



Assets | Engineering | Environment | Noise | Spatial | Waste

# Preliminary Site Investigation

Lot 500 on Plan 63577, Yilkari WA



Prepared for City of Kalgoorlie-Boulder

June 2018

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**Approval for Release**

Name	Position	File Reference
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**Signature**



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# Executive Summary

Talis Consultants Pty Ltd was commissioned by Tetris Environmental Pty Ltd on behalf of the City of Kalgoorlie-Boulder to undertake a Due Diligence Assessment, from a contamination perspective at Lot 500 on Plan 63577, Yilkari (the Site) within the City of Kalgoorlie-Boulder Western Australia.

The Site comprises an area of approximately 134.9 hectares, located approximately 6.7 km to the south-west of the Kalgoorlie town centre. The City of Kalgoorlie-Boulder intend on leasing the Site from the State of Western Australia, with an intent to sublease the Site which will see it being used for commercial/industrial purposes.

Due to the proposed commercial/industrial land use change, under City of Kalgoorlie-Boulder Town Planning Scheme No.1, the majority of the Site is zoned as *'freight/transport'* with *'Parks and Recreation'* along the southern and eastern boundaries, however, currently still remains an undeveloped *'greenfields site'*, being vacant land with no known former or current potentially contaminating land uses occurring. This was also verified through the review of available online historical aerial imagery dating back to 2000, which highlighted that there have been no apparent significant changes to the Site since at least 2000, with the Site being vacant land, covered in vegetation.

A desktop review included the interrogation of relevant databases, which identified:

- Topographically, the Site is situated between approximately 367 m Australian Height Datum within the north-western portion of the Site and 378 m Australian Height Datum within the north-eastern portion;
- The Site is located outside of any proclaimed surface water areas, however, it is located within a groundwater proclaimed area, and as such, under the Rights in Water and Irrigation Act 1914, a licence is required to alter, or draw groundwater at the Site;
- The Site is not listed as a Registered Aboriginal Heritage or Australian Heritage site. The *Goldfields Water Supply Scheme* water pipeline located directly to the north of the Site is however listed for its National Heritage;
- The Site is not listed as an Ecological Sensitive Area or conservation reserve; and
- The Site was not listed on, or located within the vicinity (less than 1 km) of any other sites listed on the DWER Contaminated Sites Database.

An inspection of the Site undertaken on 19 June 2018 identified that the Site was vacant bushland covered in vegetation described as woodland and scrub. Evidence of minor fly tipping was noted during the inspection, which included whitegoods (washing machine and dryer) and scrap including cardboard, plastic straps and sheet metal fencing. Further to this, several rock stockpiles and soil stockpiles adjacent to 'pits' were noted at the Site, considered likely to be associated with possible prospecting at the Site. Based on the visual assessment, there did not appear to be evidence of contamination at the Site.



Based on the available data pertaining to the historical and current land use, which indicates no known contaminating activities to have occurred, it is considered that the risk to human and ecological health associated with the Site is low.



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## Appendices

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# Glossary

The following abbreviations, chemical symbols and units of measure may appear in the report.

## Acronyms

AHD	Australian Height Datum
ASS	Acid Sulfate Soils
CSM	Conceptual Site Model
COPCs	Contaminants of Potential Concern
DBCA	Department of Biodiversity, Conservation and Attractions
DER	Department of Environment Regulation
DMIRS	Department of Mines, Industry Regulation and Safety
DWER	Department of Water and Environmental Regulation
DoH	Department of Health
DoW	Department of Water
EILs	Ecological Investigation Levels
HILs	Health Investigation Levels
NEPM	National Environment Protection (Assessment of Contamination) Measure
PSI	Preliminary Site Investigation

## Units of Measure

ha	hectare
km	kilometre
L	litre
m AHD	metres Australian Height Datum



## 1 Introduction

Talis Consultants Pty Ltd (Talis) was commissioned by Tetris Environmental Pty Ltd (Tetris) on behalf of the City of Kalgoorlie-Boulder (CoKB) to undertake a Due Diligence Assessment, from a contamination perspective at Lot 500 on Plan 63577, Yilkari (the Site) within the CoKB, Western Australia (WA).

The Site is a '*Greenfields site*', currently undeveloped vacant land which the CoKB seek to lease from the State Government of WA, with the intention of subsequently sub-leasing the Site for commercial/industrial use. Therefore, in order to satisfy the CoKB's pre-lease due diligence, this assessment was undertaken, focusing on potential contamination from the historical and current use of the Site.

### 1.1 Objectives

The objectives of this investigation were to:

- Identify potential contamination associated with the historical and current land use;
- Provide a preliminary assessment of risk, from a contamination perspective; and
- In terms of contamination, identify whether the Site is suitable for the proposed use, or if further investigations would be required to assess potential risks associated with the Site.

### 1.2 Scope of Works

The following scope of works was undertaken to achieve the aforementioned objectives:

- Review of Site history information;
- Undertake relevant database searches;
- Undertake an inspection of the Site;
- Preparation of a preliminary conceptual site model (CSM); and
- Preparation of this report.

## 2 Site Overview

### 2.1 Site Description

The Site is known as Lot 500 on Plan 63577, located within the Yilkari locality of CoKB, WA. The cadastral extents of the Site comprise an area of 1,349,188 m<sup>2</sup> (~134.9 hectares (ha)), with the Site being bound by John Road to the north-east and Great Eastern Highway to the south. The Site is located approximately 6.7 kilometres (km) to the south-west of the Kalgoorlie town centre and approximately 540 km to the north-east of Perth Central Business District (CBD), see Figure 1 and Figure 2.

### 2.2 Current Certificate of Title

A summary of the details contained on the current Certificate of Title (CoT) for the Site are detailed in Table 2-1 below, with a copy of the CoT provided in Appendix A.

**Table 2-1: Certificate of Title**

Description	Details
Land Description	Lot 500 on Deposited Plan 63577
Volume	LR3157
Folio	4
Status Order/Interest	Reserve Under Management Order
Primary Interest Holder	City of Kalgoorlie-Boulder of PO Box 2042, Boulder
Registered	25/05/2006
Local Government	City of Kalgoorlie-Boulder

### 2.3 Local Zoning

Under the CoKB Town Planning Scheme No.1 (District Scheme) (TPS No.1), the majority of the Site is zoned as *'Freight/transport'*, with *'Parks and Recreation'* along the southern and eastern Site boundaries as shown in Figure 3. Under TPS No.1, surrounding land uses are zoned as follows:

- **North:** *'Freight/transport'*;
- **East:** *'General industry'*;
- **South:** *'Freight/transport'*; and
- **West:** *'Rural'*.

### 3 Site History

#### 3.1 Environmental Investigations

Talis is unaware of any environmental investigations, from a contamination perspective, that have previously been completed for the Site.

#### 3.2 Historical Aerial Imagery

A review was undertaken of Landgate’s online historical aerial imagery taken at approximately five-year intervals, dating back to 2000 which is the oldest available historical image online. The details pertaining to the review are summarised in Table 3-1 below, with the aerial photographs presented in Figure 4.

**Table 3-1: Historical Aerial Imagery**

Date	Description
09/04/2000	<p><b>Onsite:</b> The Site appears to be vacant land, with vegetation cover including trees and scrub across the Site with exposed ‘red dirt’ surface. There appears to be numerous manmade meandering tracks across the Site. Several light yellow/white surfaces (possibly small stockpiles) are noted within the vegetation across the western portion of the Site.</p> <p><b>Offsite:</b> The surrounding land uses generally appear to be consistent with the Site, i.e. covered in vegetation including trees and scrub as well as exposed ‘red dirt’. Directly to the north, adjacent to the Site is the water pipeline. To the north-west of the Site, there appears to be several buildings and a residence to the north-east. It also appears that a railway line is located directly adjacent to the west of the Site, veering off towards the north-west and north east of the Site, and a road along the south-eastern boundary (consistent with the existing Great Eastern Highway).</p>
24/11/2006	<p><b>Onsite:</b> There appears to be no significant changes to the Site.</p> <p><b>Offsite:</b> A large pit filled with water is located to the north-west of the Site, it appears to be associated with mining activities. The adjacent site to the east, the western portion of the site has remained unchanged (bushland), however further east, there appears to be a small pond containing water and a small pond and two large ponds appear to be under construction (this has been identified to be the existing <i>Binduli Water Reservoir</i>). A ‘C’ shaped asphalt parking bay is located adjacent to the south-eastern boundary associated with the Great Eastern Highway.</p>
21/10/2010	<p><b>Onsite:</b> There appears to be no significant changes to the Site.</p> <p><b>Offsite:</b> There appears to be no significant changes offsite, with the exception of the Site adjacent to the east, with a large roof structure covering the two large ponds with a small building located to the south of the infrastructure. The small pond, previously under construction contains water, while the previously existing pond containing water are no longer present.</p>
20/11/2015	<p><b>Onsite:</b> There appears to be no significant changes to the Site.</p>

Date	Description
	<b>Offsite:</b> There appears to be no significant changes offsite, with the exception of the site containing a number of buildings to the north-west, it appears that the Site is also used for parking and storage of heavy vehicles, and majority of the 'red dirt' surfaces appear have been covered in asphalt/blue metal.

The most recent aerial of the Site was taken in 2018 which shows no significant changes to the Site and adjacent sites.

### 3.3 Heritage

#### 3.3.1 Aboriginal Heritage

A search for relevant Aboriginal Heritage was conducted using the Department of Planning, Lands and Heritage (DPLH) online Aboriginal Heritage Inquiry System, which incorporates both the Heritage Site Register and Heritage Survey Database. These databases list the following sites:

- *Registered Aboriginal Sites;*
- *Other Heritage Places;* and
- *Heritage Survey Areas.*

The results showed that the Site is not listed as a *Registered Aboriginal Site* on the database, with the nearest *Registered Aboriginal Site* known as the '*Binduli Rock Hole*' located approximately 830 m to the north of the Site, see Figure 5.

