

APPENDIX 12: ETHNOGRAPHIC SURVEY



Report on an Archaeological Survey of Lots 20, 64, 201, 507, and 508 Keysbrook, Western Australia

April 2023

For Ethnoscience and Doral Mineral Sands



Document Information

17 April 2023

Version: FINAL 1.0

Prepared by Archae-aus Pty Ltd for Ethnoscience and Doral Mineral Sands

Table 1. Archae-aus Document Control

Version	Effective Date	Prepared By	Reviewed By	Approved Date
Draft 1.0	30/03/2023	Lauren Jolliffe	Monica Jimenez-Lozano	06/04/2023
Final 1.0	17/04/2023			17/04/2023

Table 2. Distribution of Copies

Version	Date Issued	Media	Issued to
Draft 1.0	6/04/2023	PDF	Dr Edward McDonald (Ethnoscience)
Final 1.0	17/04/2023	PDF	Dr Edward McDonald (Ethnoscience)

Archae-aus Project Code: ES23KB1a

CITATION: Archae-aus (2023) Report of an Archaeological Survey of Lots 20, 64, 201, 507, and 508, Keysbrook, Western Australia; Prepared for Ethnoscience and Doral Mineral Sands Pty Ltd by Archae-aus Pty Ltd, North Fremantle, April 2023.

Cover Image: GBK Traditional Owners John Michael and Gus Michael examining Lot 64

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Warning

Please be aware that this report may contain images of deceased persons and the use of their names, which in some Aboriginal communities may cause sadness, distress or offence.

Disclaimer

The authors are not accountable for omissions and inconsistencies that may result from information which may come to light in the future but was not forthcoming at the time of this research.

Report Format

Section One of this report introduces the Project Area and scope of the proposed works. Section Two describes the archaeological background of the Project Area and details any previous heritage assessments. Section Three outlines the methods of the Archaeological survey, and significance assessments. Section Four details the results of the Archaeological Survey, while Section Five provides advice and recommendations.

Spatial Information

All spatial information contained in this report uses the Geocentric Datum of Australia (GDA94), Zone 50, unless otherwise specified. All information obtained from [Client or Proponent] is assumed to be accurate to two decimal places. All spatial information obtained during fieldwork was taken using a handheld Garmin GPS with a purported accuracy of ± 3 m. Where we report spatial information collected in the field, we have opted for a slightly wider degree of accuracy of ± 5 m.

Authorship

This report was written by Lauren Jolliffe [BSc (Hons) Archaeology, *UNDA*], with editorial assistance from Monica Jimenez-Lozano [BA (Hons) Archaeology, *UWA*].

The GIS data and maps were drafted by Lauren Jolliffe.

Executive Summary

This document details the results of an archaeological Site Identification survey of Doral's proposed Mineral Sands Mine expansion in Keysbrook, Western Australia. The survey area is located on Lots 20, 64, 201, 507, and 508. The fieldwork was undertaken for Ethnoscience with representatives from the Gnaala Karla Booja (GKB) Traditional Owner Group.

The Project Area does not intersect with any previously recorded Registered Aboriginal Sites, or Other Heritage Places.

No new Aboriginal Archaeological Sites were identified.

The GKB representatives identified a potential ethnographic site within Lot 64. All relevant comments and information were provided to Ethnoscience for consideration during the ethnographic survey.

Table 3. Summary of the results of an archaeological survey of Keysbrook Lots 20, 64, 201, 507, and 508

Lot (s)	Area (km ²)	Assessment Level	Type	Archaeological Sites Identified	Comments
20	0.12	Site Identification	Archaeological	No	
64 (A & B)	(1.45 & 0.19) 1.64	Site Identification	Archaeological	No	Traditional Owners identified a potential ethnographic site within Lot 64. Details were taken and passed onto Ethnoscience for discussion during the Ethnographic Survey. No archaeological material was identified at this place.
201, 507, & 508	0.73, 0.73, & 0.64 (2.09)	Site Identification	Archaeological	No	

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SECTION ONE – INTRODUCTION

Scope of Works

Ethnoscience, on behalf of Doral Mineral Sands, engaged Archae-aus to undertake an archaeological survey of Doral's proposed Keysbrook Mineral Sands Mine Expansion works. The fieldwork was conducted over two days from the 22 to 23 March 2023. GKB Traditional Owners participated in all aspects of the Aboriginal archaeological surveys and are aware of the results detailed in this report.

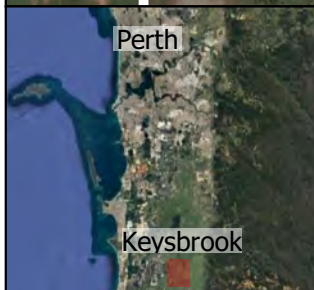
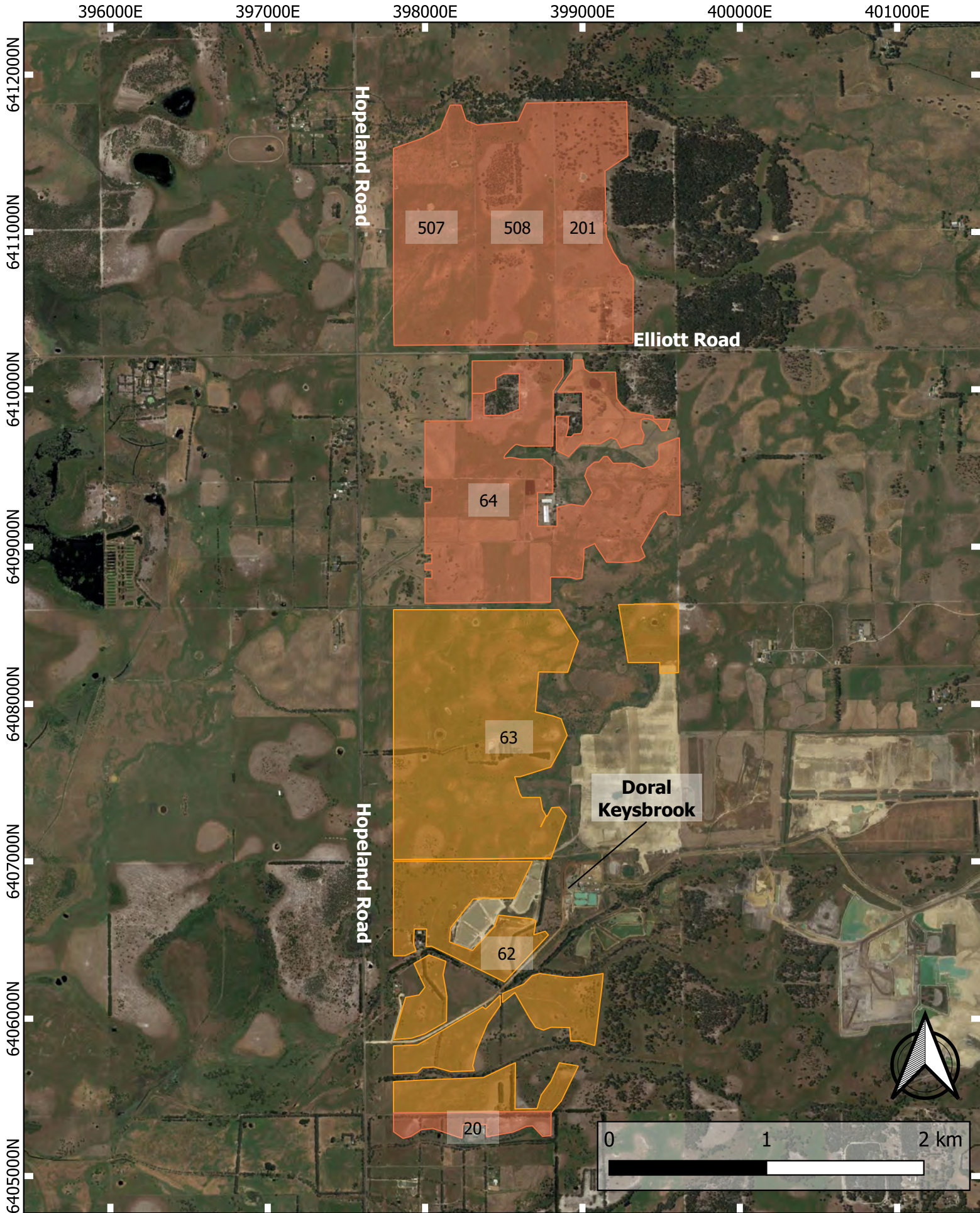
The objectives of the Scope of Works were to:

- To undertake the recommended Aboriginal archaeological heritage survey of Lots 507, 508, 64 and 201 with GKB representatives from both the Walley and the Nannup families. The survey will be conducted to a Site Identification level sufficient for Doral Mineral Sands to apply for consent under section 18 of the AHA, should this be necessary.
- To detail the results of the survey and provide heritage management recommendations within a report.

