APPENDIX 9B

ARCHAEOLOGY ASSESSMENT

SNAPPY GUM
HERITAGE SERVICES

Report on the Site Identification Archaeological Survey of the Yalyalup Mineral Sands Project survey area, east of Busselton, Western Australia – November 2019.

For Ethnosciences, the South West Boojarah People and Doral Mineral Sands Pty Ltd

Consultants Ref: 1931

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December 2019

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Aboriginal and Torres Strait Islander viewers are warned that this report may contain images and names of deceased persons.

EXECUTIVE SUMMARY

This document is the final report in relation to the findings of an Aboriginal archaeological survey over the proposed Yalyalup Mineral Sands Project within tenement R70/0052, located 10.7 km east of Busselton in south-west Western Australia. The survey area lies within the South West Boojarah #2 native title claim area (WC2006/004).

Snappy Gum Heritage Services Pty Ltd (SGH) was commissioned by Ethnosciences on behalf of Doral Mineral Sands Pty Ltd (Doral) to undertake an archaeological survey over the proposed work area using a Site Identification methodology. This work was undertaken with the approval of the South West Boojarah native title claimants and their native title representative body, the South West Aboriginal Land and Sea Council (SWALSC).

The field investigation took place between 18 to 21 November 2019. South West Boojarah representatives Wayne and Toni Webb participated in the field survey and were involved in all aspects of the work. They have provided input into the contents and recommendations of this report and are aware of the survey results and recommendations. It is understood that Dr Edward McDonald will be undertaking ethnographic consultation in the near future.

Doral proposes to develop a mineral sands deposit within the survey area, including the development of open-cut mine pits and associated infrastructure, wet concentration processing plant, solar evaporation ponds, groundwater abstraction, water management infrastructure and process water pond, dams and haul roads (Bourke Snr 2019). The proposed development will include a total disturbance of 373 hectares within a development envelope of 894 hectares.

As a result of the archaeological field investigation:

- The archaeological survey within the Yalyalup Mineral Sands Project survey area is complete;
- No new Aboriginal archaeological places were identified or recorded;
- One Registered Aboriginal Site, the Abba River (DPLH Site 17354) lies across the proposed haul road; and
- A total of 33 isolated artefacts were recorded across the survey area.

Based on these results, a series of recommendations are proposed:

1) It is **recommended** that Doral ensure that all relevant staff/contractors are informed of the location and registered status of the Abba River (DPLH Site 17354) on the DPLH Aboriginal Heritage Register. This site has historical and mythological importance and has been assessed by the ACMC to be an Aboriginal Site under the *Aboriginal Heritage Act 1972*;

2) Doral should continue to avoid the above mentioned Aboriginal archaeological site where possible.

3) It is **recommended** that should Doral require to use the land on which the Abba River (DPLH Site 17354) Registered Site exists:

    a) an application under section 18 of the *Aboriginal Heritage Act 1972* should be submitted to the Minister for Aboriginal Affairs for consent to use the land prior to the conduct of any ground disturbing works;

    b) should consent under section 18 be granted, it is **recommended** that Doral engage monitors (selected by the South West Boojarah people and SWALSC) to oversee ground disturbance works along the Abba River to ensure that no archaeological materials (surface or sub-surface) are disturbed.

4) Should any cultural materials or skeletal materials/burials be identified during ground disturbance works, Doral is reminded of their obligations under section 15 of the *Aboriginal Heritage Act 1972* to report the discovery of any cultural material and/or skeletal remains/burials to the DPLH (and, in the case of skeletal materials, the police) and should stop work immediately.

5) It is **recommended** to the ACMC that the 33 isolated artefacts are not considered to be Aboriginal sites under section 5 or section 6 of the *Aboriginal Heritage Act 1972*.

6) It is **recommended** to Doral that the work may proceed as planned, subject to the above recommendations, within the Yalyalup Mineral Sands Project survey area (as listed in Appendix 1 – Completed Survey Area Boundary Coordinates).

Doral is reminded that the above recommendations may be subject to change as the AHA is currently under review. The proposed changes, if any, are currently expected to take place at the end of 2020.

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SPATIAL ACCURACY

Data for this survey was recorded using a Garmin hand-held GPS and configured using the GDA94 coordinate system. The coordinates listed in the report are recorded within MGA Zone 50H. These coordinates are accurate to within ±15 m (Garmin Limited 1996).

ACRONYMS & DEFINITIONS

The following acronyms are used throughout this report.

ACMC	Aboriginal Cultural Materials Committee	GDA94	Geographic datum of Australia 1994, Western Australia 2000
AHA	*Aboriginal Heritage Act* 1972	GIS	Geographic Information System
AHIS	Aboriginal Heritage Inquiry System	GPS	Global Positioning System
ATSIHP	Aboriginal & Torres Strait Islander Heritage Protection Act 1984	NTA	Native Title Act 1993
Cth	Commonwealth	NRTB	Native Title Representative Body
DAA	Department of Aboriginal Affairs	OHP	Other Heritage place
DPLH	Department of Planning, Lands and Heritage	SGH	Snappy Gum Heritage Services Pty Ltd
EPBA	Environmental Protection & Biodiversity Act 1999	SWALSC	South West Aboriginal Land and Sea Council

The following definitions are used throughout this report.

Aboriginal site	A site protected under the *AHA* on the Aboriginal Site Register, administered by DPLH.
Desktop survey	An inspection of the Aboriginal site register, reports and other relevant materials to determine the presence or absence of Aboriginal sites or Aboriginal archaeological places within a given area.
Aboriginal archaeological place	In the context of this report, this phrase applies to areas of cultural materials remnant of past Aboriginal occupation. These places are considered to have some archaeological significance but have not yet been determined as Aboriginal sites under *AHA* by the ACMC. Other types of significance may also apply.
Isolated artefact	Any artefacts that are not considered to fall within an Aboriginal archaeological place or site and are considered to have little or no archaeological significance.

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INTRODUCTION

This document is the final report in relation to the findings of an Aboriginal archaeological survey over the proposed Yalyalup Mineral Sands Project within tenement R70/0052, located 10.7 km east of Busselton in south-west Western Australia. The survey area lies within the South West Boojarah #2 native title claim area (WC2006/004).

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The field investigation took place between 18 to 21 November 2019. South West Boojarah representatives participated in the field survey (Mr Wayne Webb is a member of the South West Boojarah native title claim and is an active participant with SWALSC – see Table 1) and were involved in all aspects of the work. They have provided input into the contents and recommendations of this report and are aware of the survey results and recommendations. It is understood that Dr Edward McDonald will be undertaking ethnographic consultation in the near future.

Table 1: Survey participants – 18 to 21 November 2019.

SGH	South West Boojarah
Kellie Cue	Wayne Webb
Tessa Woods	Toni Webb
Ryan Hovingh *	

* Present 20 November 2019

The purpose of this report is to:

a) Record any newly identified Aboriginal archaeological places within the survey area to inform Doral of its location;

b) describe the archaeological significance of any new Aboriginal archaeological places recorded using the Site Identification method; and

c) to provide recommendations on the management and protection of these Aboriginal archaeological places within the proposed development areas.