#### 3.3.2 Australian Heritage

An online search of the Heritage Council of WA (HCWA) database using the inHerit portal found that the Site is not listed as European Heritage sites. The nearest listed site is the '*Goldfields Water Supply Scheme*' which is of '*National Heritage*' and is located directly to the north of the Site, as shown in Figure 6.

### 3.4 Contaminated Sites Database

The Department of Water and Environmental Regulation (DWER) currently records information of contaminated sites within WA on the Contaminated Sites Database, in accordance with the *Contaminated Sites Act, 2003* (the CS Act). All sites of known or suspected contamination reported to the DWER are classified under the CS Act as one of the following:

- *Report not substantiated;*
- *Decontaminated;*
- *Possibly contaminated – investigation required;*
- *Not contaminated – restricted use;*
- *Contaminated – restricted sue;*
- *Contaminated – remediation required; or*
- *Remediated for restricted use.*

Of the above, only the last three bullet points are publically displayed on the DWER Contaminated Sites Database. The Site was not listed on the Contaminated Sites Database on 15 June 2018, nor was located within the direct vicinity (less than 1 km) of any listed sites. The nearest listed site is located approximately 1.9 km to the north-east, this being Lot 1 on Plan 18891, which is listed as *'Contaminated – remediation required'* due to the presence of free phase hydrocarbons in groundwater at the site. Its location is presented in Figure 7. At this distance, the classified site is not considered to pose a direct risk to the Site.

## 4 Site Attributes

### 4.1 Topography

Utilising topographical contour geospatial data sourced from Geoscience Australia, the Site appears to be situated between approximately 367 m Australian Height Datum (AHD) within the north-eastern portion of the Site and 378 m AHD within the north-eastern portion, as shown in Figure 8. The Site gently slopes down towards the centre from the eastern boundary in a westerly direction, and from the western boundary in an easterly direction. The Site inspection undertaken additionally highlighted that the Site was generally flat with minor undulations.

### 4.2 Geology

A review of the Department of Mines, Industry Regulation and Safety (DMIRS) Geological Survey of WA (GSWA) 1:100,000 map series has identified a single surface geological units to be present across the Site, including '*Czs – sandplain, yellow sand with limonitic pisoliths near the base*'. The near surface geology is presented in Figure 9.

The Site inspection highlighted that the surface sands were however red in colour.

### 4.3 Hydrology

No surface water bodies were noted to be present at the Site. The nearest surface water body is an intermittent waterway, located approximately 120 m to the south of the Site; with a series of lakes located further to the south-east, approximately 2.5 km from the Site. These features are shown in Figure 10.

Under the *Rights in Water and Irrigation Act 1914* (RIWI Act), proclaimed surface water areas in WA are areas where a licence is required to take water from a surface watercourse. The Site and surrounding areas are located outside of any mapped surface water proclaimed areas, with the nearest being the Avon River system, located approximately 200 km to the west of the Site.

### 4.4 Hydrogeology

Geospatial data provided by the DWER identifies that the groundwater aquifer to be '*Felsic volcanic and volcanoclastic rocks. Fractured and deeply weathered rocks – local aquifers, minor groundwater resources, locally large supplies from fractured zones and permeable horizons in weathering profile*', as shown in Figure 11.

Groundwater flow in the Kalgoorlie region is towards the major palaeodrainage channels and modern playa lakes where the groundwater table is close to the surface (*Hydrogeology of Kalgoorlie*, 1:250 000 Sheet, A.M Kern, 1995). Groundwater in the region is known to be saline to hypersaline with total dissolved solids (TDS) ranging between 1,000-200,000 mg/L, with saline water known to occur in the Archaean bedrock and at the headwaters of palaeodrainage channels, and hypersaline in palaeochannels (A.M Kern, 1995).

The Site and surrounding areas are located within the *Goldfields Groundwater Proclaimed Area* and as such, under the RIWI Act, a licence is required to construct or alter a well to draw groundwater.

#### 4.4.1 WIN Registered Bores

No registered groundwater bores were located at the Site, with the nearest located approximately 12 km to the north-east north of the Site, as shown in Figure 11.

#### 4.5 Acid Sulfate Soils

Acid Sulfate Soils (ASS) are naturally occurring soils that contain iron sulfide (iron pyrite) minerals that if disturbed by soil excavation, dewatering or drainage, can then oxidise and result in the release of acidity and potentially cause adverse environmental impacts.

The *Commonwealth Scientific and Industrial Research Organisation* (CSIRO) has gathered data from numerous governmental agencies across the country to produce a country wide database. This database contains ASS risk mapping geospatial data generated by the DWER and the Department of Biodiversity, Conservation and Attractions (DBCA). A review of this data indicates that the Site is located in an area of '*extremely low probability/very low confidence*' of ASS occurring, as shown in Figure 12. Further to this, based on the geomorphology, these soils are deemed unlikely to be present at the Site. However, due to the mineral rich environment, there is a possibility that pyritic minerals may be present within the shallow soils.

#### 4.6 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs) are declared in the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* as areas that cover any or/all of the following conservation significant areas:

- Declared World Heritage property;
- Register of National Estate;
- Defined wetland and the area within 50 m of a wetland;
- Area covered by vegetation within 50 m of rare flora to the extents to which vegetation is continuous with the vegetation in which the rare flora is located;
- Threatened Ecological Community;
- Bush Forever site; and
- Areas identified within the Environmental Protection Policy area.

According to available geospatial data from the DWER, the Site is not located in close proximity of any listed ESAs. The nearest ESA is located approximately 55 km to the south-west of the Site, which is associated with rare flora.

#### 4.7 Conservation Reserves

The Site is not a registered conservation reserve. According to available geospatial data generated by the DBCA, the nearest conservation reserve is the Kurrawang Nature Reserve, located approximately



3.5 km to the south-west of the Site. Its conservation status is for the protection of flora and fauna, as shown in Figure 13.



## 5 Site Inspection

A Site inspection was undertaken by an experienced environmental consultant from Talis on 19 June 2018. This involved traversing across the Site to assess for any visible signs of contamination and/or areas of potential concern. Photographs from the Site inspection are contained in Appendix B, while field observations made were as follows:

- The Site is accessible from the Great Eastern Highway via an asphalt 'C' shaped road side rest stop and via John Road along the eastern edge of the Site from where internal tracks can be accessed;
  - There is an access track along the northern boundary of the Site adjacent to the services corridor in which powerlines, underground services and the water pipeline are located; and
  - The Site is not accessible from the west due to the presence of a railway line.
- Tracks through the Site are unsealed and appear to be the result of continual access by vehicles;
- The Site is generally flat with minor undulations and no significant drainage lines. Minor surface water ponding was observed in some location due to recent rainfall events;
- Vegetation within the Site generally appears to be healthy and consists open woodland and low shrubs;
- No visible signs of contamination, such as surface staining of soils, was noted;
- Minor fly tipping was noted within the southern portion of the Site- close to the access via the rest stop area. Rubbish consisted of minor wood pallet scraps, cardboard, plastic straps, sheet metal and household whitegoods including washing machine and dryer;
- Minor litter was observed around the rest stop;
- Areas in the north east of the Site have had ground disturbance, with minor trenches and stockpiles present. Some of this appears to be imported and dumped waste earth and rubble; and
- No infrastructure or buildings were identified within the Site.

Overall, the Site inspection found a low risk of contamination.

## 6 Preliminary Conceptual Site Model

The Preliminary CSM was undertaken based on the review of available historical data and observations made during the Site inspection.

### 6.1 Contamination Sources

Based on historic land use, which is consistent with the *current* land use – vacant land, it appears that no contaminating land uses have occurred at the Site. In addition, while minor fly tipping of inert waste (i.e. household white goods) was noted, no visual evidence of contamination was identified during the Site inspection. Therefore, it is considered that the Site presents a low risk to ecological and human health.

#### 6.1.1 Primary Sources of Contamination

There appears to be no apparent primary sources of contamination at the Site.

#### 6.1.2 Secondary Sources of Contamination

There appears to be no apparent secondary sources of contamination at the Site.

### 6.2 Contaminants of Potential Concern

Based on the above, there appears to be no apparent contaminants of potential concern (COPC) associated with the Site.

### 6.3 Receptors

Given the proposed land use (commercial/industrial), the following human and ecological receptors have been identified:

Onsite:

- Workers, including construction personnel;
- Visitors to the Site; and
- Existing flora and visiting fauna.

Offsite:

- Existing flora and visiting fauna; and
- Visitors and workers at adjacent sites.

### 6.4 Transportation Mechanism

Given that there appeared to be no COPCs associated with the historical and current land use, the transportation mechanisms for COPCs are not considered to be relevant. However, if COPCs were to be present at the Site, the following transportation mechanisms could be applicable:

- Leaching of COPCs from surface to the underlying soils;

- Leaching of COPCs from the underlying soils to groundwater;
- Transportation of contaminants down-hydraulic gradient in groundwater;
- Migration to and transportation of COPCs in waterways; and
- Windborne transportation of impacted soil.

## 6.5 Exposure Pathways

Given that there appeared to be no COPCs associated with the historical and current land use, there are no apparent exposure pathways. However, if contamination was present, then the following could be considered as likely primary pathways for exposure to COPCs:

- Dermal contact;
- Ingestion;
- Inhalation; and
- Uptake of contaminated groundwater by deep rooted vegetation and subsequent ingestion by fauna.