Project Area

The Project Area consists of five Lots in Keysbrook, Western Australia, totalling an area of 3.85 km². Lots 507, 508, and 201 are northeast of the Elliott Road - Hopelands Road intersection in Keysbrook. Lot 64 is southeast of the Elliott Road - Hopelands Road intersection, and north of the current Doral mine office. Lot 20 is east of Hopelands Road, and south of the current Doral mine office (see Map 1).

Proposed works within the Project Area will involve extensive surface ground disturbance and use of heavy machinery to mine for mineral sands.

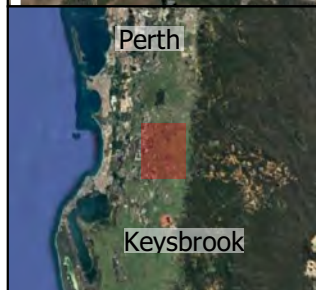
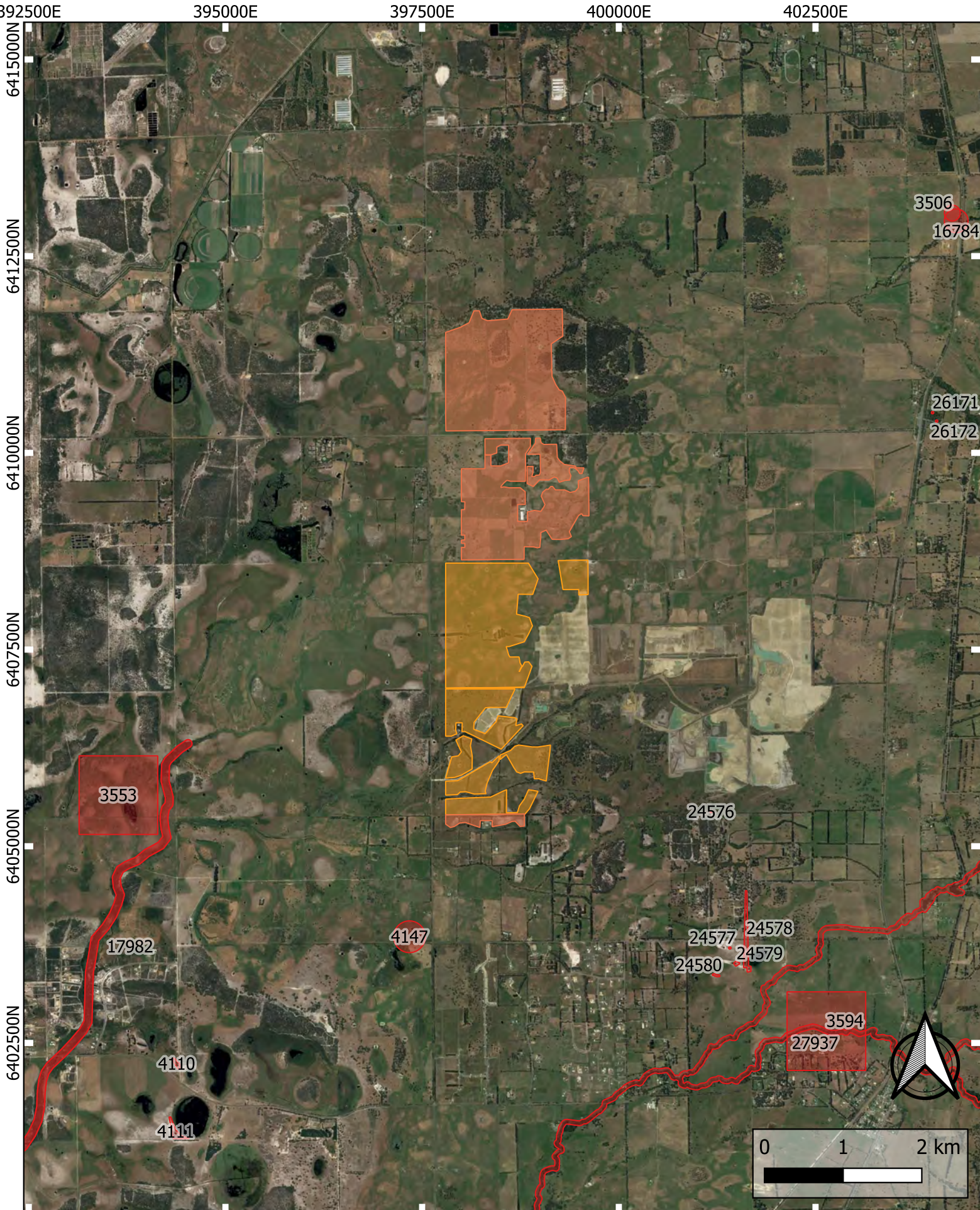


- ### Legend
- Survey Area March 2023
 - Surveyed 2006 Glendenning
 - 20 Lot Numbers



Map 1. Overview of the Doral Keysbrook Project Area

Drafted by Lauren Jolliffe, 29th March, 2023. GDA94, Zone 50. Satellite imagery courtesy of Google and Wiki Maps.



Legend

- Survey Area March 2023
- Surveyed 2006 Glendenning
- Aboriginal Heritage Places (DPLH)



archae-aus

Map 2. Previously Identified Aboriginal Heritage Places surrounding the Project Area

Drafted by Lauren Jolliffe, 29th March, 2023. GDA94, Zone 50. Satellite imagery courtesy of Google and Wiki Maps.

Legislation

Aboriginal Heritage Act 1972

At the time of writing, the *Aboriginal Heritage Act 1972* (AHA) remains the main legislative framework for Aboriginal heritage in the State. The *Aboriginal Cultural Heritage Act 2021* (ACHA) is coming into effect after June 2023; section 18 applications will no longer be accepted after this date. Any section 18 consents approved prior to June 2023 during this transitional period to the new Act will have a five (5) year expiry period, which may be extended by the Minister for Aboriginal Affairs if the project is considered to be of State significance.

The AHA, which is currently administered by the Department of Planning, Lands and Heritage (DPLH), protects sites and objects that are significant to living Aboriginal people as well as Aboriginal sites of historical, anthropological, archaeological, and ethnographic significance. This includes Aboriginal sites that are not yet on the Register. It is important that the proper Aboriginal heritage due diligence is carried out for any proposed ground disturbance within the Project Area (Department of Aboriginal Affairs and Department of the Premier and Cabinet, 2013), which will be addressed through this report and the archaeological and ethnographic surveys scheduled for this work.

The primary sections of the AHA that need to be considered are section 5 which defines the term 'Aboriginal Site'; and section 39 (2) which details what the Aboriginal Cultural Materials Committee (ACMC) should have in regard to considering the importance of objects and places; and section 39 (3) which gives primary consideration to associated sacred beliefs, and ritual or ceremonial usage that needs to be taken into account when evaluating a place or object.

Section 17 of the AHA states that it is an offence to :

alter an Aboriginal site in any way, including collecting artefacts; conceal a site or artefact; or excavate, destroy or damage in any way an Aboriginal site or artefact; without the authorisation of the Registrar of Aboriginal Sites under section 16 or the Minister of Aboriginal Affairs under section 18 of the AHA.

Aboriginal heritage sites are also protected under the Commonwealth *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (the HPA). The HPA complements state/territory legislation and is intended to be used only as a 'last resort' where state/territory laws and processes prove ineffective. Under the HPA the responsible Minister can make temporary or long-term declarations to protect areas and objects of significance under threat of injury or desecration. The HPA also encourages heritage protection through mediated negotiation and agreement between land users, developers and Aboriginal people.

Aboriginal human remains are protected under the AHA and the HPA. In addition, the discovery of human remains requires that the following people are informed: the State Coroner or local Police under section 17 of the *Coroners Act 1996*; the State Registrar of Aboriginal Sites under section 15 of the AHA; and the Federal Minister for Aboriginal Affairs under Section 20 of the HPA.

DPLH Register Status

The Aboriginal Heritage Inquiry System (AHIS), managed by the DPLH, is the tool through which the public can access information about heritage places and their legal status. There are two broad

categories by which the AHIS uses to characterise heritage places: Aboriginal Sites (registered sites) or Other Heritage Places.

A registered Aboriginal Site is a place that fulfils the following definitions for protection under section 5 of the *AHA*:

1. Any place of importance and significance where persons of Aboriginal descent have, or appear to have, left any object, natural or artificial, used for, or made or adapted for use for, any purpose connected with the traditional cultural life of the Aboriginal people, past or present.
2. Any sacred, ritual or ceremonial site which is of importance and special significance to persons of Aboriginal descent.
3. Any place which, in the opinion of the Aboriginal Cultural Materials Committee (ACMC), is or was associated with Aboriginal people and which is of historical, anthropological, archaeological or ethnographical interest and should be preserved because of its importance and significance to the cultural heritage of the State.
4. Any place where objects to which the *AHA* applies are traditionally stored, or to which, under the provisions of the *AHA*, such objects have been taken or removed.

The category 'Other Heritage Place' is complex and is not a reliable indicator for the legal status of a heritage place under the *AHA*.

The status of most 'Other Heritage Places' is either 'Lodged' or 'Stored Data'.