To this end, the following report will provide an introduction to the project, environmental context and the survey methods employed; an analysis of the desktop survey and the field results; and a discussion of the investigation. Recommendations are presented based on the results, with new Aboriginal archaeological places discussed with respect to their potential to contribute to archaeological research in the wider South-West region as well as the broader Australian landscape. To provide a background, this report will outline the context regarding archaeological research in the South-West and will discuss the key themes in Australian archaeology. An outline of the legal and ethical context regarding the recognition, protection and management of Aboriginal heritage under State and Commonwealth legislation is also described.

PROPOSED DEVELOPMENT AREA

Doral proposes to develop a mineral sands deposit within the survey area, including the development of open-cut mine pits and associated infrastructure, wet concentration processing plant, solar evaporation ponds, groundwater abstraction, water management infrastructure and process water pond, dams and haul roads (Bourke Snr 2019). The proposed development will include a total disturbance of 373 hectares within a

development envelope of 894 hectares. Much of the disturbed area is on cleared agricultural land. The life of the mine is expected to be up to 5.5 years. Summary information is listed in Table 2.

Table 2: Yalyalup Mineral Sands Project survey area summary.

Survey area	Proposed activity	Work Program	Tenement No.	Area (km^2)
Yalyalup Mineral Sands Project	Sand mining, infrastructure and haul road	Site Identification	R70/52	9.3

ENVIRONMENTAL CONTEXT

Regional environment

This section provides a summary of the regional environment to understand the context in which past Aboriginal people may have lived and moved through country.

The Yalyalup Mineral Sands Project survey area is situated on the Swan Coastal Plain, between 9.7 km and 15.3 km south-east of Busselton. The Whicher Scarp abuts the eastern boundary of the Swan Coastal Plain approximately 3.5 km to the east of the survey area.

The Swan Coastal Plain extends from Jurien in the north to Dunsborough in the south and is comprised of an approximately 20 – 30 km wide strip running roughly parallel with the south-west coast of Western Australia (Gibbs 2011; Webb, Keighery *et al.* 2009). It is composed of Quaternary sediments of alluvial and aeolian origin, with the Yalyalup Minerals Sands Project survey area located atop the Pinjarra Plain, one of the six major landforms of the Swan Coastal Plain (Webb, Keighery *et al*. 2009). The Pinjarra Plain is an alluvial plain of Pleistocene to Holocene age, originating from the river systems flowing down from the plateaus (Astron Environmental Services 2013; Government of Western Australia 2000). As per Webb, Keighery *et al*. (2009:10):

> "The Pinjarra Plain is composed of alluvial (riverine) and colluvial (erosional) deposits. These deposits have been eroded from the adjoining Blackwood and Darling Plateaus and deposited over the last three million years by the alluvial fans of rivers and streams, as the flow rates slow and there is a loss of sediment carrying capacity."

The Pinjarra Plain can be divided into upland and wetland areas and is generally very poorly drained (Moore 2001; Webb, Keighery *et al.* 2009). The Abba and Sabina Rivers are the major water systems local to the survey area, both of which flow west into the Geographe Coastal Wetlands. Jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) forest historically covered much of the upland areas (though this has now mostly been cleared) (Patrick 2005). Forest blackbutt (*Eucalyptus patens*) grows with Marri near rivers, with River Gum (*Eucalyptus rudis*) and Paperbark trees (*Melaleuca rhaphiophylla*) present along watercourses. Low Paperbark woodland was present in the wetlands and swamps, along with grass trees (*Kingia australis*) and the occasional Christmas Tree (*Nuytsia floribunda*). Low open forest with *Banksia* spp., *Nuytsia* spp. and *Melaleuca* species occurs on more sandy soils.

The Yalyalup Mineral Sands Project survey area is located within the Abba Plain soil-landscape system (Bourke Snr 2017). The Abba soil system contains a combination of a sandy grey brown duplex, alluvial soils, bleached sands, both shallow and deep red brown sands and loams over ironstone, and clay subsoils (Bourke Snr 2017).

This southern section of the Swan Coastal Plain was attractive for Aboriginal people because it was well watered and rich in resources year-round (Gibbs 2011), with groups tending to move around the landscape as seasonally available resources required. The current survey area and its surrounds were comprised of extensive wetlands until European colonisation when agricultural activities were introduced, with native vegetation cleared and the land altered to remove the water (through modifications to the river systems and the construction of drainage channels) and achieve ideal farming conditions (Environmental Protection Authority 1993). Drainage channels were built across most of the local area to divert much of the low lying waters towards the larger rivers to "prevent the backing up of water during winter periods to much rich,

cultivable land, and would further assist in the drainage of group settlements in the vicinity" (The Daily News 1927).

Local environment

Of the 8.94 km^2 (894.17 hectares) within Doral's Yalyalup Mineral Sands Project development envelope, at least 76.65% has been cleared of native vegetation (6.85 km^2, or 685.45 hectares) and is now classified as cleared pasture (Bourke Snr 2017). These are highly degraded areas consisting of paddocks, roads and dwellings.

Only a few narrow tracts of native vegetation exist within the survey area, primarily along the banks of the Abba and Sabina Rivers and along McGibbon Track. Vegetation in these areas includes *Eucalyptus* spp. trees (*Eucalyptus marginata* and *Eucalyptus rudis*), *Melaleuca* spp. trees (paperbarks), *Banksia littoralis* (Swamp Banksia), as well as *Hakea* spp. and *Acacia* spp. shrubs, with a thick understory of native weeds and sedges. Ground surface visibility in these areas is extremely poor, owing to heavy leaf litter and an overcrowded understory.

Pine trees have been planted in belts within some properties, likely to aid in stabilising the fine sandy ground. Some small areas of vegetation rehabilitation (or attempts at it) were observed, though these tended to be along the roadways. The only other native vegetation noted were lone Eucalypts that were dotted across the paddocks (providing shade for cattle, with all other native vegetation around them removed).

Through the paddocks, there is no ground surface visibility except where cattle congregate at gates and water troughs. Continuous trampling at these locations has removed the introduced grasses, leaving small sandy openings. These are generally comprised on super fine white/grey sands, with a few veins of yellow sand occasionally visible. Coffee rock was noted in places, as were a few small pieces of shell which alludes to the fact that these lands were once ocean floor when the sea levels were higher. The survey area is generally quite low-lying, with a few low rises noted in a roughly north-east to south-west orientation through the eastern Lots.

Cattle and vehicle tracks cross through all properties. Dams and rubbish pits have been constructed. Where the Abba River intersects with the survey area, it is clear from the surrounding landform that the river has been modified to increase drainage. Drainage channels are visible cutting through most the paddocks, which were dug to drain water off the wetlands to make way for usable paddocks.