## 7 Discussion

The Site comprises an area of approximately 134.9 ha and is located at Lot 500 on Plan 63577, within the Yilkari locality of CoKB, WA, approximately 6.7 km to the south-west of the Kalgoorlie town centre. The CoKB intend on leasing the Site from the State of WA, with an intent to sublease the Site which will see it being use for commercial/industrial purposes.

Due to the proposed commercial/industrial land use change, under TPS No.1, the majority of the Site is zoned as *'freight/transport'* with *'Parks and Recreation'* along the southern and eastern boundaries. The Site, however, currently still remains an undeveloped *'greenfields site'*, being vacant land with no known former or current potentially contaminating land uses occurring. This was also verified through the review of available online historical aerial imagery dating back to 2000, which highlighted that there have been no apparent significant changes to the Site since at least 2000, with the Site being vacant land, covered in vegetation.

While the Site and adjacent sites to the north and south and to the east are zoned as *'freight/transport'* and *'general industry'*, the surrounding environment appears to be generally rural, with significant vegetation cover.

A desktop review included the interrogation of relevant databases, which identified:

- Topographically, the Site is situated between approximately 367 m AHD within the north-western portion of the Site and 378 m AHD to the north-east;
- The Site is located outside of any proclaimed surface water areas, however, it is located within a groundwater proclaimed area, and as such, under the RIWI Act, a licence is required to alter, or draw groundwater at the Site;
- The Site is not listed as a Registered Aboriginal Heritage or Australian Heritage site. The *Goldfields Water Supply Scheme* water pipeline located directly to the north of the Site is however listed for its National Heritage;
- The Site is not listed as an ESA or conservation reserve; and
- The Site was not listed on, or located within the vicinity (less than 1 km) of any other sites listed on the DWER Contaminated Sites Database.

An inspection of the Site undertaken on 19 June 2018 identified that the Site was vacant bushland covered in vegetation described as woodland and scrub. Evidence of minor fly tipping was noted during the inspection, which included whitegoods (washing machine and dryer) and scrap including cardboard, plastic straps and sheet metal fencing. Further to this, several rock stockpiles and soil stockpiles adjacent to 'pits' were noted at the Site, considered likely to be associated with possible prospecting at the Site. Based on the visual assessment, there did not appear to be evidence of contamination at the Site.

Based on the available data pertaining to the historical and current land use, which indicates no known contaminating activities to have occurred, it is considered that the risk to human and ecological health associated with the Site is low.

## 8 Conclusions and Recommendations

Based on the investigation undertaken, Talis has drawn the following conclusions:

- The Site is comprised of a single ~134.9 ha lot, known as Lot 500 on Plan 63577, located within the Yilkari locality of CoKB, WA;
- Both currently and historically, the Site has been vacant bushland;
- From a topographic perspective, the Site was shown to sit between 367-378 m AHD;
- A desktop review identified that the Site is:
  - Located within the *Goldfield Groundwater Proclaimed Area*, and as such, under the RIWI Act, a licence is required to construct or alter a well to draw groundwater;
  - Not located within a surface water proclaimed area;
  - Not listed as an Aboriginal Registered Heritage site nor is it an Australian Registered Heritage Site-with the nearest being the '*Goldfields Water Supply Scheme*' located directly to the north of the Site, which is listed for its National Heritage;
  - Not a listed ESA or conservation reserve; and
  - In an area of '*extremely low probability/very low confidence*' of ASS occurring.
- There was no visual evidence of contamination identified during the Site inspection undertaken on 19 June 2018. The Site inspection highlighted that:
  - The Site is accessible both via Great Eastern Highway and John Road;
  - Numerous unsealed tracks are located across the Site;
  - Minor fly tipping of waste was noted within the southern portion of the Site. The material consisted of wood pallet scraps, cardboard, plastic straps, sheet metal and household whitegoods including washing machine and dryer; and
  - The Site was noted to be generally flat with minor undulations, while no major drainage lines were identified.

Overall, based on the Site inspection and available data pertaining to the historical and current land use, no known contaminating activities have occurred at the Site. It is therefore considered that the risk to ecological and human health associated with the Site is low, and no further intrusive investigations are considered warranted. From a contamination perspective, the Site appears to be suitable for the proposed commercial/industrial use.

### 8.1 Recommendations

Based on the investigation undertaken, it is considered that the Site is suitable for use in a commercial/industrial land use setting. However, due to the presence of minor fly tipped waste material which was identified during the Site inspection, Talis recommends that this be removed and disposed off site to a licenced facility prior to development.

### 8.2 Limitations

The extent of this assessment covers the Site as shown in Figure 2 and the findings are based on a qualitative assessment, with no intrusive soil or groundwater investigations undertaken.

# References

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# Figures

**Figure 1: Locality**

**Figure 2: Site Aerial**

**Figure 3: Zoning**

**Figure 4: Historical Photographs**

**Figure 5: Aboriginal Heritage**

**Figure 6: Australian Heritage**

**Figure 7: Contaminated Sites**

**Figure 8: Topography**

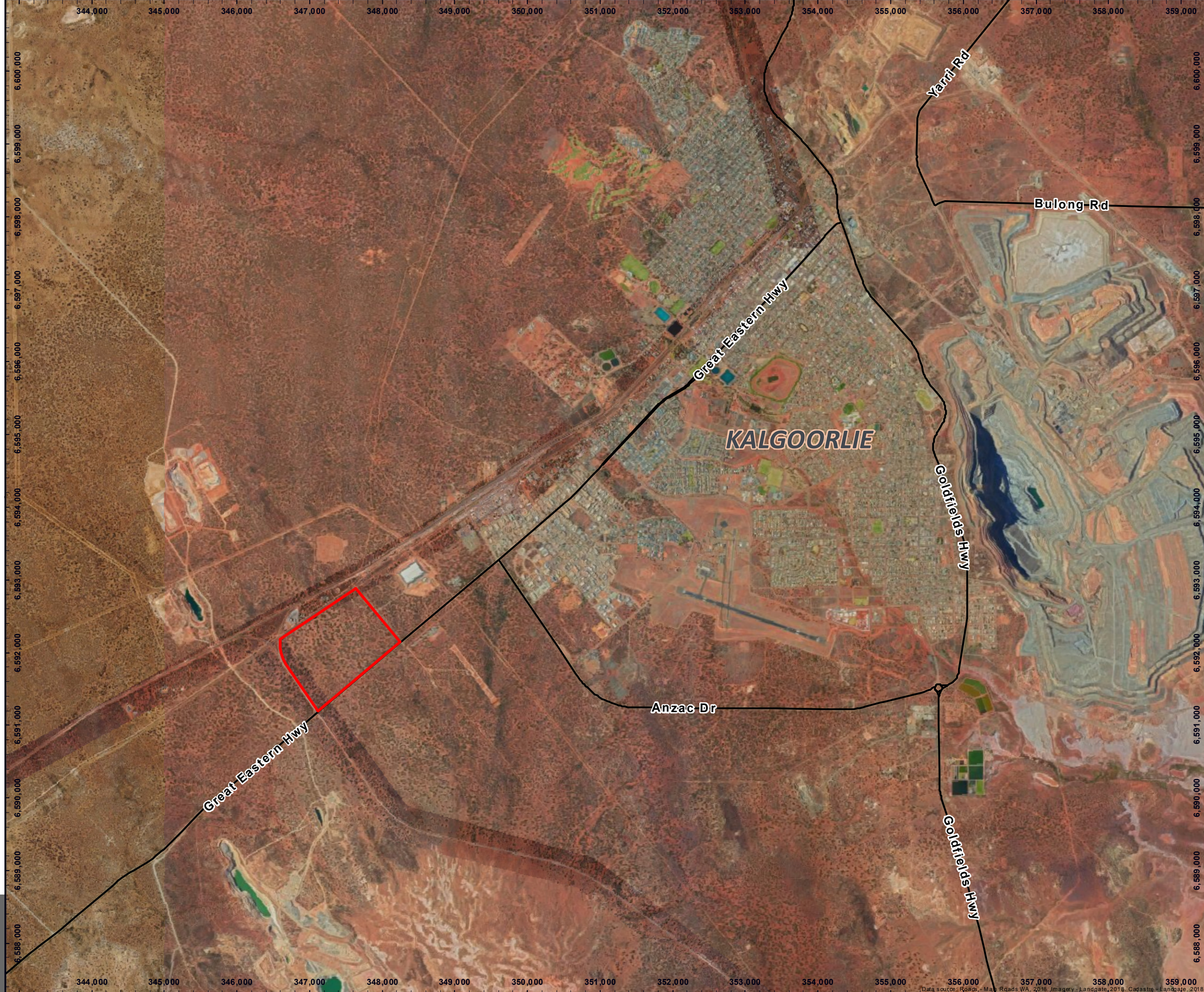
**Figure 9: Geology**

**Figure 10: Hydrology**

**Figure 11: Hydrogeology**

**Figure 12: Acid Sulfate Soils**

**Figure 13: Conservation Reserves**



**LEGEND**

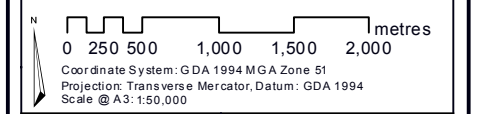
- Site Boundary
- Major Road

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**LOCALITY**

Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



Prepared: F Walker	Date: 26/06/2018
Checked: N King	Project No: TE 18047
Reviewed: J Skiba	Revision: A