- Lodged indicates a potential Aboriginal Site that has been reported but not yet assessed by the ACMC. These places are therefore immediately protected under the *AHA*.
- Stored Data / Not a Site indicates a place that has been assessed by the ACMC, who have decided that the place does not fulfil the above definitions for an Aboriginal Site, protected under the *AHA*.

A small number of 'Other Heritage Places' have 'Contact DAA/DPLH' as their status, indicating that contact needs to be made with the Department of Planning, Lands and Heritage regarding these places, to access further information/advice.

Thus some 'Other Heritage Places' are protected under the *AHA*, while others are not. Consequently, Archae-aus would recommend full and transparent consultation with Traditional Owners about all of their heritage places.

Furthermore, the status of both Aboriginal Sites and Other Heritage Places may change as the information available or assessment procedures change through time. In the last few years, the register status of some places has changed from one of these categories to another. An apparent shift has occurred in the benchmarks used by the ACMC in the assessment of places as Aboriginal Sites under section 5 of the *AHA*. These changes have been most noticeable since 2012, particularly in the outcomes of section 18 applications, despite no change in the *AHA* itself. For example, some Aboriginal Sites have been re-classified as Other Heritage Places, meaning that they are no longer considered to meet the criteria to be registered as Aboriginal Sites and thus may no longer be protected under the *AHA*. This process is being challenged by Aboriginal groups in the Supreme Court. One decision by the court in April 2015 determined that the ACMC criteria used for assessing places under 5b was incorrect¹. The ACMC was instructed to reassess those places assessed by the ACMC under 5b since 2012. This reassessment process has begun and several places have been placed back onto the register of

¹ https://www.dlapiper.com/~media/Files/Insights/Publications/2015/04/Supreme_court_clarifies_meaning_of_sacred_site_in_WA.pdf.

Registered Sites under the *AHA*. Other challenges under 5a assessments are in train through the Supreme Court.

Personnel

Gnaala Karla Booja Representatives

Day 1 Survey Team [22/03/2023]

John Michael

Gus Michael

Day 2 Survey Team [23/03/2023]

Franklin Nannup

Harry Nannup

Archae-aus

Adrian Di Lello (*Senior Archaeologist*)

Lauren Jolliffe (*Assistant Archaeologist*)

Doral Mineral Sands

Ali Tozer



Plate 1. Day One Survey Team; A. Di Lello, G. Michael, J. Michael, & A. Tozer (left to right)

SECTION TWO –BACKGROUND

Archaeological Background

It has long been recognised that the southwest of Western Australia forms a distinct geographical and cultural region, bounded by the south and west coasts and, inland by desert. It has a Mediterranean climate and is characterised by high levels of biodiversity. Noongar Boodja, or country, corresponds roughly to this geographic region and the Noongar people today are descendants of several groups living in the region, with a similar culture and a common language.

Keysbrook is within the Gnaala Karla Booja region, which in this area, is linked to the Binjareb Noongar people. The Project Area is not located within any known Aboriginal Heritage Sites.

Initial Occupation

Archaeological evidence from several sites recorded along the west coast shows that the Aboriginal people first occupied the south-west of Western Australia by about 50,000 years ago (Balme, 2014; J. Dortch & Dortch, 2019; Monks et al., 2016). The southwest of Western Australia forms a distinct biogeographic and cultural region, bounded by the Indian Ocean to the west, the Southern Ocean to the south and inland by the arid zone. It has a Mediterranean climate and a high level of biodiversity. Noongar boodja, or Country, corresponds roughly to this biogeographic region.

Dated sequences from the Southwest region have produced a well-established Pleistocene antiquity for human occupation. Devils Lair on the Leeuwin – Naturaliste Ridge, for example, has produced basal dates of approximately 37,000 BP (C. E. Dortch, 1979c, 1979a, 1979b), and dates of similar antiquity have also been obtained from Tunnel Cave (J. Dortch, 1994, 1996).

The oldest known site in the Southwest, located near Upper Swan Bridge in Midland, is dated to 39,500 BP (Pearce & Barbeti, 1981). Other early dated sites are located at the site of the Fiona Stanley Hospital dating to 33,000 BP (J. Dortch et al., 2009), on an old river terrace in the Helena Valley dated to 29,400 BP (Schwede, 1983, 1990), and a site at Minim Cove near the mouth of the Swan River dated to 9,930 BP (Clark & Dortch, 1977).

Noongar people today are descendants of several different groups who lived in the south-west region; however, they shared a similar culture and spoke dialects of a single language. These groups had core territories, but maintained strong relationships with neighbouring groups, with whom they traded and interacted (Archae-aus, 2022).

Site Location and Assemblage Variation

In her synthesis of the archaeological evidence from research conducted on the Swan Coastal Plain and the Darling Scarp, Anderson (1984) formulated a seasonal land use model of human movement between the Swan Coastal Plain, the Darling Scarp and the Darling Range. A summary of this model is quoted below.

- 1) Groups essentially based on the Swan Coastal Plain and the Darling Plateau were associated with specific core territories within those zones and had stronger cultural ties within four larger units such as Tindale (1974) outlines.
- 2) In summer and autumn, the plains groups concentrated in larger numbers on the coast, estuaries and larger inland water bodies to collect fish, waterfowl and other water-based resources. The

very large archaeological sites on the plain are the result of repeated visits to such venues, probably over long periods of time.

- 3) In winter and early spring, when the coastal resources were less abundant, some of the plain based people moved into the jarrah forest in the Darling Range to relieve the pressure on available food sources; the remainder of the people fragmenting and ranging more widely. The extent of penetration into the densest and most uniform stands of the forest zone was only about 30-35 km. The predominantly small sites throughout the jarrah forest are evidence of the mobility necessitated by less prolific resources and the pursuit of game.
- 4) In late spring, there was a gradual movement of people back toward the coast. The western plateau area of the scarp is seen as having a less distinctly seasonal pattern of movement. The groups would possibly have been more nomadic and moved over wide ranges, taking advantage of the large mammal population and plant foods in the open woodlands.
- 5) The eastern jarrah forest (ie. that portion more than 30 km east of the escarpment and gradually grading into wandoo woodland) was exploited by plateau groups, some of whose ranges penetrated well into the jarrah zone. More extensive swamps in the eastern jarrah forest may have allowed use of the area for a greater part of the year, especially if below-ground water was tapped. The large sites near Boddington are consistent with this general interpretation.
- 6) There was also some less patterned movement, more direct and rapid, through the forest zone from plain to plateau and vice versa by individuals and groups of varying sizes, for specific trade, social and ritual purposes (Anderson, 1984).

Anderson (Anderson, 1984) used variation in the density of sites per square kilometres in support of her model. Numbers of sites on the Swan Coastal Plain were calculated to range from 3 /km² to 6.5 /km², as opposed to the jarrah forests where site densities varied from 0.8 /km², 1.3 /km², 2 /km² and 5 /km². Artefact densities also varied, with those on the Swan Coastal Plain averaging at around 50,000 /km², and in the jarrah forest near the Darling Scarp returning averages of 24 /km², 52 /km², 75 /km² and a maximum of 190 /km².

The dominant lithic raw material in archaeological sites on the Swan Coastal Plain (and the Darling Scarp) is vein quartz (Anderson, 1984; Quartermaine, 1987, 1988; Veitch, 1997). Other lithological components recorded in archaeological sites include dolerite, granite, mylonite, crystal quartz, silcrete, glass, and fossiliferous chert. As the Swan Coastal Plain does not possess any sources of natural stone, all of the raw materials, except fossiliferous chert, originate in the Darling Scarp or to the east of the scarp (Anderson, 1984). The sources of fossiliferous chert are postulated as having occurred on the Continental Shelf to the west of the current coastline. Consequently, access to fossiliferous chert may have been denied from about 6,000 years ago when the sea level rose to its present level at the end of the Glacial Maximum (Glover, 1984).

In an appraisal of Anderson's model, Veth (1987) found a high number of large sites and high densities of archaeological material in the area now inundated by the Canning Dam. He concluded that this raised the possibility of spring and summer use of the Darling Scarp. Here the flaked stone assemblages were almost entirely dominated by quartz. Nearer to Boddington, whilst still dominated by quartz, flaked stone assemblages were found to include a range of other lithologies including dolerite, with chert, quartzite, calcrete, granite and even flaked glass artefacts also present in small numbers (Anderson, 1984).

Variation in the proportions of retouched artefacts were found to vary considerably between different areas from the Darling Scarp to the coast. Proportions of retouched artefacts recorded on archaeological sites indicate that:

- the Swan Coastal Plain includes percentages of retouched artefacts ranging from 9.9% to 17.8%;
- the jarrah forests returned low proportions of retouched artefacts (0.6% to 2.0%) (Anderson 1984; Veitch 1988; Veth et al. 1983); and
- one study in the Collie region returned a notably high average of 28.1% (Pearce unreferenced in Anderson, 1984).

The generally greater proportion of retouched artefacts on the Swan Coastal Plain may suggest more focussed use of this area as opposed to the jarrah forests (Anderson, 1984; Veth, 1993). Also, the higher numbers of sites found on the Bassendean Sands may suggest that this area was a prime focus of Aboriginal seasonal occupation.