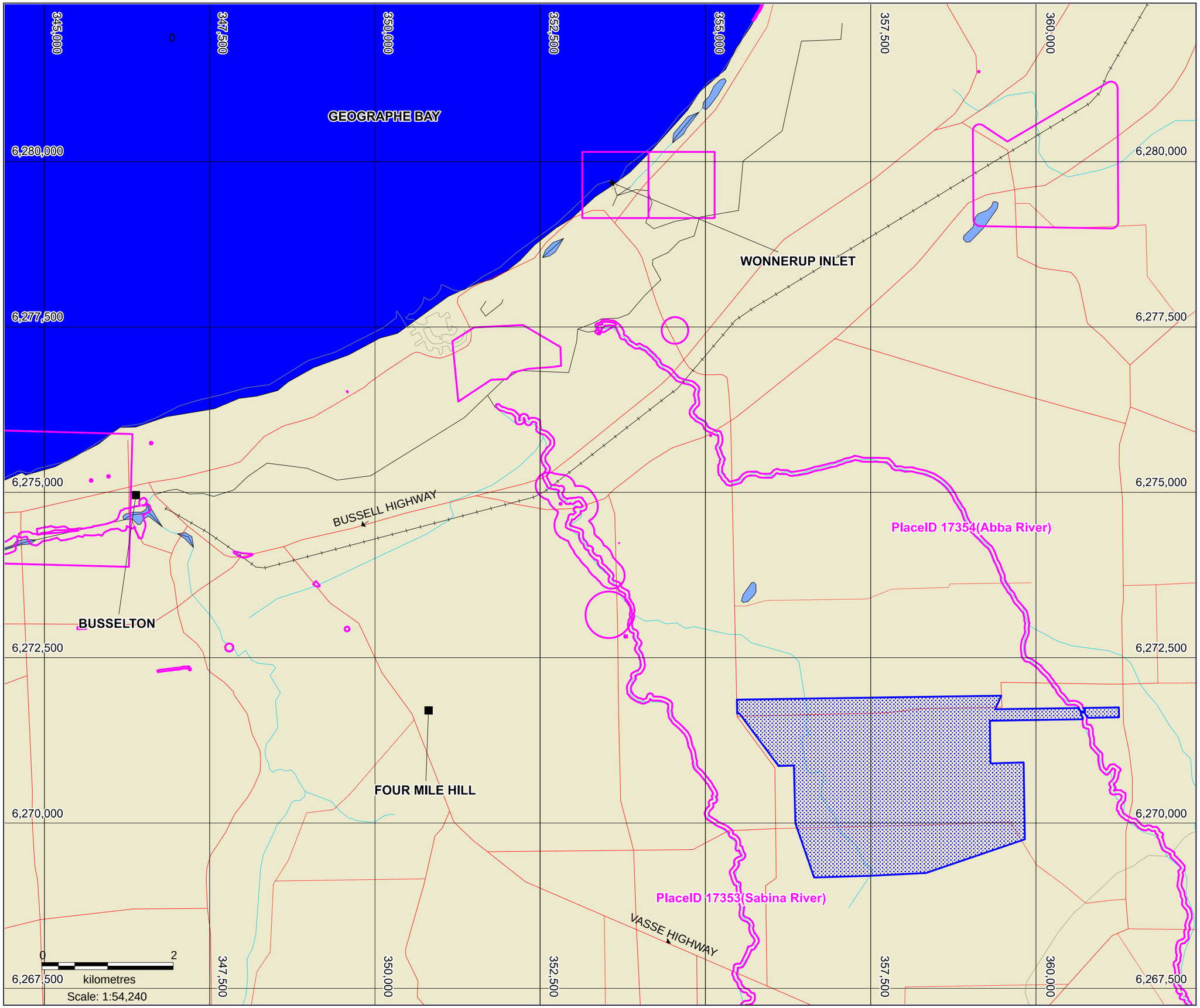

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Figure 1:
Overview of survey area.

Survey Areas
- Yalyalup Development Envelope

Heritage Places
- 10,730
- Places listed on the RTIO database.

Elevation
- Contours

Transport
- Principal Road
- Minor Road
- Track
- Secondary Road
- Dual Carriageway
- Minor Road
- Principal Road
- Track
- Railway

Hydrography
- Watercourse
- Connector
- Non-perennial Lakes

Utilities
- Powerline
- Gas Pipeline
- Water Pipeline

Topographic Features
- Bore
- Place Name
- Homestead
- Location

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LEGAL AND ETHICAL CONTEXT

Aboriginal archaeological surveys take place within a legal and ethical framework that underpins survey methods, survey findings, cultural heritage recommendations and the approvals process.

There are a number of Commonwealth and State Acts that provide for the recognition, protection and management of indigenous rights and interests in relation to land and heritage. In Western Australia, the *Aboriginal Heritage Act* 1972 (WA) (AHA) provides the principal legislative framework for the protection and preservation of places and objects that are of significance to Aboriginal people and their cultural heritage. The AHA is administered by the Minister for Aboriginal Affairs, who must consider the recommendations of the Registrar for Aboriginal Sites and the Aboriginal Cultural Material Committee (ACMC), although the Minister is not bound by such recommendations.

It is important to note within the context of this report that the manner in which the information is presented to the ACMC, the decisions about what constitutes an Aboriginal Site and the way they are managed has varied since the inception of the AHA. For example, early practitioners applying the AHA, including the ACMC, were keen to protect Aboriginal cultural material, including isolated artefacts and small artefact scatters. Further, the use of GPS technology was not present for early site recordings and, was not widely used until approximately 1998. Large buffers were, therefore, placed around sites to minimise potential impact. These legacy issues are still existent today. With the increase in mining and land development practices, an increase in the number of heritage investigations and the number of resultant identified Aboriginal Sites, the system has been placed under a lot of pressure to change the way the AHA is managed within the government departments. The *Aboriginal Heritage Due Diligence Guidelines* was one such measure adopted in 2013 (Department of Aboriginal Affairs 2013).

Governmental changes to heritage management are discussed and/or implemented every few years, with proposals ranging from formal and informal regulation changes, to amendments to the AHA. These changes have not always been successful with Justice John Chaney ruling against a decision by the ACMC on the 1 April 2015, for removing *Marapikurrinya Yintha*, a sacred site in Port Hedland, from the DAA Register as they had "acted upon a misconstruction of s 5 of the Act" (Chaney 2015: 39), forcing the Department of Planning, Lands and Heritage (DPLH) to reconsider their approach to site assessment under the AHA.

On the 9 March 2018, Aboriginal Affairs Minister Ben Wyatt announced another review of the AHA (Department of Planning 2018). The subsequent release of discussion and consultation papers indicates that the AHA will be rewritten (Department of Planning 2019a; Department of Planning 2019b). These changes are touted to be made around the end of 2020.

Under the existing AHA, it is an offence for a person or company to excavate, destroy, damage, conceal or in any way alter any Aboriginal site without prior authorisation from the Registrar of Aboriginal Sites under section 16 or the consent of the Minister for Aboriginal Affairs under section 18 of the AHA. The AHA, therefore, imposes an obligation on all land users who wish to use land for a purpose which might contravene the AHA to exercise due diligence in evaluating whether or not their proposed activity on a specified area may damage or destroy an Aboriginal site. Pursuant to section 17, an offence is committed if these provisions are contravened and substantial penalties may be imposed as a consequence.