**Figure 01**





**LEGEND**

- Site Boundary
- Cadastre
- Major Road

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**AERIAL**

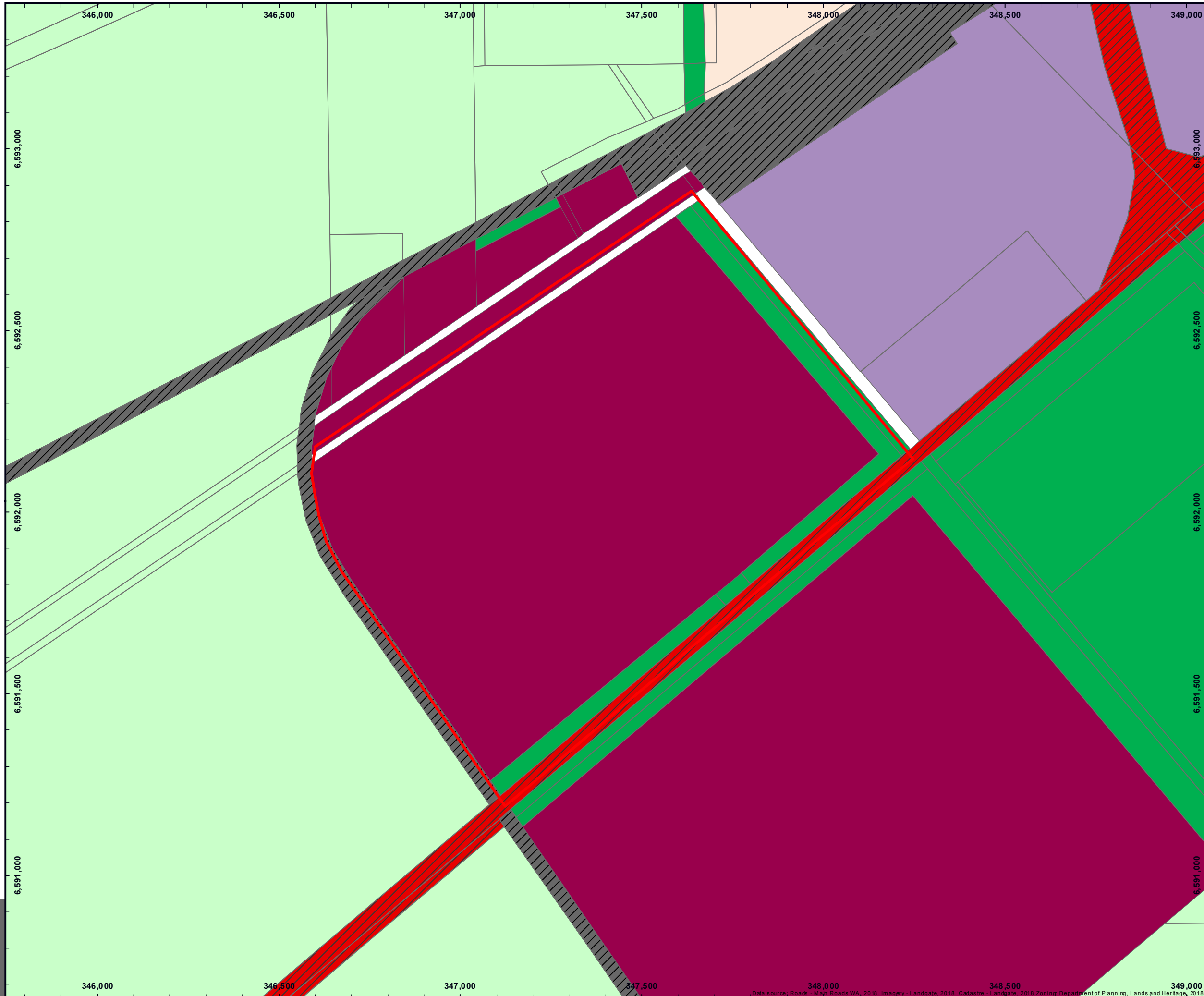
Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder









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Checked: N King	Project No: TE 18047
Reviewed: J Skiba	Revision: A



Figure 02



**LEGEND**

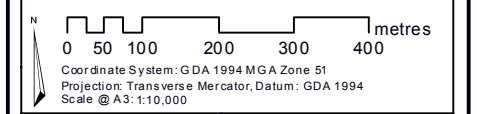
-  Site Boundary
- Local Planning Scheme Zones**
-  Freight / Transport
-  General Industry
-  General Residential
-  Major Road
-  No Zone
-  Parks and Recreation
-  Primary Distributor Road
-  Railways
-  Rural

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**ZONING**

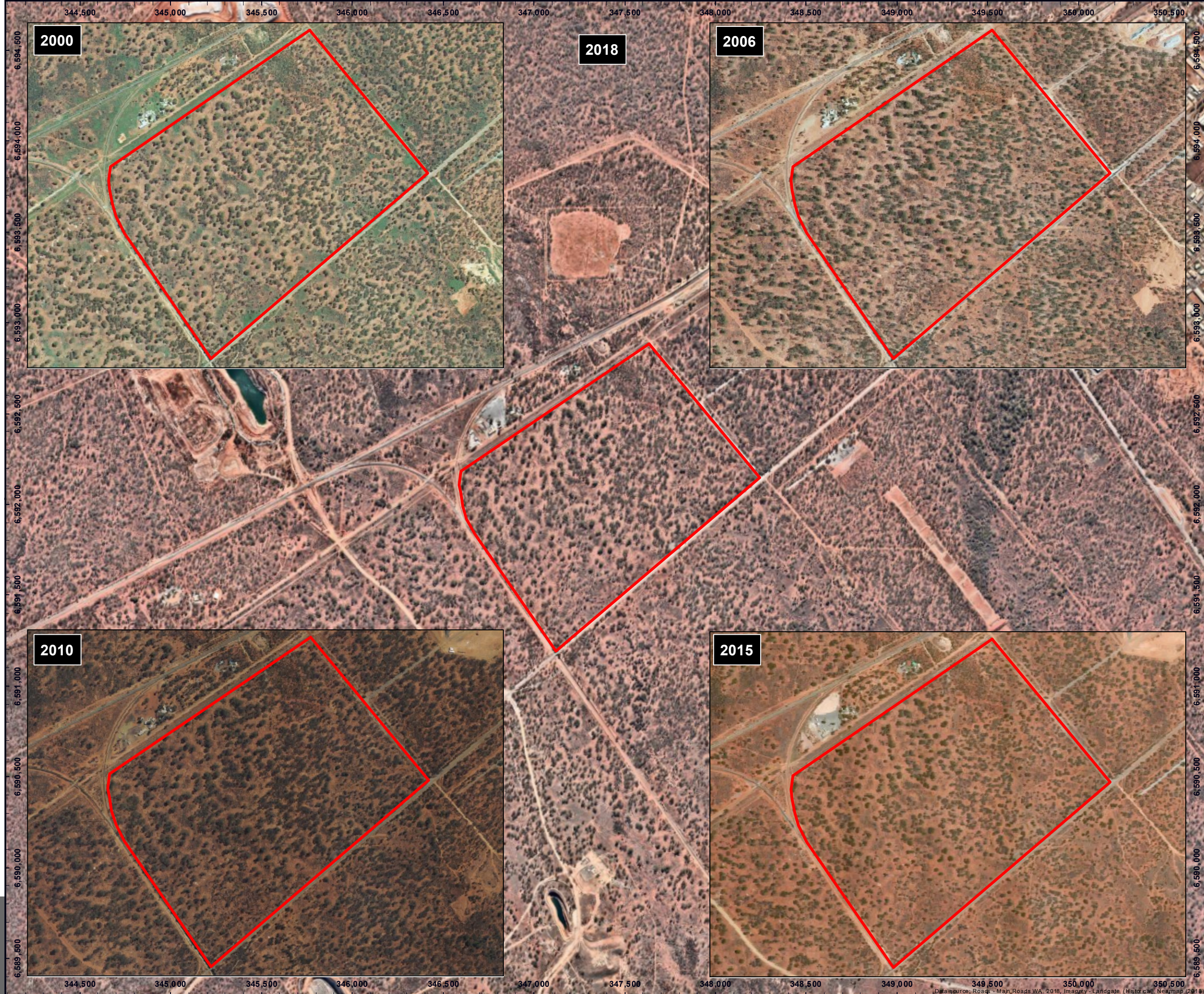
Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder




Prepared: F Walker	Date: 26/06/2018
Checked: N King	Project No: TE18047
Reviewed: J Skiba	Revision: A