The available evidence suggests greater site densities on the Swan Coastal Plain, dropping off in the dense jarrah forests, and then rising again in the eastern part of the jarrah forests as the less densely packed wandoo forests begin to dominate. This model continues to rely heavily on the suggestion that the jarrah forest is a relatively resource poor area (Anderson, 1984).

In opposition to Anderson's (1984) model, Ferguson (1985) suggested that Aboriginal society in the region made flexible responses to a scattered resource base, leaving little in the way of an archaeological signature. Ferguson (1985) supported Hallam's (1975) model derived from ethno-historical sources. Ferguson suggested that the open coastal plains and eastern woodlands were more intensively used compared to the forests (particularly the karri forests). Similar findings have been reported for other forests in the Southwest region. A study of the southern forests suggests that poor resource availability and low encounter rates for archaeological material occur in forested areas, when compared to coastal plains.

The over-riding pattern of open site location thus far detected on the Swan Coastal Plain has been one where artefact scatters have been located in clearings, where high ground surface visibility makes detection much easier. This aspect of site location begs the question regarding whether this is simply a function of ground surface visibility and whether the detected archaeological record may simply represent a skewed sample.

Another pattern of site location is where artefact scatters have been predominantly found associated with drainage lines and water sources (Veth, 1987). This site patterning is consistent with other regions in Western Australia and reflects not only a need for potable water but is probably associated with a greater diversity of floristic associations and relatively richer resource zones near to more permanent water sources (Bowdler et al., 1991; Veth, 1993).

Using traditional models for archaeological site location Anderson (1984) predicted that there will be a higher density of archaeological sites near to water sources and on elevated sandy areas near to water. The assemblages at these sites will tend to be dominated by quartz, with lesser proportions of dolerite, granite, silcrete, quartzite and chert.

Previous Heritage Assessments

A search of the Department of Planning, Lands, and Heritage's (DPLH) online Aboriginal Heritage Inquiry System (AHIS) shows that the Project Area does not intersect with any Registered Aboriginal Sites or Other Heritage Places (Appendix Two). Four previous heritage surveys intersect the project area (Table 4). However, only one has featured an archaeological survey, and all have been broader scale surveys that did not target the Project Area. According to the AHIS system, no focused archaeological survey has been conducted on Keysbrook lots 20, 64, 201, 507, or 508.

Table 4. Previous Heritage Surveys that intersect the Project Area

DPLH ID	Report Title	Type	Author
22366	Indigenous heritage of the Peel – Harvey Region : a review of previous research and archival data for phase 1 of the Peel Cultural Landscape Assessment Project	Archaeological & Ethnographic	Dortch, J.
22724	A report of an Aboriginal Heritage survey of a proposed Sand Mining Project at Keysbrook	Ethnographic	Western Heritage Research
102670	Preliminary Report on the Survey of Aboriginal areas of Significance in the Perth Metropolitan & Murray River Regions July 1985	Ethnographic	O'Connor, R.
106534	Ethnographic report on an Aboriginal Community Consultation Project Conducted in Pinjarra, Western Australia	Ethnographic	De Gand, D.

SECTION THREE –METHODS

Archaeological Assessment

Survey

Due to the highly disturbed/developed nature of the Lots, the Project Area was inspected using a mixed method approach of vehicular and pedestrian survey. Archaeologists and Traditional Owners first surveyed the paddocks of Lots 20, 64, 201, 507, and 508 from vehicles to identify areas of archaeological potential. Areas of archaeological potential included:

- Zones that did not exhibit extensive disturbance from ground clearance, machinery, or farm operations;
- Historic water sources;
- Areas of unimpacted vegetation, or mature native trees with complex understoreys; and
- High rises, or sandy areas above the marshy flood zone.

Identified areas of archaeological potential were then surveyed using a series of pedestrian transects, with archaeologists and GKB Traditional Owners walking out from the identified point. Team members visually inspected the terrain for archaeological material.

SECTION FOUR – RESULTS

Lots 507, 508, and 201

Location

Lots 201, 507, and 508 are three plots of land immediately northeast of the Hopelands Road / Elliott Road intersection.

Coordinates

Coordinates for the surveyed area of Lots 201, 507, and 508 are detailed in Table 5 in Appendix One.

Environment

Lots 201, 507, and 508 are on a paddocked marshland. The paddocks have been extensively cleared and landscaped into level blocks of land. There are drainage channels throughout the paddocks. Vegetation largely consists of exotic turf and livestock pasture. Corridors and groves of mature *Melaleuca* spp. and *Eucalyptus* spp. are scattered across the property. Ground surface visibility ranged from 10 % on the pastured paddocks, and 30 % to 70 % in the native vegetated corridors and groves.

Previously Recorded Sites

Lots 201, 507, and 508 do not intersect with the boundaries of any previously recorded Aboriginal heritage places.

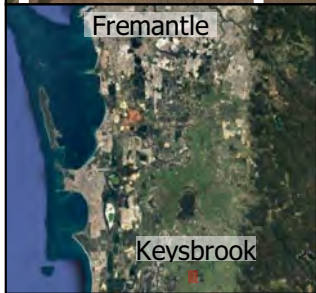
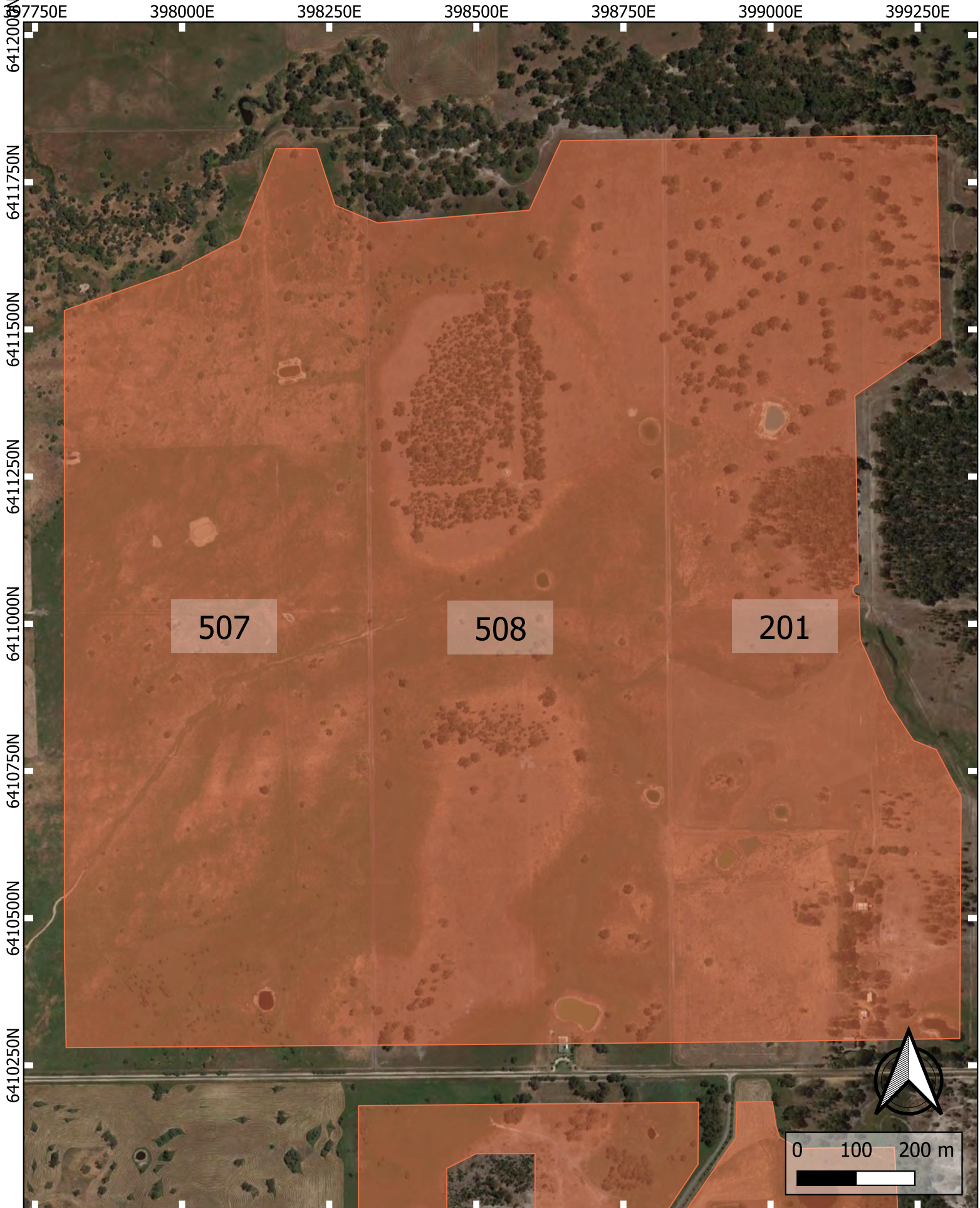
Results



Aboriginal Archaeological Sites

No Aboriginal archaeological sites were identified within Lots 201, 507, or 508.