Whether an Aboriginal site exists and is significant to Aboriginal people is determined by the ACMC, taking into account numerous factors including any anthropological, archaeological and/ or cultural/ ethnographic interests in the land concerned. Once a determination is reached, the ACMC make a recommendation to the Minister to either grant or refuse an application to use the land, as well as any conditions that may be attached to the consent.

SGH identifies and reports on Aboriginal archaeological places which may contribute to current or future archaeological research. However, the final decision about whether an individual place constitutes an 'Aboriginal site' under the AHA lies with the ACMC and consents to use land rests with the Minister for

Aboriginal Affairs. As a consequence, SGH makes a distinction between 'Aboriginal archaeological places' and 'Aboriginal sites' throughout this report.

The proponent should also be aware of the application of the *Native Title Act 1993* (Cth) (**"NTA"**), which establishes a process in which native title rights and interests are recognised, as well as how various acts affecting such native title rights and interests are to be dealt with. These native title rights and interests may include the right of exclusive possession and use for traditional purposes by the holders of native title such as camping, fishing, hunting, taking traditional resources, carrying out cultural and religious activities and teaching of law and custom on land where native title has been determined to exist by the Federal Court of Australia. Where an act proposed to be carried out on land or waters is likely to affect native title, the NTA sets out procedures which must be followed in order for the act to be valid ("**future act provision**"). Examples of future acts include the grant of mining leases, exploration licences and some compulsory acquisitions by the government. Certain future acts give rise to a right to negotiate under the NTA whereby the government, the developer and the native title party must negotiate "in good faith" about the effects of the proposed activities on the native title party's rights and interests.

Aboriginal archaeological sites may also fall within the jurisdiction of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth) (**"ATSIHP Act"**). The ATSIHP Act enables an Aboriginal person or group to apply to the Minister for a declaration to preserve and protect, by way of interim or permanent declaration, from injury or desecration areas or objects of particular significance to Aboriginal people in accordance with Aboriginal traditions. A person who engages in conduct in contravention of a provision of such declaration commits an offence under the ATSIHP Act.

Similarly, *'outstanding'* sites of nationwide heritage significance can also be protected under the *Environmental Protection and Biodiversity Conservation Act 1999* (Cth) (**"EPBC"**) but few Indigenous archaeological sites to date are recognised under this Act. Places where heritage values are linked directly to the physical and biological attributes of the environment may also be assessed in accordance with the *Environmental Protection Act 1986* (Environmental Protection Authority 2004). The *Assessment of Aboriginal Heritage* Guidance Statement No. 41 (Environmental Protection Authority 2004) is a product of this legislation.

There are also legislative provisions which apply to specific types of sites. For example, if Indigenous human remains are uncovered by any development, the *Coroners Act (1996)* (WA), the AHA and the ATSIHP Act would be applicable. If any human remains are uncovered during development, the police and the Department of Planning, Lands and Heritage must be notified immediately.

SGH is also guided by ethical responsibilities that support Aboriginal input and recognise that the archaeological record is a non-renewable resource. As such, SGH advocates the conservation, curation and preservation of archaeological sites, assemblages, collections and archival records where possible. For more information, please refer to the Australian Association of Consulting Archaeologists' website (2011) www.acaai.com.au.

Disclaimer

The above material is a summary produced by the writer based on the writer's own opinion, knowledge and experience. It is not intended to be used as legal reference or constitute any type of legal advice in respect to the subject matter. Persons wishing to rely on the above material should seek independent legal advice.

ARCHAEOLOGICAL CONTEXT

Archaeological research in Australia, as well as in the south-west region of Western Australia, has generally investigated a number of key themes including the following:

- The timing and nature of human occupation regionally and Australia wide;
- The life ways of Aboriginal people in the past;
- The nature and negotiation of broad scale and local group social interactions; and
- The impact of European colonisation on Aboriginal life patterns.

Timing and nature of human occupation

Early archaeological research was primarily concerned with determining the earliest dates for the colonisation of Australia by Aboriginal people. Archaeological evidence from sites across Australia provide unambiguous evidence that humans were occupying most, if not all, of the continent by 50, 000 BP: see for example Carpenter's Gap (O'Connor 1995), Cuddie Springs (Field, Fullagar *et al.* 2001), Devil's Lair (Turney, Bird *et al.* 2001b), Nauwalabila (Roberts, Jones *et al.* 1994b), Puritjarra (Smith, Bird *et al.* 2001) and Riwi (Balme 2000). Archaeological excavations at Boodie Cave on Barrow Island suggests initial occupation between 51.1 ka – 46.2 ka (Veth, Ward *et al.* 2017).

Devil's Lair near Margaret River is of particular national and international significance as it is located within the broader South-West region of Western Australia and has provided a significant archaeological and palaeontological record for this area (Dortch 1979). It has the oldest recorded date for Pleistocene human occupation in the region with an age estimate of 45,500 ^{14}C yrs. BP (Turney, Bird *et al.* 2001a).

Other sites within the wider South-West region (Swan Coastal Plain) also record Pleistocene occupation. Upper Swan (located approximately 25 km north of Perth) was determined to be approximately 38,000 BP (Pearce and Barbetti 1981) and Helena River was assessed as being 29,000 BP (Bowdler, Strawbridge *et al.* 1991). Tunnel Cave, located within the Leeuwin Naturaliste Ridge north of Devil's Lair (Dortch 2004), was determined to be dated at 22,410 ±40 BP. Recent excavation work carried out at Yellabidde Cave in the northern Swan Coastal Plain (230 km north-west of Perth) obtained dates up to 25,500 BP (Monks, Dortch *et al.* 2016). In the Holocene, which dates from the end of the Pleistocene to the present, the results are less clear.

Dating Holocene occupation within the Swan Coastal Plain is problematic due to the dearth of stratified archaeological sites in the region. Where sites have been subjected to archaeological excavation, only one has been dated at North Lake to 2,200 years ago (Pearce 1979 cited in Bowdler, Strawbridge and Schwede 1991: 25). Most are reported to have little stratigraphic integrity, being disturbed by natural processes (constant dune deflation) as well as farming, urban development and low levels of deposit accumulation (Bowdler, Strawbridge *et al.* 1991). Older Holocene sites tend to be found within the mid-southern jarrah forests such as: Collie (5810 ± 330 BP), Boddington (3230 ± 170 BP) and North Dandalup (1280 ± 80 BP) (Anderson 1984; Pearce 1982). Sites in the Leeuwin Naturaliste Ridge (in a mosaic of Karri and Jarrah forests) similarly record Holocene occupation from approximately 8000 years ago to within the last few hundred years (Dortch 2004). Two coastal sites on the far southern coast Nookanellup Shelter and Katelysia Rockshelter record occupation dates at approximately 2500 years ago (Dortch, Kendrick *et al.* 1984; Dortch and Kelly 1997).