**Figure 03**



**LEGEND**

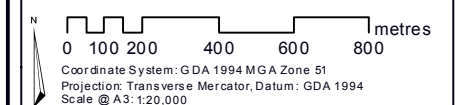
 Site Boundary

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**HISTORICAL AERIAL**

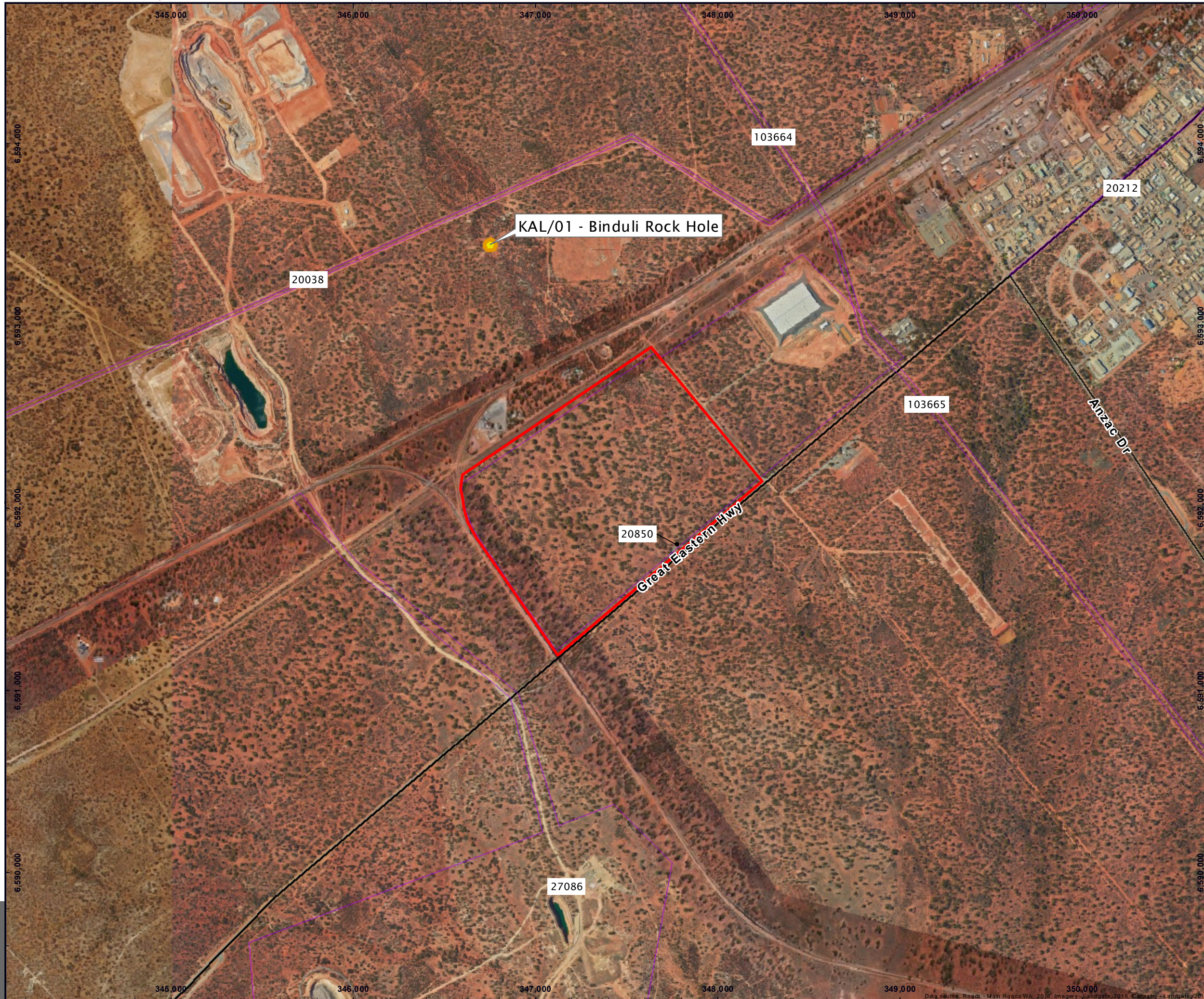
Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



Prepared: F Walker	Date: 26/06/2018
Checked: N King	Project No: TE 18047
Reviewed: J Skiba	Revision: A



Figure 04



**LEGEND**

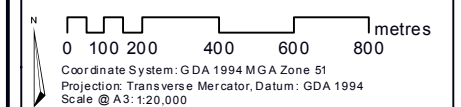
- Site Boundary
- Major Road
- Aboriginal Heritage Places
- Heritage Survey Area

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**ABORIGINAL HERITAGE**

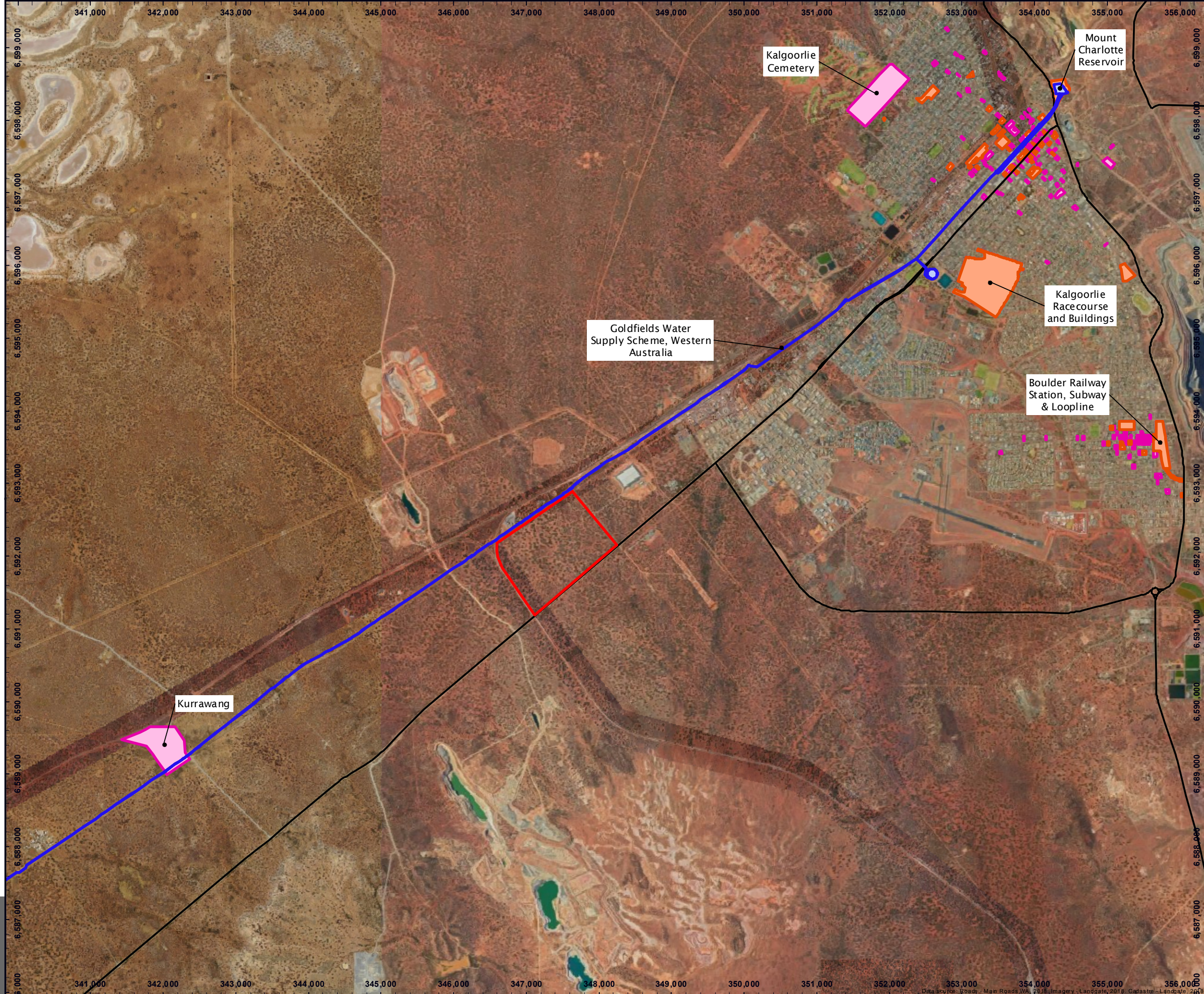
Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



Prepared: F Walker	Date: 26/06/2018
Checked: N King	Project No: TE 18047
Reviewed: J Skiba	Revision: A



Figure 05



**LEGEND**

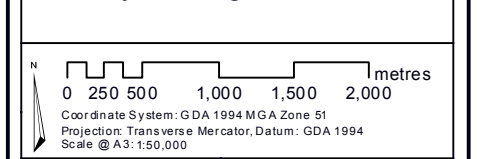
- Site Boundary
- Major Road
- National Heritage
- State Heritage
- Municipal Heritage

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**EUROPEAN HERITAGE**

Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



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Checked: N King	Project No: TE18047
Reviewed: J Skiba	Revision: A



**LEGEND**

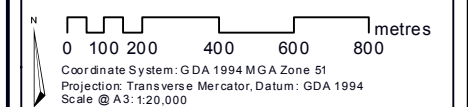
- Site Boundary
- Contaminated Sites**
- Classification**
- Contaminated - remediation required
- Contaminated - restricted use
- Remediated for restricted use

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**CONTAMINATED SITES**

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 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



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Reviewed: J Skiba	Revision: A



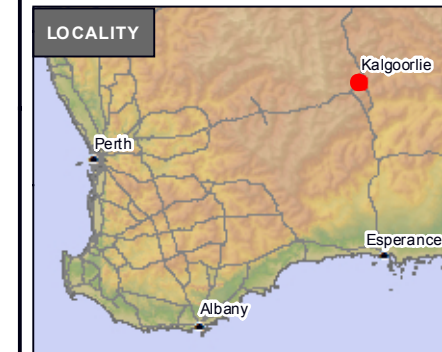
Figure 07



### LEGEND

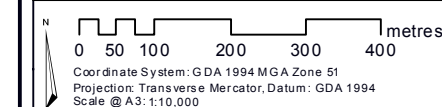
- Site Boundary
- Elevation (m)