Isolated Artefacts

No isolated artefacts were identified within Lots 201, 507, or 508.



Legend	
	Survey Area March 2023
	Lot Numbers


Map 3. Lots 507, 508, and 201 Survey Results
<small>Drafted by Lauren Jolliffe, 29th March, 2023. GDA94, Zone 50. Satellite imagery courtesy of Google and Wiki Maps.</small>

**Figure 1. Lots 201, 507, and 508 . Top:
View east of Lot 507 survey area; Middle:
Survey Team walking to inspect a targeted
area in Lot 508; Bottom: View east of Lot
508 survey area**



Lot 64

Location

Lot 64 is immediately southeast of the Hopelands Road – Elliott Road intersection.

Coordinates

Coordinates for the surveyed areas of Lot 64 are available in Table 5 in Appendix 1.

Environment

Lot 64 is on a paddocked marshland that has been extensively cleared and landscaped into flat blocks of land. Drainage channels are scattered throughout the paddocks. Vegetation largely consists of exotic turf and livestock pasture. Corridors and groves of mature *Melaleuca* spp. and *Eucalyptus* spp. are scattered across the property. Ground surface visibility ranged from 10% on the pastured paddocks, and 30% to 70% in the native vegetated corridors and groves.

Previously Recorded Sites

Lot 64 does not intersect with the boundaries of any previously recorded Aboriginal heritage places.

Results

Aboriginal Archaeological Sites

No Aboriginal Archaeological sites were identified within Lot 64.

Isolated Artefacts

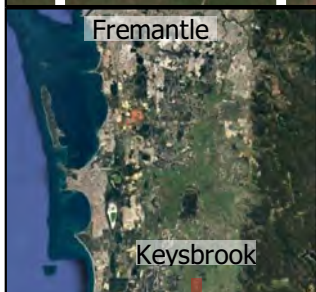
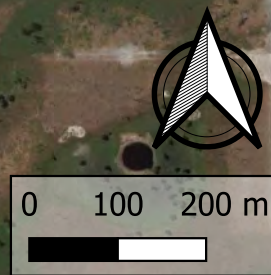
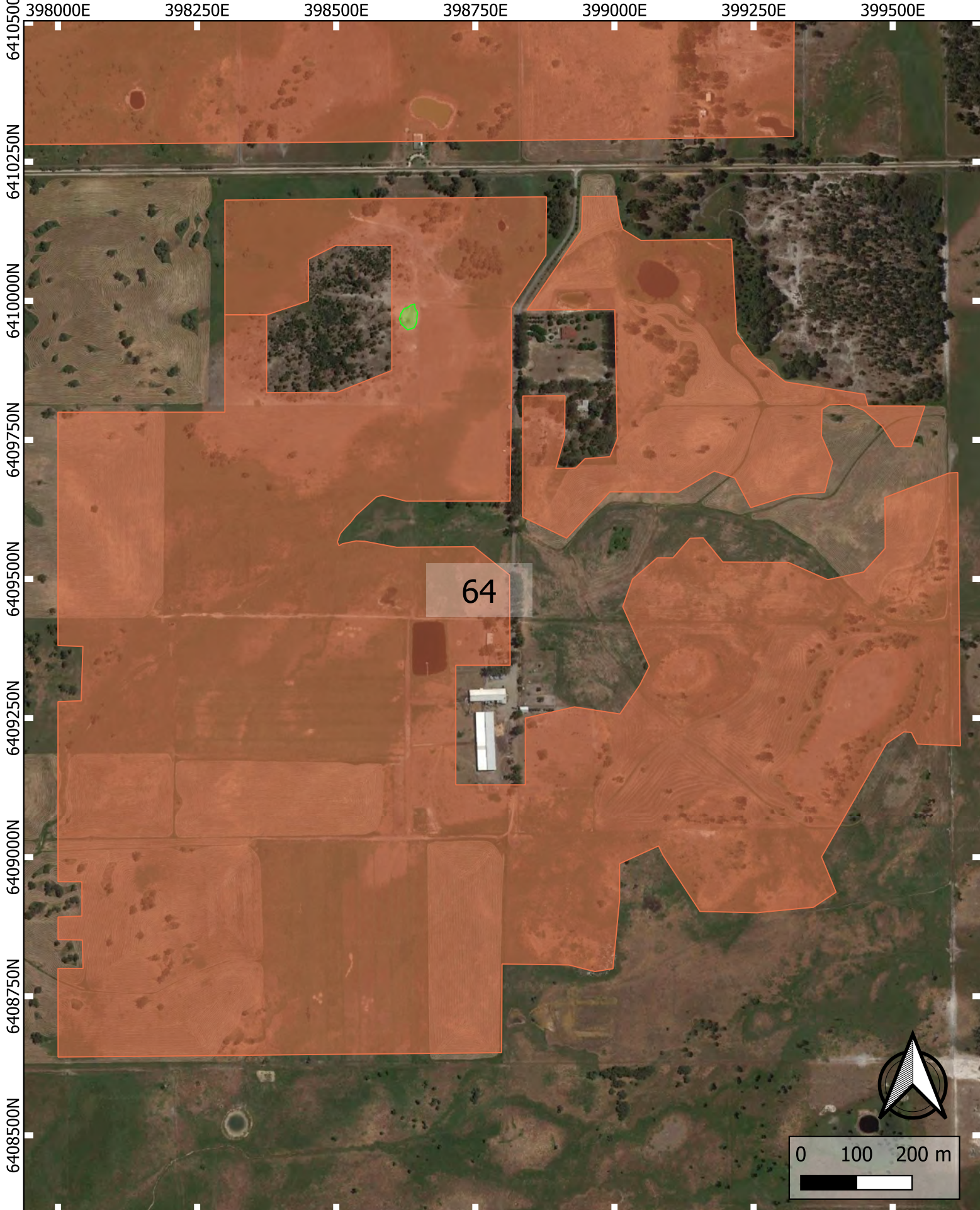
No isolated artefacts were identified within Lot 64.

Potential Ethnographic Site

During survey of Lot 64, GKB Traditional Owners John Michael and Gus Michael highlighted an area they believed to be of cultural significance. The area had been initially selected for pedestrian survey due to its sandy, raised position above the surrounding marshland. The area also features a corridor of mature *Eucalyptus* spp. trees, and a sandy blowout with scattered quartz pieces.

Archaeologists examined approximately 60 small to very small quartz pieces and did not find any artefactual or diagnostic pieces. No archaeological material was identified at this place.

GKB Traditional Owners present at the archaeological survey requested the place be recorded as an ethnographic site, citing the area's favourable characteristics for traditional burials, or use as a campsite during floods of the surrounding marshland. Ethnoscience were advised of this result by phone on the 22nd of March 2023, and provided with spatial data for the potential ethnographic site (Table 6 in Appendix 1) on the 24 March 2023, ahead of the scheduled ethnographic survey on the 27 March 2023.



Legend

- Survey Area March 2023
- Potential Campsite Identified for Discussion at Ethnographic Survey
- Lot Numbers



Map 4. Lot 64 Survey Results

Drafted by Lauren Jolliffe, 29th March, 2023. GDA94, Zone 50. Satellite imagery courtesy of Google and Wiki Maps.

Figure 2. Lot 64. Top: View south of Lot 64 Survey Area; Middle: View south Potential Ethnographic Site in Lot 64; Bottom: View east of livestock in paddock of Lot 64



Lot 20

Location

Lot 20 is a plot of land in Keysbrook, Western Australia. The lot is immediately southeast of the Hopelands Road – Elliott Road intersection.

Coordinates

Coordinates for the surveyed areas of Lot 20 are available in Table 5 in Appendix 1.

Environment

Lots 20 is a on a paddocked marshland in Keysbrook, Western Australia. The paddocks have been extensively cleared and landscaped into flat blocks of land. Drainage channels are scattered throughout the paddocks. Vegetation largely consists of exotic turf and livestock pasture in the paddocks. Corridors and groves of mature *Melaleuca* spp. and *Eucalyptus* spp. are scattered across the property. Ground surface visibility ranged from 10 % on the pastured paddocks, and 30 % to 50 % in the native vegetated corridors and groves.

Previously Recorded Sites

Lot 20 does not intersect with the boundaries of any previously recorded Aboriginal heritage places.

Results

Aboriginal Archaeological Sites

No Aboriginal Archaeological sites were identified within Lot 20.

Isolated Artefacts

No Isolated Artefacts were identified within the Project Area at Keysbrook Lot 20.



- Legend**
- Survey Area March 2023
 - 20 Lot Numbers



Map 5. Lot 20 Survey Results

Drafted by Lauren Jolliffe, 29th March, 2023. GDA94, Zone 50. Satellite imagery courtesy of Google and Wiki Maps.