Research concerning the nature of occupation during the Pleistocene has centred on rockshelter sites within the Leeuwin-Naturaliste Ridge that contain rich faunal assemblages. Unlike other areas in Australia where sites were abandoned or demonstrate a reduction in Indigenous activity owing to increasing aridity during the Last Glacial Maximum (see for example Veth 1993), there has been relatively little significant changes in the nature of these faunal assemblages suggesting that the biota were relatively unaffected by post-glacial climate oscillations in the Mediterranean-climate. Local Indigenous people in the South-West were relatively unaffected by the changes in aridity and sites continued to be used, if somewhat sporadically, across the broad quaternary span (Dortch and Smith 2001; Dortch, Balme *et al.* 2011). There is, however, much discussion

regarding local changes in population distribution regarding environmental fluctuations in forested vs open woodland regimes (Balme, Merrilees *et al.* 1978a; Burke 2004; Ferguson 1985; O'Connor, Veth *et al.* 1993).

Applicable research questions

- What is the antiquity of human occupation across the Swan Coastal Plain and how does this vary across the region?
- What was the pattern and intensity of occupation of the Swan Coastal Plain and what does this suggest about sites in the different geomorphic zones?
- What does the age of the wetland areas imply about the age of associated sites? If those wetland areas were not present when the sea level was lower, what was the pattern and intensity of occupation of the Swan Coastal Plain and what does this suggest about sites in the different geomorphic zones?
- Why do many sites lack evidence of sediment accumulation? What taphonomic conditions may be contributing to this and how does this influence site formation?

Life-style patterns and behaviour

Zoo-archaeological evidence provides an insight into how Aboriginal people subsisted during the Pleistocene. Evidence from four key sites (Devil's Lair, Tunnel Cave, Rainbow Cave and Witchcliffe Rockshelter) within the Leeuwin-Naturaliste region (Dortch 1979; Dortch 2004; Dortch, Balme *et al.* 2011) suggests that people using these sites relied on a diet of largely terrestrial mammal vertebrates including kangaroo, bandicoots, possums as well as small amounts of fish, lizards, birds and emu eggs (Dortch 1979; Dortch 2004; Dortch, Balme *et al.* 2011).

Evidence for subsistence patterns within the Holocene for the Swan Coastal Plain comes largely from ethnohistorical literature (Meagher 1974) and records a mobile foraging economy based on the seasonal exploitation of terrestrial and aquatic resources with the latter obtained largely from wetland and riverine/ estuarine environments (Dortch 2002).

Dortch (2002) frames this past mobile foraging economy within two classes of sites (congregative and dispersive) which reflect the "periodic congregation and dispersal of families, local descent groups and bands" (Dortch 2002:13). These contrasting settlement/mobility systems create contrasting archaeological signatures (Dortch 2002:14, see Dortch's Table 3 for a detailed list of site type examples) that, at the regional scale, provide evidence for group mobility, dispersal, and congregation through reciprocal agreements on land access and usage.

Within this framework, large, open dispersive sites are largely recorded archaeologically as isolated finds or as small sparse stone artefact scatters. Indicators of large, open congregative sites are extensive stone artefact scatters or the seasonal use of areas such as the Barragup weir or sites along the Swan River in modern day Perth which have been recorded in the ethno-historical literature (Dortch 2002).

Within the Swan Coastal Plain, most recorded sites occur within the 'Bassendean Dune System' which lies midway between the eastern alluvial plains and foothills of the Darling Scarp and the western (and younger) Spearwood and Quindalup Dune Systems (Bowdler, Strawbridge *et al.* 1991; Hallam 1987). It is thought that the relatively high number of sites recorded in this area in comparison to other parts of the Swan Coastal Plain is most likely due to the presence of swamps and lakes that would have provided relatively stable and seasonally predictive food resources (Anderson 1984; Bowdler, Strawbridge *et al.* 1991; Hallam 1987; Meagher 1974). Archaeological investigations using site frequency as a measure of site use suggest that the seaward margin (Quindalup Dune System) was not used significantly in terms of camping and resource procurement (Hallam 1987: 14).

Ethno-historical accounts record that summer was the season for the largest aggregation of people when fish and other aquatic fauna in particular were hunted along the sea coast and in estuaries. This was also when large areas were burnt to facilitate the capture of larger species such as kangaroos and wallabies, as well as to promote favourable habitats for preferred animals (Hallam 1989; Meagher 1974). Research suggests that the

vegetation communities of the South West Botanical Region represent the effects of this frequent, low intensity, controlled firing regimes used by Noongar people in the past as a form of land management or environmental niche construction (Hallam 1989; Kost 2013).

Aboriginal people in the South-West were relatively unaffected by changes in aridity associated with the Last Glacial Maximum and sites continued to be used, if somewhat sporadically, across the broad quaternary span (Dortch and Smith 2001; Dortch, Balme *et al.* 2011). There is, however, much discussion regarding local changes in population distribution regarding environmental fluctuations in forested vs open woodland regimes (Balme, Merrilees *et al.* 1978b; Burke 2004; Ferguson 1985; O'Connor, Veth *et al.* 1993).

It is still not clear from archaeological evidence how people used and moved through the various environmental zones (coastal plain, plateau and forests) that make up the South-West region, largely due to preservation and visibility issues as many sites have been disturbed by European colonisation or are not visible in areas of high density vegetation. Anderson (1984) postulates that the coastal plains and plateau areas were more actively utilised based on the seasonal availability of resources and related social and land use obligations, although this model does not take into account later palaeo-environmental and archaeological evidence that suggests that forested areas were also well utilised as part of a broader system of land use and management (Dortch 2004; Kost 2013).

In the wider South-West, the stone tool record exhibits an unusual pattern involving the decline and disappearance of artefacts made from a distinctive type of fossiliferous chert between 12,000 and 4,500 years BP (Ferguson 1980). The sources of the fossiliferous chert are postulated to have been submerged by rising sea levels, which attained their present position around 6,500 years BP and so acts as a temporal marker in archaeological contexts (Glover and Lee 1983; Worrell 2008). An article by O'Leary, Ward *et al.* (2017) challenges this notion and posits that source rocks from the Nullarbor Plain may suggest long-distance trade, although source accessibility following post-glacial rise may still be a factor.

Preliminary research suggests that chert use became more economic over time and that other local raw material sources became increasingly utilised (such as crystal quartz) as access to fossiliferous chert sources declined (Worrell 2008). The knapping properties of the lithic materials, site type and the local geological context of a site appear to have influenced responses to changing raw material availability through time (Dortch 2002; Worrell 2008).

Analysis of artefactual material in the Swan Coastal Plain historically focussed on describing phases of stone tool technology over time (Schwede 1990) but to date little detailed stone artefact analysis has been carried out at more extensive scatter sites which may provide insights into the choices and agency at work within a stone artefact assemblage and is an area for future research.

Applicable research questions

- Why is the recorded number of sites within the Bassendean Sands formation higher compared to other zones? And what does this indicate about demographic changes, mobility and land use patterns over time?
- How were people using lithic resources?
- What does spatial analysis tell us about how Aboriginal groups used the landscape and their cultural practices?
- What technological changes over time are discernible in stone artefact assemblages as a result of the loss of fossiliferous chert sources?

