cultural Heritage Management Plans (CHMPs) for the area:

Departmental Reference No.	Project	Sponsor	Party	Registration Date
CLH017009	ARTC Inland Rail Programme Project	ARTC Inland Rail	ENDORSED PARTY S35(7)	Oct 4, 2018

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Cultural Heritage Database and Register Search Report

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APPENDIX AD

Borrow Pits—Supporting Technical Information

Appendix E Air quality laboratory analysis results

BORDER TO GOWRIE REVISED DRAFT ENVIRONMENTAL IMPACT STATEMENT

CERTIFICATE OF ANALYSIS

Work Order	: EB2237885	Page	: 1 of 3
Client	: ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)	Laboratory	: Environmental Division Brisbane
Contact	: MR JOSEPH JAMES	Contact	: Sally Mitchell
Address	: LEVEL 9 260 QUEEN STREET BRISBANE CITY 4000	Address	: 2 Byth Street Stafford QLD Australia 4053
Telephone	: +61 03 9696 8011	Telephone	: +61-7-3243 7222
Project	: 0660106 ARTC Borrow Bit	Date Samples Received	: 15-Dec-2022 15:10
Order number	: ----	Date Analysis Commenced	: 20-Dec-2022
C-O-C number	: ----	Issue Date	: 23-Dec-2022 09:36
Sampler	: SEAN MUIRHEAD		
Site	: ----		
Quote number	: EN/114		
No. of samples received	: 2		
No. of samples analysed	: 2		



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, unless the sampling was conducted by ALS. 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 ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.
- Analysis as per AS 3580.10.1-2016. Samples passed through 1mm sieve prior to analysis. Period Sampled: 15/11/2022 - 15/12/2022.
- Dust analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in deposition units e.g. g/m²/month as sampling data was provided by the client.
- For dust analysis, the Limit of Reporting (LOR) referenced in the reports for deposited matter parameters represents the reporting increment rather than reporting limit.



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

				Sample ID	DDG - A	DDG - B			
				Sampling date / time	15-Dec-2022 00:00	15-Dec-2022 00:00			
Compound	CAS Number	LOR	Unit		EB2237885-001	EB2237885-002			
					Result	Result			
EA120: Ash Content									
Ash Content	----	0.1	g/m ² .month		0.9	2.0	----	----	----
Ash Content (mg)	----	2	mg		16	35	----	----	----
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m ² .month		0.8	1.5	----	----	----
Combustible Matter (mg)	----	2	mg		14	26	----	----	----
EA139: Total Soluble Matter									
Total Soluble Matter	----	0.1	g/m ² .month		2.7	4.3	----	----	----
Total Soluble Matter (mg)	----	2	mg		49	76	----	----	----
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m ² .month		1.7	3.5	----	----	----
Total Insoluble Matter (mg)	----	2	mg		30	61	----	----	----
EA142: Total Solids									
Total Solids	----	0.1	g/m ² .month		4.4	7.8	----	----	----
Total Solids (mg)	----	2	mg		79	137	----	----	----

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: EB2237885	Page	: 1 of 4
Client	: ENVIRONMENTAL RESOURCES MANAGEMENT (ERM)	Laboratory	: Environmental Division Brisbane
Contact	: MR JOSEPH JAMES	Telephone	: +61-7-3243 7222
Project	: 0660106 ARTC Borrow Bit	Date Samples Received	: 15-Dec-2022
Site	: ----	Issue Date	: 23-Dec-2022
Sampler	: SEAN MUIRHEAD	No. of samples received	: 2
Order number	: ----	No. of samples analysed	: 2

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

- **NO Analysis Holding Time Outliers exist.**

Outliers : Frequency of Quality Control Samples

- **NO Quality Control Sample Frequency Outliers exist.**



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: **AIR**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA120: Ash Content								
Dust Gauge (Bottle) - Copper Sulfate (EA120)	DDG - A, DDG - B	15-Dec-2022	----	----	----	22-Dec-2022	14-Jan-2023	✔
EA125: Combustible Matter								
Dust Gauge (Bottle) - Copper Sulfate (EA125)	DDG - A, DDG - B	15-Dec-2022	----	----	----	22-Dec-2022	14-Jan-2023	✔
EA139: Total Soluble Matter								
Dust Gauge (Bottle) - Copper Sulfate (EA139)	DDG - A, DDG - B	15-Dec-2022	----	----	----	22-Dec-2022	14-Jan-2023	✔
EA141: Total Insoluble Matter								
Dust Gauge (Bottle) - Copper Sulfate (EA141)	DDG - A, DDG - B	15-Dec-2022	----	----	----	22-Dec-2022	14-Jan-2023	✔
EA142: Total Solids								
Dust Gauge (Bottle) - Copper Sulfate (EA142)	DDG - A, DDG - B	15-Dec-2022	----	----	----	22-Dec-2022	14-Jan-2023	✔



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: **AIR**

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)							
Total Insoluble Matter (TIM)	EA141	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Solids (TS)	EA142	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Soluble Matter (SM)	EA139	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Total Insoluble Matter (TIM)	EA141	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Solids (TS)	EA142	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Soluble Matter (SM)	EA139	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
Ash Content (AC)	EA120	AIR	In house: Referenced to AS 3580.10.1. A gravimetric procedure reporting Ash content in deposited dust.
Combustible Matter (CM)	EA125	AIR	In house: Referenced to AS 3580.10.1. A gravimetric procedure reporting Combustible Matter in deposited dust.
Total Soluble Matter (SM)	EA139	AIR	In house: Referenced to AS 3580.10.1. A gravimetric procedure reporting Soluble Solids in deposited dust.
Total Insoluble Matter (TIM)	EA141	AIR	In house: Referenced to AS 3580.10.1. A gravimetric procedure reporting Total Insoluble solids in deposited dust.
Total Solids (TS)	EA142	AIR	In house: Referenced to AS 3580.10.1. A gravimetric procedure reporting Total Solids in deposited dust.