Discussion

Ethnoscience, on behalf of Doral Mineral Sands, engaged Archae-aus to undertake an archaeological survey of Doral's proposed Keysbrook Mineral Sands Mine Expansion works. The fieldwork was conducted over two days from the 22 to 23 March 2023. GKB Traditional Owners participated in all aspects of the Aboriginal archaeological surveys and are aware of the results detailed in this report.

The Project Area consists of five Lots in Keysbrook, Western Australia, totalling an area of 3.85 km². Lots 507, 508, and 201 are northeast of the Elliott Road - Hopelands Road intersection in Keysbrook. Lot 64 is southeast of the Elliott Road - Hopelands Road intersection, and north of the current Doral mine office. Lot 20 is east of Hopelands Road, and south of the current Doral mine office (see Map 1).

The survey team did not locate any archaeological sites or isolated artefacts. This is in part due to the heavy paddock grasses that afford almost no ground surface visibility. As such, any archaeological sites or isolated artefacts may have been totally obscured due to poor surface visibility.

The best chance of locating archaeological sites within the Project Area was to target sections relatively devoid of vegetation. The survey team did locate a relatively small area that had been stripped of vegetation which enabled better visibility, although most of the area has been dug up by earth moving machinery sometime prior. This has resulted in several very small and numerous pieces of white quartz on the ground surface. On inspection, these were not deemed as stone tools as they did not possess the kinds of characteristics that stone artefacts display such as a bulb of percussion; identifiable flake scars or evidence of tool use such as retouch or identifiable use wear.

It is also important to consider the connections that the Ballardong Traditional owners have with the Keysbrook area. Traditional Owner John Michael stated that in past this whole area would have been the ideal place for camping, hunting and fishing and an area where people walked through to find resources such as kangaroos and emus, which remain an important sources of protein. Mr Michael also stated that some time ago, before farming came into this area, that Keysbrook was a free-flowing brook that contained resources such as fish and turtles.

SECTION FIVE –RECOMMENDATIONS

It is recommended that Ethnoscience, Doral, and their contractors are aware:

- 1) that the Site Identification Archaeological Survey of Lots 20, 64, 201, 507, and 508, is **complete**;
- 2) that no Aboriginal archaeological sites or isolated artefacts were identified; and
- 3) that potential ethnographic site identified in Lot 64 be visited and subjected to an ethnographic consultation and (if applicable) site recording with an anthropologist and the appropriate GKB representatives.

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APPENDIX ONE – SURVEY DATA

Table 5. Coordinates of Surveyed Areas

Lot(s)	Polygon	Node	Easting	Northing	Node	Easting	Northing
201,507, & 508	A	1	399282	6411830	32	398601	6410286
		2	399286	6411651	33	398327	6410284
		3	399289	6411486	34	398199	6410283
		4	399235	6411449	35	398004	6410282
		5	399144	6411388	36	397803	6410280
		6	399146	6411285	37	397800	6410450
		7	399146	6411246	38	397800	6410650
		8	399149	6411134	39	397800	6410850
		9	399150	6411067	40	397800	6411050
		10	399146	6411066	41	397800	6411250
		11	399143	6411064	42	397800	6411450
		12	399141	6411060	43	397800	6411533
		13	399141	6411055	44	398000	6411602
		14	399142	6411052	45	398000	6411605
		15	399145	6411049	46	398088	6411650
		16	399150	6411047	47	398088	6411650
		17	399150	6411046	48	398098	6411654
		18	399153	6410973	49	398160	6411807
		19	399184	6410902	50	398200	6411808
		20	399198	6410871	51	398200	6411808
		21	399213	6410849	52	398229	6411807
		22	399238	6410809	53	398260	6411711
		23	399243	6410802	54	398323	6411685
		24	399282	6410786	55	398333	6411681
		25	399324	6410706	56	398591	6411703
		26	399324	6410639	57	398644	6411821
		27	399323	6410450	58	398820	6411823
		28	399322	6410296	59	399003	6411826
		29	399200	6410294	60	399203	6411829
		30	399000	6410290	61	399282	6411830
		31	398833	6410289			
64	A	1	399622	6409200	65	398375	6409975
		2	399545	6409203	66	398300	6409975
		3	399534	6409224	67	398300	6410181
		4	399520	6409225	68	398449	6410183

5	399489	6409204	69	398599	6410184
6	399484	6409195	70	398878	6410187
7	399372	6409000	71	398877	6410082
8	399398	6408937	72	398815	6409989
9	399358	6408910	73	398815	6409829
10	399326	6408907	74	398815	6409829
11	399282	6408903	75	398812	6409640
12	399255	6408900	76	398625	6409640
13	399206	6408901	77	398584	6409651
14	399154	6408902	78	398572	6409648
15	399090	6408999	79	398536	6409615
16	399088	6409003	80	398526	6409602
17	399079	6409020	81	398515	6409591
18	399009	6408988	82	398507	6409582
19	399009	6408925	83	398502	6409567
20	399003	6408855	84	398505	6409560
21	398997	6408800	85	398512	6409564
22	398977	6408796	86	398536	6409569
23	398965	6408794	87	398552	6409568
24	398918	6408806	88	398598	6409559
25	398850	6408807	89	398608	6409557
26	398824	6408808	90	398718	6409558
27	398798	6408808	91	398748	6409558
28	398797	6408649	92	398812	6409507
29	398601	6408647	93	398812	6409425
30	398400	6408645	94	398813	6409345
31	398200	6408642	95	398715	6409345
32	398000	6408641	96	398715	6409200
33	398000	6408800	97	398715	6409130
34	398045	6408800	98	398800	6409130
35	398044	6408851	99	398840	6409130
36	398000	6408852	100	398840	6409201
37	398000	6408892	101	398840	6409232
38	398043	6408894	102	398840	6409250
39	398043	6408956	103	398928	6409270
40	398000	6408956	104	399010	6409257
41	398000	6409000	105	399046	6409310
42	398000	6409200	106	399063	6409343
43	398000	6409280	107	399037	6409401
44	398000	6409280	108	399015	6409450
45	398042	6409281	109	399033	6409500

B		46	398045	6409379	110	399077	6409538
		47	398000	6409380	111	399105	6409538
		48	398000	6409400	112	399136	6409573
		49	398000	6409600	113	399159	6409574
		50	398000	6409800	114	399194	6409531
		51	398200	6409800	115	399195	6409531
		52	398300	6409800	116	399313	6409530
		53	398300	6409975	117	399383	6409499
		54	398375	6409975	118	399401	6409503
		55	398375	6409835	119	399448	6409513
		56	398398	6409835	120	399487	6409555
		57	398439	6409835	121	399487	6409601
		58	398500	6409835	122	399486	6409647
		59	398600	6409875	123	399602	6409691
		60	398600	6409987	124	399617	6409691
		61	398600	6410100	125	399618	6409600
		62	398500	6410100	126	399620	6409400
		63	398450	6410075	127	399621	6409231
		64	398450	6410000	128	399622	6409200
	B	1	399015	6410128	25	399200	6409687
		2	399048	6410109	26	399180	6409694
		3	399211	6410111	27	399115	6409656
		4	399218	6409985	28	398992	6409657
		5	399220	6409942	29	398914	6409574
		6	399250	6409900	30	398835	6409612
		7	399276	6409879	31	398835	6409829
		8	399307	6409854	32	398911	6409829
		9	399450	6409832	33	398911	6409756
		10	399455	6409811	34	398895	6409699
		11	399558	6409811	35	398930	6409699
		12	399533	6409738	36	398947	6409716
		13	399505	6409738	37	398992	6409720
		14	399481	6409775	38	399005	6409753
		15	399448	6409804	39	399005	6409801
		16	399421	6409814	40	399001	6409984
		17	399386	6409813	41	398843	6409984
		18	399373	6409805	42	398941	6410127
		19	399372	6409758	43	398943	6410188
		20	399392	6409711	44	399001	6410188
		21	399378	6409656	45	399003	6410188
		22	399320	6409652	46	399009	6410148

		23	399245	6409628	47	399015	6410128
		24	399217	6409682			
20	A	1	397800	6405400	13	398392	6405327
		2	398797	6405411	14	398241	6405326
		3	398809	6405411	15	398235	6405240
		4	398802	6405402	16	398200	6405251
		5	398800	6405257	17	398050	6405303
		6	398747	6405252	18	397999	6405297
		7	398684	6405319	19	397978	6405295
		8	398644	6405316	20	397910	6405252
		9	398600	6405296	21	397860	6405239
		10	398558	6405279	22	397800	6405281
		11	398400	6405251	23	397800	6405400
		12	398390	6405251			

Table 6. Coordinates of a Potential Ethnographic Site identified for Ethnographic Survey

Place	Lot	Node	Easting	Northing	Node	Easting	Northing
Potential Campsite identified for Ethnographic Survey	64	1	398616.6	6409959	8	398641.6023	6409987.05
		2	398613.7	6409968	9	398646.1907	6409979.557
		3	398616.3	6409977	10	398644.5904	6409961.137
		4	398621.9	6409986	11	398640.2662	6409951.78
		5	398629.4	6409989	12	398628.4596	6409947.891
		6	398634.8	6409993	13	398616.5969	6409958.859
		7	398641.2	6409994			

APPENDIX TWO – DPLH AHIS REGISTER SEARCHES

Search Criteria

No Other Heritage Places in Shapefile - Survey Area

Disclaimer

The *Aboriginal Heritage Act 1972* preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at AboriginalHeritage@dplh.wa.gov.au and we will make every effort to rectify it as soon as possible.