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### TOPOGRAPHY

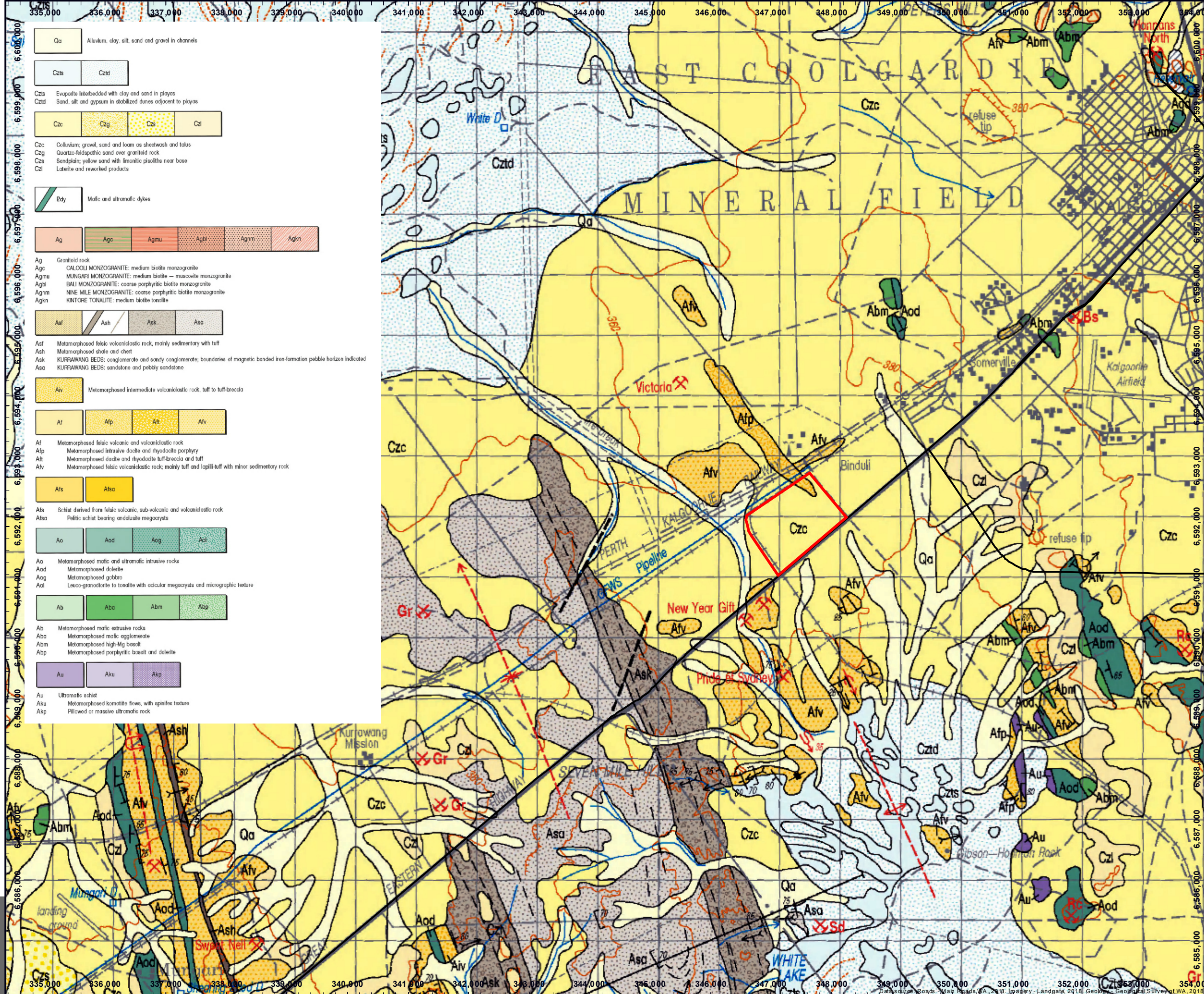
Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



Prepared: F Walker	Date: 26/06/2018
Checked: N King	Project No: TE18047
Reviewed: J Skiba	Revision: A

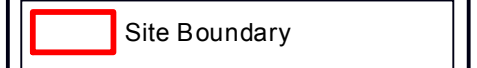


Figure 08



Qa	Alluvium, clay, silt, sand and gravel in channels
Czts	Evaporite interbedded with clay and sand in playas
Cztd	Sand, silt and gypsum in stabilized dunes adjacent to playas
Czc	Colluvium: gravel, sand and loam as sheetwash and talus
Czg	Quartz-feldspathic sand over granitoid rock
Czs	Sandplac: yellow sand with limonitic pseudis near base
Czi	Laterite and reworked products
Bdy	Mafic and ultramafic dykes
Ag	Granitoid rock
Agc	CALCOLI MONZOGRANITE: medium biotite monzogranite
Agmu	MUNGARI MONZOGRANITE: medium biotite - muscovite monzogranite
Agtl	BAU MONZOGRANITE: coarse porphyritic biotite monzogranite
Agim	NINE MILE MONZOGRANITE: coarse porphyritic biotite monzogranite
Agkn	KINTORE TONALITE: medium biotite tonalite
Asf	Metamorphosed felsic volcanoclastic rock, mainly sedimentary with tuff
Ask	Metamorphosed shale and chert
Ask	KURRAWANG BEDS: conglomerate and sandy conglomerate; boundaries of magnetic banded iron-formation pebble horizon indicated
Asa	KURRAWANG BEDS: sandstone and pebbly sandstone
Afv	Metamorphosed intermediate volcanoclastic rock, tuff to tuff-breccia
Af	Metamorphosed felsic volcanic and volcanoclastic rock
Afp	Metamorphosed intrusive dacite and rhyodacite porphyry
Aft	Metamorphosed dacite and rhyodacite tuff-breccia and tuff
Afv	Metamorphosed felsic volcanoclastic rock; mainly tuff and lapilli-tuff with minor sedimentary rock
Afs	Schist derived from felsic volcanic, sub-volcanic and volcanoclastic rock
Afsa	Pelitic schist bearing andalusite megacrysts
Ao	Metamorphosed mafic and ultramafic intrusive rocks
Aod	Metamorphosed dolerite
Agg	Metamorphosed gabbro
Acl	Leuco-granodiorite to tonalite with ocellar megacrysts and micrographic texture
Ab	Metamorphosed mafic extrusive rocks
Abc	Metamorphosed mafic agglomerate
Abm	Metamorphosed high-Mg basalt
Abp	Metamorphosed porphyritic basalt and dolerite
Au	Ultramafic schist
Aku	Metamorphosed komatiite flows, with spinifex texture
Akp	Pillowed or massive ultramafic rock

**LEGEND**

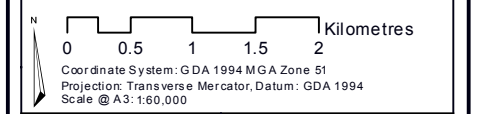


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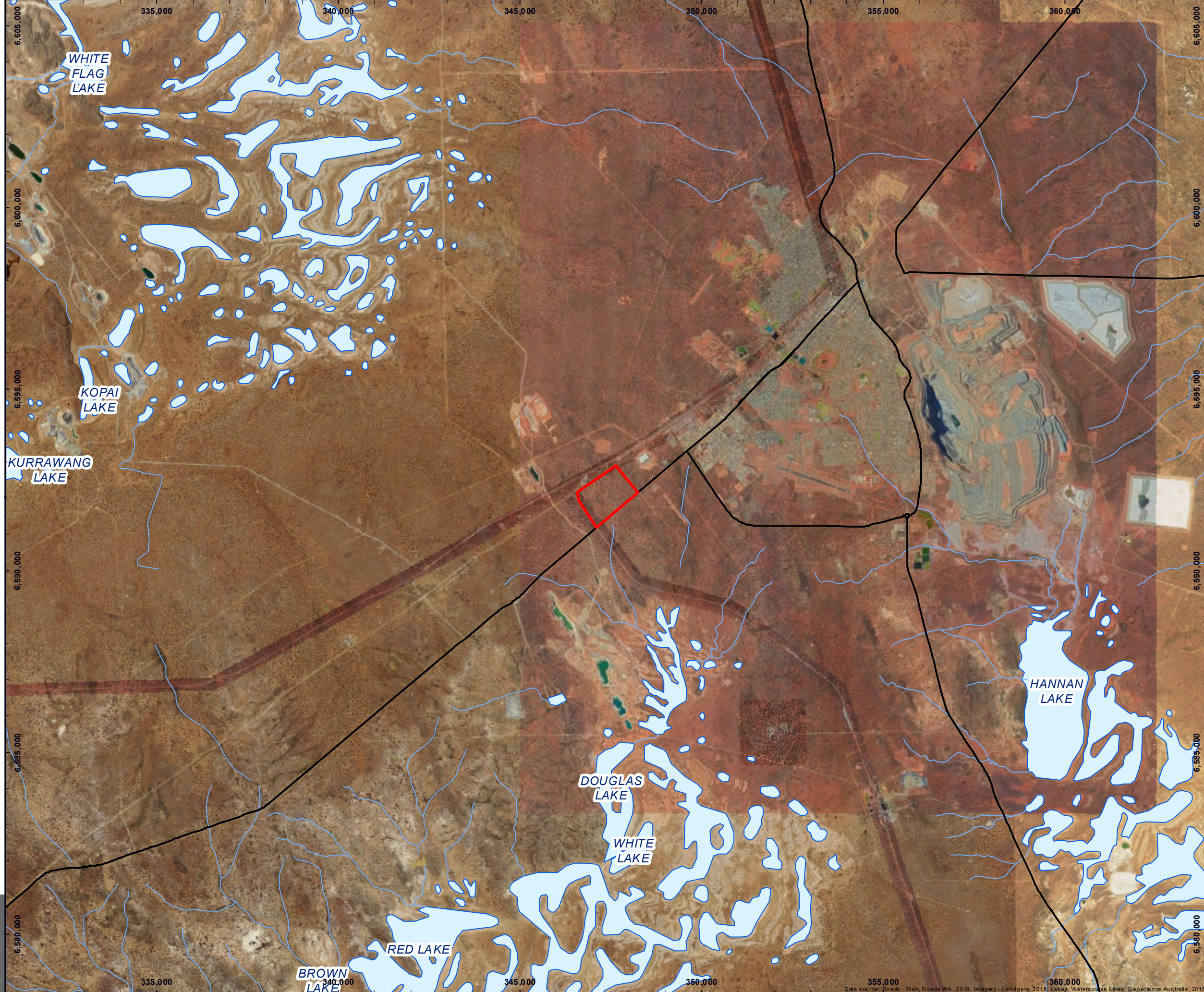
**SURFACE GEOLOGY (1:100K, GSWA)**

Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



Prepared: F Walker	Date: 26/06/2018
Checked: N King	Project No: TE 18047
Reviewed: J Skiba	Revision: A





**LEGEND**

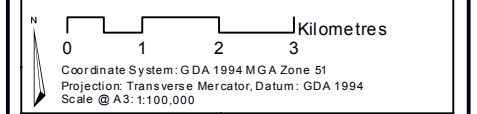
- Site Boundary
- Lakes
- Watercourse

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**HYDROLOGY**

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 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



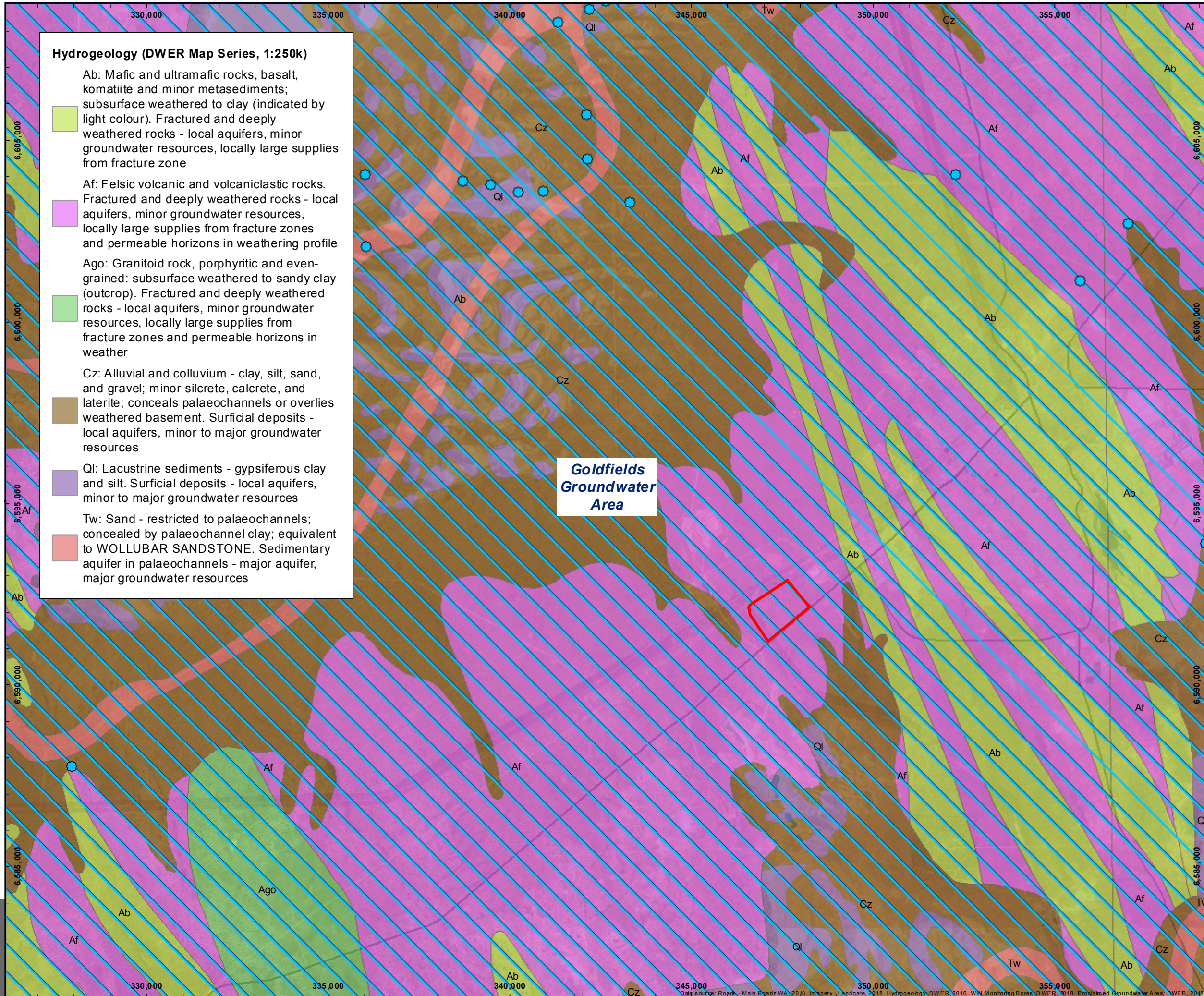
Prepared: F Walker	Date: 26/06/2018
Checked: N King	Project No: TE18047
Reviewed: J Skiba	Revision: A



**Figure 10**

**Hydrogeology (DWER Map Series, 1:250k)**

- Ab: Mafic and ultramafic rocks, basalt, komatiite and minor metasediments; subsurface weathered to clay (indicated by light colour). Fractured and deeply weathered rocks - local aquifers, minor groundwater resources, locally large supplies from fracture zone
- Af: Felsic volcanic and volcanoclastic rocks. Fractured and deeply weathered rocks - local aquifers, minor groundwater resources, locally large supplies from fracture zones and permeable horizons in weathering profile
- Ago: Granitoid rock, porphyritic and even-grained: subsurface weathered to sandy clay (outcrop). Fractured and deeply weathered rocks - local aquifers, minor groundwater resources, locally large supplies from fracture zones and permeable horizons in weather
- Cz: Alluvial and colluvium - clay, silt, sand, and gravel; minor silcrete, calcrete, and laterite; conceals palaeochannels or overlies weathered basement. Surficial deposits - local aquifers, minor to major groundwater resources
- Ql: Lacustrine sediments - gypsiferous clay and silt. Surficial deposits - local aquifers, minor to major groundwater resources
- Tw: Sand - restricted to palaeochannels; concealed by palaeochannel clay; equivalent to WOLLUBAR SANDSTONE. Sedimentary aquifer in palaeochannels - major aquifer, major groundwater resources



**Goldfields  
Groundwater  
Area**

**LEGEND**

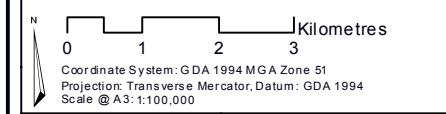
- Site Boundary
- WIN Monitoring Site
- Proclaimed Groundwater Area

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**HYDROGEOLOGY**

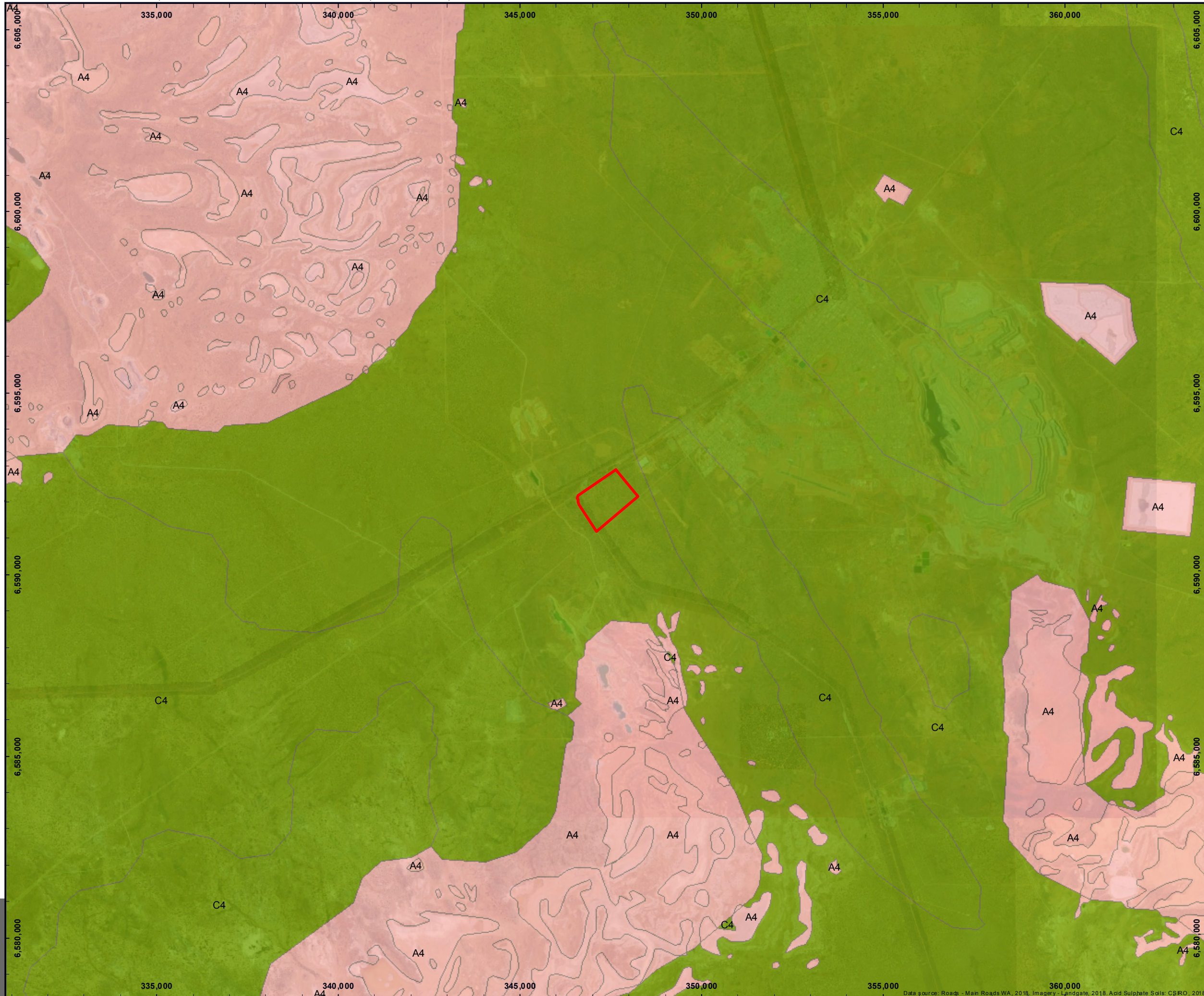
Preliminary Site Investigation  
Lot 500 on Plan 63577  
Yilkari WA 6430  
City of Kalgoorlie-Boulder