Broad scale and local group social interactions

Evidence for trade and exchange is marked by the transportation of various stone types across the region from as yet unknown quarry sources. In particular, there is evidence of fossiliferous chert artefacts well inland from now submerged quarry sources which suggests that this material was traded or transported (Dortch 2002).

Ethno-historical sources describe the seasonal movements of large groups particularly in summer linked to the exchange of male initiates, shared ceremonies and exogamous marriage arrangements as well as the consolidation of kinship and broader group alliances (Dortch 2002; Hallam 1989). Longer distance trade networks are also described, with groups exchanging items such as ochre or specialised items such as spears from modern day Albany through to the Murchison area (Le Souef 1993).

Items that leave little or no archaeological trace such as kangaroo skins and wooden implements were also regularly reported to have been traded and exchanged (South West Aboriginal Land and Sea Council 2010; Tilbrook 1983).

Applicable research questions

- What is the spatial distribution and nature of fossiliferous chert artefacts within the broader South-West region and what does this suggest about past trade and exchange networks?

Post-European settlement and Aboriginal life-ways

European settlement in the southern part of Western Australia disrupted traditional Aboriginal social organisation, traditional home lands, lifestyle and culture by introducing and enforcing a foreign social organisation. However, ethno-historical records and oral histories from Aboriginal people indicate that many cultural traditions were maintained well into the very recent past including corroborees and traditional hunting practices as well as the regular firing of the landscape to rejuvenate vegetation (Kost 2013; South West Aboriginal Land and Sea Council 2010; Tilbrook 1983).

Archaeological evidence signalling the use of country by Aboriginal people in historic times is manifested in the inclusion of historical artefacts in stone artefact scatters such as flaked glass, clay pipes or matchbox and tobacco tins. Other connections include the continuing use of bush resources such as medicinal plants and the transmission of cultural knowledge.

Aboriginal participation in the agricultural industry during the past century is also of significance to many Aboriginal groups in the region as many people found work on farms in the South-West. Other historical sites such as farm camps, burials, fringe camps, missions and other institutions now closed also have contemporary importance to local Aboriginal communities. Similarly, pre-European Aboriginal sites demonstrate group ownership of country and are a tangible link to the past as a source of heritage and identity (South West Aboriginal Land and Sea Council 2010; Tilbrook 1983).

Applicable research questions

- What archaeological evidence is there for the maintenance and adaptation of Aboriginal life ways following European colonisation?

SURVEY METHODS

ARCHAEOLOGICAL SITE SURVEY STRATEGY

Overview

The archaeological heritage investigation of the Yalyalup Mineral Sands Project survey area followed a Site Identification survey methodology.

The main objective of a Site Identification survey is to:

- Identify any known and/or potential Aboriginal archaeological heritage concerns that may be impacted upon by the proposed development;
- Locate/record Aboriginal archaeological places in enough detail for Doral to lodge a section 18 application to DPLH (if required); and
- Make recommendations regarding the management of any Aboriginal archaeological places, including any further research and/or consultation that may be required.

The Site Identification methodology aims to generate enough information to assess the archaeological significance and representativeness of an Aboriginal archaeological place. The Consultant (SGH) is expected to provide a sufficiently detailed recording of each newly-identified Aboriginal archaeological place to address the DPLH Heritage Information Submission Form (HISF), enabling the Proponent (Doral) to give notice to the DPLH/ACMC under section 18 of the AHA. Expectations for this level of recording include (but are not limited to):

- Significance assessments addressing DPLH section 5 guidelines, which have since been removed from the DPLH website (see the Legal and Ethics section of this report);
- A professional opinion regarding site representativeness;
- Recommendations as to what basis under the AHA each site applies
- Recommendations as to subsequent mitigative measures including those related to section 16 and 18 of the AHA.

In addition to the above, SGH also ensured independent industry standards were maintained after consideration of the wider industry discussions about significance assessment. This is discussed further below.

Desktop research methods

Prior to the field investigation, SGH searched the DPLH Aboriginal Heritage Inquiry System (AHIS) for any reports or previously recorded Aboriginal places within 200 m of the survey requests (Appendix 3). This was undertaken to identify previously recorded places that may require management during the field investigation. SGH also reviewed site and report information supplied by Doral and Ethnosciences.

Please note that problems with data stored in the AHIS database must be acknowledged. First, many Aboriginal groups and proponents prefer to maintain their own databases of heritage data so these documents do not always end up on the AHIS database unless they are required for approvals. Second, data have been recorded by a variety of consultants under differing regulatory regimes and recording standards. Third, survey areas have been determined by proponent requirements rather than a sampling strategy so there are inherent biases in site distribution. However, as the largest source of information about Aboriginal archaeological places in the South-West, the AHIS database provides a useful overview of site types likely to be encountered in an area and their distribution and frequency.

Field survey process

Field investigation

Given the extensive disturbance to the vast majority of the survey area as a result of decades of sustained agricultural use, the survey team targeted any areas of remnant vegetation, open patches where the ground was visible (such as cattle pads, deflations and dams), tracks and firebreaks, as well as along the banks of the Abba River within the eastern section of the survey area and a branch of the Sabina River within the west. A 4WD vehicle was used to access each of the Lots, and where remnant vegetation/open areas were identified, these places were inspected by the survey team on foot.

Several factors, though primarily ground surface visibility, may limit or bias the survey results. This being the case, SGH recognises that the survey is a sampling exercise designed to identify as many Aboriginal archaeological places as possible but acknowledges that the outcomes of any archaeological surface survey may in general terms only be representative of the visible rather than the actual archaeological record. To minimise any limitation or bias, several strategies are employed:

a) The use of a purposive sampling strategy (that is, targeting high potential landscape features like dams, deflations, fire breads, etc);

b) Team members were encouraged to walk at a pace commensurate with their experience and/or physical ability while being mindful of survey timeframes;

c) Regular breaks were encouraged to maximise survey viability;

d) Surveys were undertaken when lighting conditions were adequate to identify artefactual materials.

The heritage assessment is used to determine the presence or absence of newly-identified Aboriginal archaeological places. Once an artefact and/or cultural feature is identified, an assessment is made as to its suitability for being an Aboriginal archaeological site (see Archaeological Assessment below). If it is deemed to meet the criteria of a "site" under the AHA, the Aboriginal archaeological place is recorded as per the 'Site recording methods' detailed below.

Site recording methods

Based on the use of a Site Identification survey methodology, the following steps for recording were to be used should an Aboriginal archaeological place be identified:

1) The Aboriginal archaeological place extent was to be determined in consultation with the South West Boojarah representatives. Once the extent of the material was identified, the boundaries were to be demarcated using pink and black flagging tape and a handheld Garmin GPS was to be used to mark boundary point locations. No additional buffers would be applied.

2) Information would be recorded using written descriptions, hand-drawn plans and photographs. The recorded information would include the environment, site features and assemblage characteristics such as artefact types, size, presence of cortex, lithology and spatial distribution.