South West Settlement ILUA Disclaimer

Your heritage enquiry is on land **within or adjacent to** the following Indigenous Land Use Agreement(s): Gnaala Karla Booja Indigenous Land Use Agreement.

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will 'impact' (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Mines, Industry Regulation and Safety (DMIRS) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DMIRS, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at <https://www.wa.gov.au/organisation/departments/departments-of-the-premier-and-cabinet/south-west-native-title-settlement>.

Further advice can also be sought from the Department of Planning, Lands and Heritage at AboriginalHeritage@dplh.wa.gov.au.

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Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

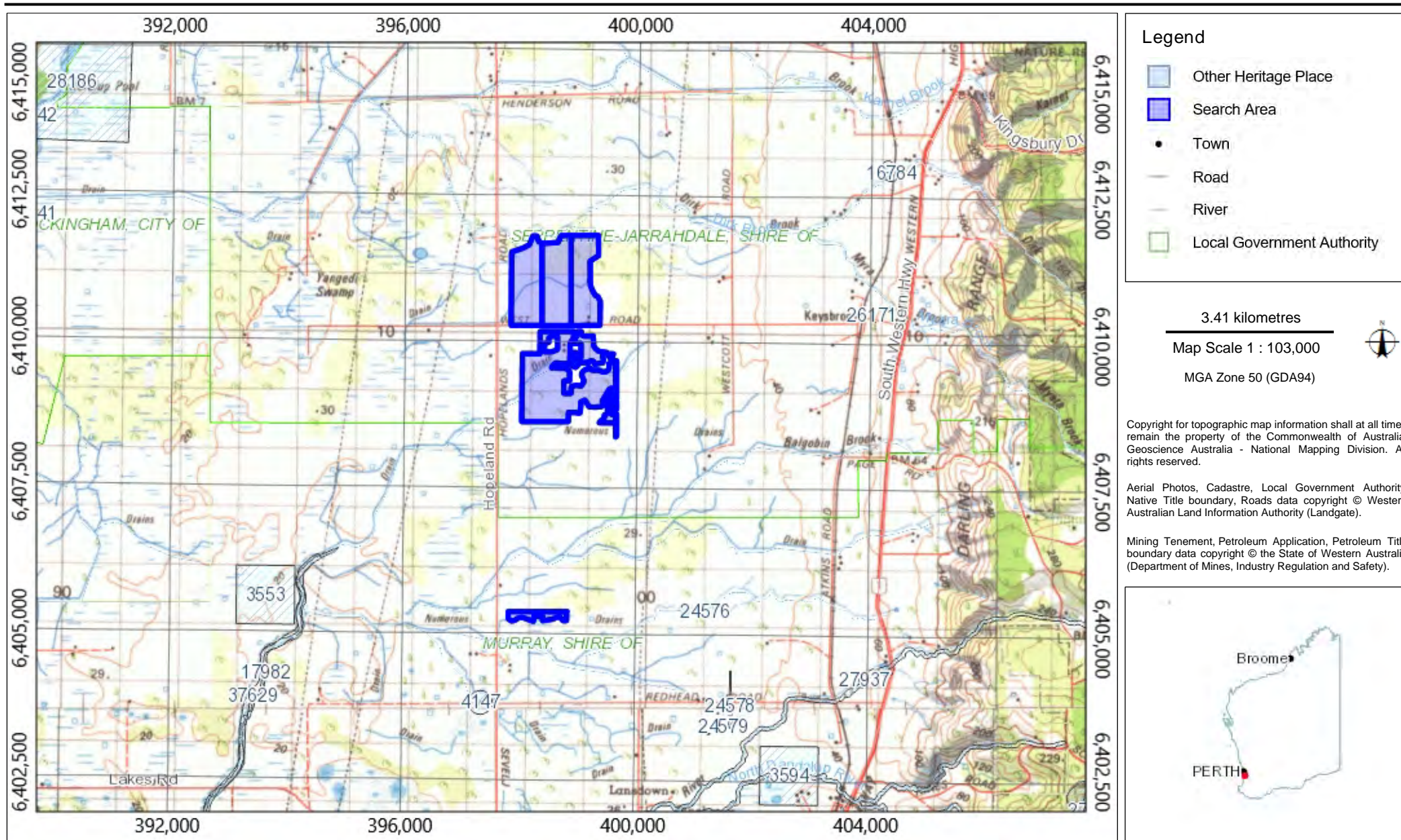
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Map of Other Heritage Places



Search Criteria

4 Heritage Surveys containing 4 Survey Areas in Shapefile - Survey Area

Disclaimer

Heritage Surveys have been mapped using information from the reports and / or other relevant data sources. Heritage Surveys consisting of small discrete areas may not be visible except at large scales. Reports shown may not be held at the Department of Planning, Lands and Heritage (DPLH). Please consult report holder for more information. Refer to www.dplh.wa.gov.au/information-and-services/aboriginal-heritage for information on requesting reports held by DPLH.

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Access

Some reports are restricted.

Spatial Accuracy

The following legend strictly applies to the spatial accuracy of heritage survey boundaries as captured by DPLH.

Very Good	Boundaries captured from surveyed titles, GPS (2001 onwards) submitted maps georeferenced to within 20m accuracy.
Good / Moderate	Boundaries captured from GPS (pre 2001) submitted maps georeferenced to within 250m accuracy.
Unreliable	Boundaries captured from submitted maps georeferenced to an accuracy exceeding 250m.
Indeterminate	Surveys submitted with insufficient information to allow boundary capture.

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Aboriginal Heritage Inquiry System

List of Heritage Surveys

For further important information on using this information please see the
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<https://www.dplh.wa.gov.au/about-this-website>

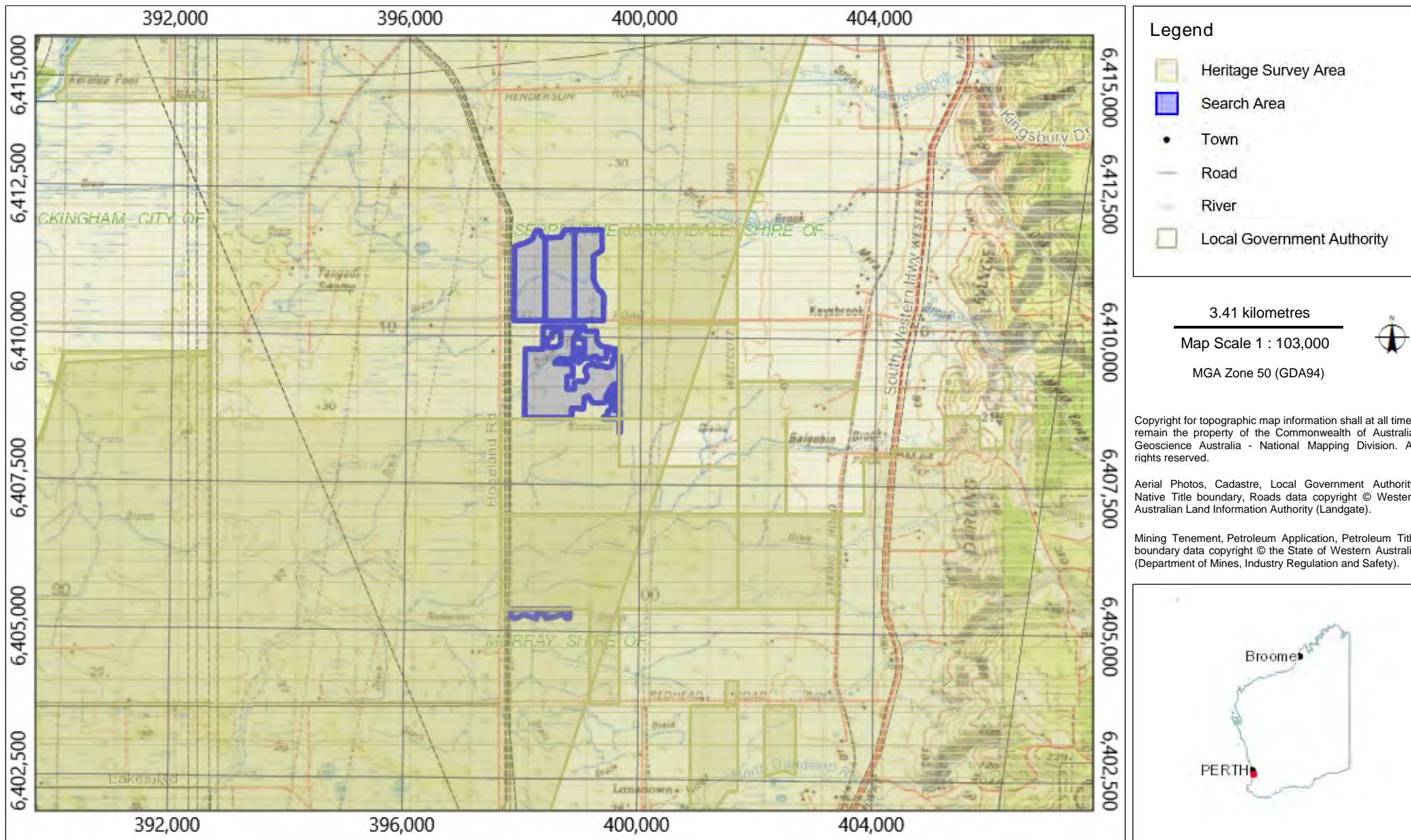
Survey Report ID	Report Title	Report Authors	Area Number	Survey Type	Area Description	Spatial Accuracy	Field / Desktop
22366	Indigenous heritage of the Peel - Harvey Region : a review of previous research and archival data for phase 1 of the Peel Cultural Landscape Assessment Project	Dortch, Joe	1	Archaeological & Ethnographic	phase 1 of the Peel Cultural Landscape Assessment Project	Good	Field and Desktop
22724	A report of an Aboriginal Heritage survey of a proposed Sand Mining Project at Keysbrook	Western Heritage Research Pty. Ltd.	1	Ethnographic	Keysbrook. Bounded by the following roads; on the east by Atkins Road, on the west by Hopeland Road, on the south by Redheads Road and on the north by Elliot Road. Including lots 1,3,6,7,44,49,52,56,57,59,62,63,111,112,113, 300.	Very Good	Field and Desktop
102670	Preliminary Report on the Survey of Aboriginal Areas of Significance in the Perth Metropolitan & Murray River Regions July 1985.	O'Connor, R	1	Ethnographic	Perth Metropolitan & Murray River Regions. A roughly triangular region, with Yanchep National Park as the Northern point, Gidgegannup as the Eastern point and Pinjarra as the Southern point.	Indeterminate	Field and Desktop
106534	Ethnographic report on an Aboriginal Community Consultation Project conducted in Pinjarra, Western Australia	De Gand, Daniel	1	Ethnographic	Murray Shire	Very Good	Field only