Prepared: F Walker	Date: 26/06/2018
Checked: N King	Project No: TE 18047
Reviewed: J Skiba	Revision: A



Figure 11



**LEGEND**

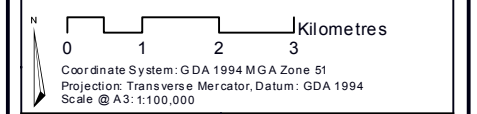
- Site Boundary
- Acid Sulphate Soils**
- Probability, Confidence**
- A4 High Probability / Very Low Confidence
- C4 Extremely Low Probability / Very Low Confidence

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**ACID SULPHATE SOILS**

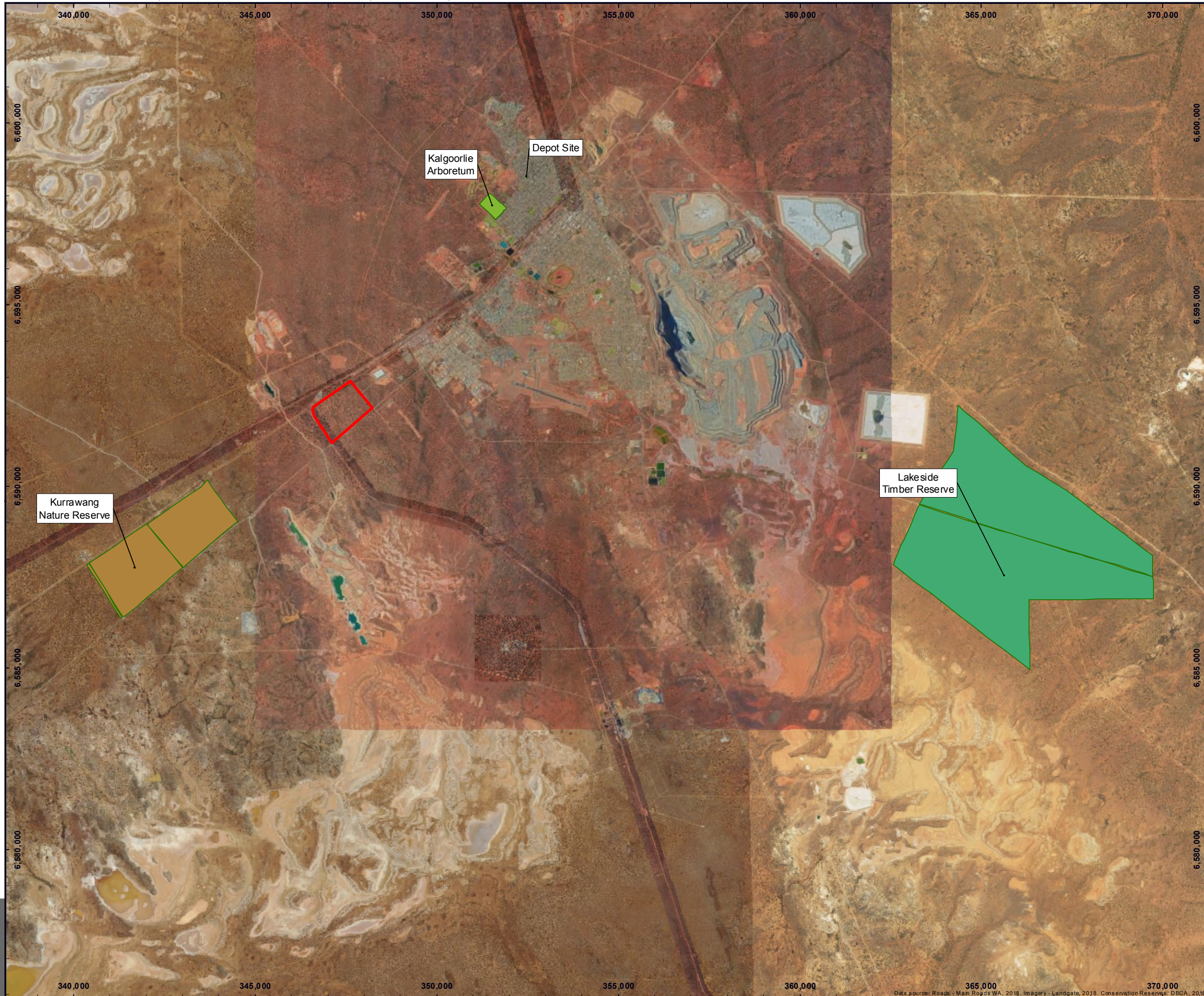
Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



Prepared: F Walker	Date: 21/06/2018
Checked: N King	Project No: TE18047
Reviewed: J Skiba	Revision: A



Figure 12



**LEGEND**

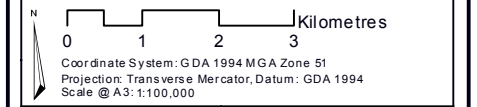
- Site Boundary
- DBCA Legislated Lands And Waters**
- Arboretum
- Conservation Of Flora And Fauna
- Depot Site
- Timber

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**CONSERVATION RESERVES**

Preliminary Site Investigation  
 Lot 500 on Plan 63577  
 Yilkari WA 6430  
 City of Kalgoorlie-Boulder



Prepared: F Walker	Date: 26/06/2018
Checked: N King	Project No: TE 18047
Reviewed: J Skiba	Revision: A



Figure 13



# Appendix A: Certificate of Title



REGISTER NUMBER <b>500/DP63577</b>	
DUPLICATE EDITION <b>N/A</b>	DATE DUPLICATE ISSUED <b>N/A</b>

**RECORD OF QUALIFIED CERTIFICATE  
OF  
CROWN LAND TITLE  
UNDER THE TRANSFER OF LAND ACT 1893  
AND THE LAND ADMINISTRATION ACT 1997  
NO DUPLICATE CREATED**

VOLUME **LR3157** FOLIO **4**

The undermentioned land is Crown land in the name of the STATE OF WESTERN AUSTRALIA, subject to the interests and Status Orders shown in the first schedule which are in turn subject to the limitations, interests, encumbrances and notifications shown in the second schedule.



REGISTRAR OF TITLES

**LAND DESCRIPTION:**

LOT 500 ON DEPOSITED PLAN 63577

**STATUS ORDER AND PRIMARY INTEREST HOLDER:  
(FIRST SCHEDULE)**

**STATUS ORDER/INTEREST:** RESERVE UNDER MANAGEMENT ORDER

**PRIMARY INTEREST HOLDER:** CITY OF KALGOORLIE-BOULDER OF PO BOX 2042, BOULDER  
(XE J759259 ) REGISTERED 25/5/2006

**LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:  
(SECOND SCHEDULE)**

- 1. K875359 RESERVE 8787 FOR THE PURPOSE OF PARKLAND REGISTERED 10/3/2009.  
J759259 MANAGEMENT ORDER. CONTAINS CONDITIONS TO BE OBSERVED. REGISTERED 25/5/2006.

- Warning:
- (1) A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.
  - (2) The land and interests etc. shown hereon may be affected by interests etc. that can be, but are not, shown on the register.
  - (3) The interests etc. shown hereon may have a different priority than shown.

-----END OF CERTIFICATE OF CROWN LAND TITLE-----

**STATEMENTS:**

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP63577  
 PREVIOUS TITLE: LR3131-607  
 PROPERTY STREET ADDRESS: NO STREET ADDRESS INFORMATION AVAILABLE.  
 LOCAL GOVERNMENT AUTHORITY: CITY OF KALGOORLIE-BOULDER  
 RESPONSIBLE AGENCY: DEPARTMENT OF PLANNING, LANDS AND HERITAGE (SLSD)

END OF PAGE 1 - CONTINUED OVER

ORIGINAL CERTIFICATE OF CROWN LAND TITLE  
QUALIFIED

REGISTER NUMBER: 500/DP63577

VOLUME/FOLIO: LR3157-4

PAGE 2

NOTE 1: J759258 CORRESPONDENCE FILE 06565-1903-03RO  
NOTE 2: K888449 SUBJECT TO SURVEY - NOT FOR ALIENATION PURPOSES

Subject to Dealing



# Appendix B: Site Photographs



Lot 500 on Plan 63577  
City of Kalgoorlie-Boulder



Photo 1: Parking area on southern boundary facing north.

Lot 500 on Plan 63577  
City of Kalgoorlie-Boulder



Photo 2: Parking area on southern boundary facing west.

Lot 500 on Plan 63577  
City of Kalgoorlie-Boulder



Photo 3: Fly tipping of wood, cardboard, plastic straps and sheet metal facing west.

Lot 500 on Plan 63577  
City of Kalgoorlie-Boulder



Photo 4: Fly tipping of a washer and dryer facing south.



Photo 5: Service corridor along the northern boundary of the Site. Power lines and water pipeline visible. Freight and transport yards and workshops visible in background. Facing west.

Lot 500 on Plan 63577  
City of Kalgoorlie-Boulder



Photo 6: Digging in the north east of the Site facing south west.



Photo 7: Diggings and soil piles in the north east of the Site facing south.



Phot 8: Soil and rubble pile in the north east of the site facing west.





Photo 9: Piles of earth and rock rubble in the north east of the Site facing west.