3) Recommendations would be provided as to why the Aboriginal archaeological place should be considered a site under the *Aboriginal Heritage Act 1972* and, where alteration of the Aboriginal archaeological place is anticipated, recommendations on measures that might be warranted under section 16 or section 18 of the AHA would be made.

The above methods incorporate strategies from the Aboriginal Heritage Due Diligence Guidelines and Site Reporting requirements as provided by the Department of Aboriginal Affairs (2013).

Isolated finds

Isolated finds have been designated as such by the survey team as they are considered by the archaeologists to have next to no archaeological significance, and by the South West Boojarah representatives as having little

significance to them. As a consequence, the ACMC are unlikely to consider them Aboriginal Sites under Section 5 of the *Aboriginal Heritage Act 1972 (AHA)* after considering their importance under Section 39(2). However, they may still be classified as 'objects' under Section 6 of the AHA. While it is an offence under Section 17 of the AHA to disturb, damage or conceal Aboriginal Sites (s17a), this protection is only extended to objects *on* or *under* an Aboriginal Site (s17b). Aboriginal objects are therefore not often protected under the current regime at the DPLH.

The isolated artefacts identified on the survey were not considered to be of sacred, ritual or ceremonial importance; were not considered of anthropological, archaeological or ethnographic or other special national or local interest; or were not considered to be of outstanding aesthetic value. As a result, these Aboriginal objects are not likely considered to be 'Aboriginal cultural material' (as defined under Section 40 of the AHA) and are not subject to the restrictions identified in Section 43(1).

Based on the above, SGH would suggest that the isolated finds do not warrant special protection during the proposed works, although Doral is encouraged to seek advice from the DPLH and refer to their heritage agreement with the South West Boojarah people.

While isolated finds typically don't warrant special protection, their distribution across the landscape provides important contextual information. As such, GPS coordinates are recorded and other supplementary notes that may be of interest are noted (e.g. for stone artefacts the type, lithology and maximum dimension).

ARCHAEOLOGICAL ASSESSMENT

SGH considers whether a place is likely to meet the criteria for definition by the ACMC as an "Aboriginal site" before recording it as an Aboriginal archaeological place. As explained in the Legal and Ethics Section of this report, the AHA applies to any place or object of significance to Aboriginal people as defined in sections 5 and 6 of the AHA ("Aboriginal site"). More specifically, a place may be assessed as an Aboriginal Site under one or more of the paragraphs of section 5 of the Act as follows:

- Section 5(a): 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.
- Section 5(b): Any sacred, ritual or ceremonial site which is of importance and special significance to persons of Aboriginal descent.
- Section 5(c): Any place which, in the opinion of the Committee, is or was associated with the 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.
- Section 5(d): Any place where objects to which this Act applies are traditionally stored, or to which, under the provisions of this Act, such objects have been taken or removed.

To assist with the interpretation of what constitutes 'importance and significance', the DAA (a former incarnation of DPLH) provided a list of guideline criteria the ACMC have regard to (under section 39) on section 5 of the AHA. These include:

i. The intactness and condition of the place and object(s);
ii. The temporal context of the place or object(s) (i.e. relationship in time to other places and things);
iii. Complexity or diversity of the assemblage or object(s);
iv. Relationships between object and place;
v. Rarity and uniqueness of the place or object;
vi. Context and relationship of the place to other places; and
vii. Contribution to research into the understanding of Aboriginal people past and present.

The DPLH has removed these guidelines from their website following Justice Chaney's decision on 1 April 2015 (Chaney 2015:39). SGH also draws upon wider industry discussions about the assessment of archaeological significance (Bowdler 1984; Russell and Winkworth 2009; Smith 1996; Sutton, Huntley *et al.* 2013).

On most occasions, SGH specifically assesses artefacts and features contained within an Aboriginal archaeological place according to the key components of sections 5(a) and 5(c) of the AHA. The following key components include the above DPLH criteria:

a) that the place and objects are demonstrably the product of Aboriginal traditions and practices as described in archaeological literature (referenced in section 5 a and 5 c). This includes but is not limited to criteria (iii) above;

b) that the assemblage is connected to place (referenced in section 5 a and 5 c). This includes but is not limited to criteria (iv) and (vi) above;

c) that the place and objects are of archaeological significance (referenced in section 5 a) and of importance to the State (referenced in section 5 c), incorporating criteria (ii), (iii), (v) and (vii) above (site integrity (criteria i) is considered as part of this process); and

d) whether mitigation requires *in situ* preservation (referenced in section 5 c).

These are discussed below:

Product of traditional Aboriginal life

As part of the Scope of Works, SGH attempts to identify all Aboriginal archaeological places within the survey area. These places are identified by key attributes noted previously in the archaeological literature or by ethnographic accounts. The desktop review contributes to this process allowing familiarity with the local and regional archaeological record.

Connection to place

As part of the assessment, SGH looks at the relationship between the assemblage, its context, the place it is located and its relationships to other places. Provenance of the artefacts from their manufacture, use through to site documentation is a key consideration in site assessment (Russell and Winkworth 2009:15).

Archaeological significance

The 'importance' or 'significance' of a place or object and is considered to be an important consideration in heritage management where the values attributed to a place or object can be managed and/or protected (Department of Aboriginal Sites 1979; Smith 2004). While it is commonly accepted within the international heritage industry that there are five types of significance (aesthetic, historical, scientific, social and spiritual), this report is primarily concerned with archaeological (scientific) significance which is generally determined by the site's potential to address research questions and representativeness (Bowdler 1981:19) but can also be moderated by provenance, rarity, integrity and interpretative capacity.

Research potential

The Archaeological Context section of this report discusses current regional themes in the archaeological literature and research questions that are being applied to archaeological sites on a regional and local level. The list of research questions applicable to the South-West region is listed after each section under Archaeological Context discussed above. These questions are by no means exhaustive and site significance can only be applied in a timely and specific manner (Bowdler 1981).

Representativeness

While applicability to research questions is a useful concept to gauge the current significance of an Aboriginal archaeological place, its use has been criticised as not being able to anticipate future research (Smith 2004).

Representativeness is the level of how well or how accurately an Aboriginal archaeological place reflects upon the local, regional or national archaeological record. Representativeness is employed to preserve a sample of the archaeological record as a means of insuring that future values are not compromised by the management decisions and principles used today (Bowdler 1984; Smith 2004).

This system is not perfect and is under on-going debate. Much of the disagreement focuses on the difficulties in defining representative criteria for groups of Aboriginal archaeological places where the entire population is unknown (Bowdler 1984; Smith 2004). Further, all sites are unique at some level when considering lithic assemblage content, time periods, lithologies, population size etc. (Smith 2004:119). Brown (2008) promotes the conservation of entire landscapes to get around this issue.

Furthermore, there are limitations on the detail and quality of data available on the Aboriginal Sites Register. There is a paucity of information concerning what sites have been destroyed; cultural politics determine that some reports are not to be listed and/or disseminated broadly; and there is a high degree of variability between consultants' reporting standards. Further, the values attributed to sites may change over time.