Aboriginal Heritage Inquiry System

Map of Heritage Survey Areas

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Search Criteria

No Registered Aboriginal Sites in Shapefile - Survey Area

Disclaimer

The Aboriginal Heritage Act 1972 preserves all Aboriginal sites in Western Australia whether or not they are registered. Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist.

The information provided is made available in good faith and is predominately based on the information provided to the Department of Planning, Lands and Heritage by third parties. The information is provided solely on the basis that readers will be responsible for making their own assessment as to the accuracy of the information. If you find any errors or omissions in our records, including our maps, it would be appreciated if you email the details to the Department at AboriginalHeritage@dplh.wa.gov.au and we will make every effort to rectify it as soon as possible.

South West Settlement ILUA Disclaimer

Your heritage enquiry is on land within or adjacent to the following Indigenous Land Use Agreement(s): Gnaala Karla Booja Indigenous Land Use Agreement.

On 8 June 2015, six identical Indigenous Land Use Agreements (ILUAs) were executed across the South West by the Western Australian Government and, respectively, the Yued, Whadjuk People, Gnaala Karla Booja, Ballardong People, South West Boojarah #2 and Wagyl Kaip & Southern Noongar groups, and the South West Aboriginal Land and Sea Council (SWALSC).

The ILUAs bind the parties (including 'the State', which encompasses all State Government Departments and certain State Government agencies) to enter into a Noongar Standard Heritage Agreement (NSHA) when conducting Aboriginal Heritage Surveys in the ILUA areas, unless they have an existing heritage agreement. It is also intended that other State agencies and instrumentalities enter into the NSHA when conducting Aboriginal Heritage Surveys in the ILUA areas. It is recommended a NSHA is entered into, and an 'Activity Notice' issued under the NSHA, if there is a risk that an activity will 'impact' (i.e. by excavating, damaging, destroying or altering in any way) an Aboriginal heritage site. The Aboriginal Heritage Due Diligence Guidelines, which are referenced by the NSHA, provide guidance on how to assess the potential risk to Aboriginal heritage.

Likewise, from 8 June 2015 the Department of Mines, Industry Regulation and Safety (DMIRS) in granting Mineral, Petroleum and related Access Authority tenures within the South West Settlement ILUA areas, will place a condition on these tenures requiring a heritage agreement or a NSHA before any rights can be exercised.

If you are a State Government Department, Agency or Instrumentality, or have a heritage condition placed on your mineral or petroleum title by DMIRS, you should seek advice as to the requirement to use the NSHA for your proposed activity. The full ILUA documents, maps of the ILUA areas and the NSHA template can be found at <https://www.wa.gov.au/organisation/departments/departments-of-the-premier-and-cabinet/south-west-native-title-settlement>.

Further advice can also be sought from the Department of Planning, Lands and Heritage at AboriginalHeritage@dplh.wa.gov.au.

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Coordinate Accuracy

Coordinates (Easting/Northing metres) are based on the GDA 94 Datum. Accuracy is shown as a code in brackets following the coordinates.

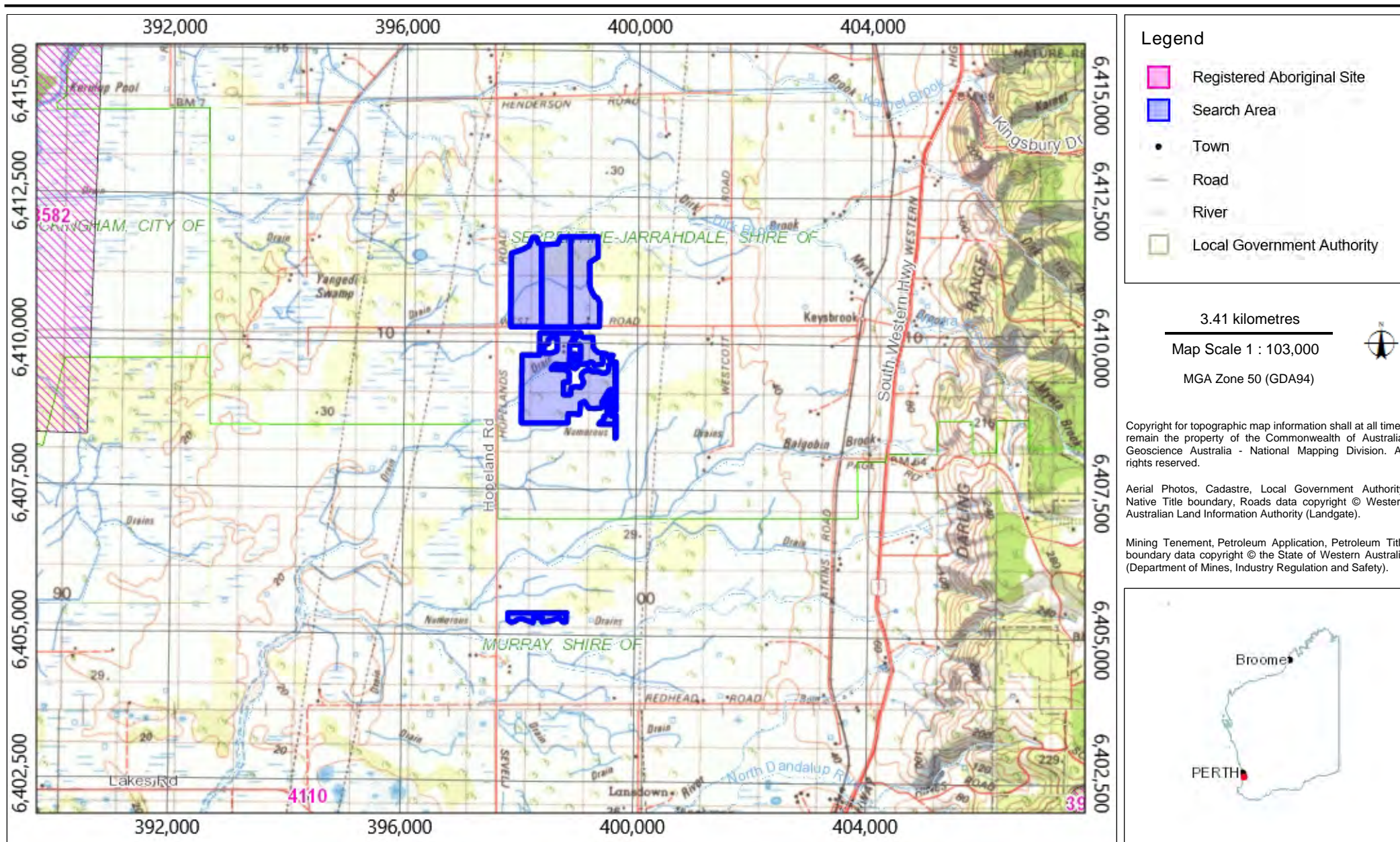
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Map of Registered Aboriginal Sites





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