Other considerations: rarity and integrity

Rarity of a particular site type or feature also needs to be considered. Some research questions, regarding the spatial distribution of sites in the South-West, require a range of site types, site sizes and landform units to address the question. For this reason, it is important to assess how rare a site is to avoid bias in the research data set.

Clearly, the research potential of a place is moderated by its integrity: post-depositional disturbance/damage may compromise its value in this regard. Some research questions and methods can still be applicable even in the event of disturbance: a broken fragment of baler shell, for example, can still be radiocarbon-dated and contribute to the discussions about trade and exchange across Australia.

While the above concepts of research potential, representativeness, rarity and integrity are considered alongside the DPLH section 5 criteria to determine the importance of an Aboriginal heritage place and its status under the AHA. Any value attributed, is subject to change owing to variations in research design, site integrity and the impact of development on the extant archaeological record.

Archaeological values

Of particular note is the determination of archaeological importance and significance in relation to section 5(c) and importance to the State. The Australian Government signed on to the United Nations Declaration on the Rights of Indigenous People in 2009, which affirms the minimum standards for the survival, dignity, security and well-being of Indigenous peoples worldwide and enshrined Indigenous peoples' right to be different (United Nations 2010). In addition, the declaration allows "Indigenous peoples to have the right to maintain, control, protect and develop their cultural heritage …" (United Nations 2010: 11). As such, SGH considers archaeological discussions on research questions of national and international importance to be 'of importance to the State'.

SGH does recognise that archaeological/scientific significance is not the only determinant of a site's value. These places may have a range of other values (e.g. historic, social, aesthetic, cultural, environmental) for different individuals or groups (Australia ICOMOS Burra Charter 1999; Sutton, Huntley *et al.* 2013) which should also be taken into account before any final determination about site management takes place.

Mitigation and *In situ* preservation

Once the research potential has been assessed, SGH assesses the research question methods to determine if subsequent mitigative actions (such as, but not limited to, salvage, excavation, further recording, radiocarbon dating, etc.) may be used to preserve the archaeological values of the place. Where this is not appropriate, *in situ* preservation would be recommended.

Aesthetic significance

With respect to section 39 (2d) of the AHA, the ACMC should have regard to the aesthetic values of the heritage place. According to the ICOMOS Guidelines to the Burra Charter (Australia ICOMOS Burra Charter 2013), Aesthetic values include those "aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and material of the fabric; the smells and sounds associated with the place and its use". As part of this assessment, it is recognised that the environment may influence audience perceptions, including the way they experience the place.

DESKTOP SURVEY RESULTS

Previous heritage surveys and previously-recorded Aboriginal archaeological sites/places

Doral commissioned Ethnosciences to undertake a desktop assessment of the Yalyalup Mineral Sands Project survey area in 2017 (see McDonald and Coldrick 2017), with an addendum issued in 2019 (McDonald 2019). As these reports discuss the existing archaeological and ethnographic heritage considerations overlying and adjacent to the Yalyalup Mineral Sands Project survey area, there is no need to address them further here.

The only existing heritage consideration that required action as part of the archaeological field investigation is the Abba River, which is registered as an Aboriginal Site on the DPLH AHIS (Table 3). This site spans some 25 km of the Abba River from the Geographe Coastal Wetlands in the north to Yoganup in the south. The Abba River site intersects with the survey area in the east, where Doral proposes to construct a haul-road river crossing to connect the mineral sands operations to Ludlow-Hithergreen Road to the east.

SGH will assess the location of the proposed haul road/Abba River crossing and make recommendations accordingly.

Table 3: Existing Aboriginal archaeological sites/places that intersect with the Yalyalup Mineral Sands Project survey area.

Place Name	DPLH ID	Status	Site Type	Proposed Action
Abba River	17354	Registered Site	Historical, Mythological	Section 18

Information from previous research, heritage surveys and recorded sites

A search of the DPLH heritage database identified 110 Registered Sites and 188 Other Heritage Places located within the South West Boojarah native title claim area. While SGH are aware that this is not the entire documented record of archaeological sites/places within this part of the South-West (being only those that (a) have been reported to DPLH and (b) SGH have permission to access), it does provide a background to draw upon when considering the field results of the current field investigation.

Stone artefact scatters are the most commonly recorded archaeological feature throughout South West Boojarah country, accounting for 46.52% of sites/places. They tend to be relatively small with cultural assemblages of less than 50 artefacts, with the overwhelming majority of artefact scatters having a direct association with a water source (generally ephemeral), be it a creek, water hole or drainage channel that runs adjacent to or bisects the assemblage.

It is important to note the absence of reduction or knapping places as a specific site type within the AHIS database, as well as the under-representation of quarries. No sites/places have been identified as reduction areas within the South West Boojarah native title claim area and only five sites/places have 'quarry' as either a primary or secondary site descriptor, both of which are clearly unusual given the high proportion of artefact scatters documented. This may be in part a product of documentation bias, where the presence/absence of reduction areas and quarries is not universally documented amongst heritage consultants, with these places instead captured and recorded under the broader 'stone artefact scatter' banner.

After artefact scatters, skeletal material/burials are the next most numerous site type recorded, accounting for 11.11% of sites/places. These sites/places are almost exclusively located within 3.5 km of the current coast line (indeed, all except three of the burials on the AHIS are no more than 2 km from the coast). One registered site, DPLH ID 16001 Pioneer Graves, is located 10.5 km from the current coast line.

Eleven skeletal material/burial sites/places exist along the Busselton coastline to the north and west of the Yalyalup Mineral Sands Project survey area. These burials/skeletal materials are located on a coastal dune

system that stretches from Wonnerup through the Vasse Estuary and continuing west past Busselton to Vasse. Local conflict between European settlers and Aboriginal people is often touted as a cause of the numerous incidences of skeletal material recorded in this area (cf. Green 1984): for example, historical records describe the Wonnerup Massacre of local Wardandi people by locals after the death of resident George Layman (The Perth Gazette and Western Australian Journal 1841). Anecdotal evidence from traditional owner Wayne Webb during previous heritage surveys in the wider Busselton area (Hovingh and Ogilvie 2013) also suggests that the location was the product of a burial practice undertaken by local Indigenous people to assist with sending the spirits of the deceased over the ocean.

Camps (accounting for 9.72% of sites/places on the AHIS), mythological places (6.59%), modified trees (5.2%), historical places (5.2%), ceremonial places (3.47%) rockshelters (3.47%) and man-made structures (1.73%) make up the majority of the remainder of existing site types within South West Boojarah country.

FIELD SURVEY RESULTS

Survey request considerations

The archaeological investigation within the Yalyalup Mineral Sands Project survey area is complete.

Coordinates of the completed survey area are listed in Appendix 1. A summary of the survey results is presented in Table 4.

Table 4: Summary results of field investigations with the 2018 WAN survey requests.

Survey area	Proposed activity	Survey status	Heritage considerations
Yalyalup Mineral Sands Project	Mining, Infrastructure and Haul Road for mineral sand mining	Complete	Abba River (DPLH ID 17354)

Aboriginal archaeological places

As a result of the archaeological field investigation, no new Aboriginal archaeological places were identified or recorded.

Isolated artefacts

Thirty-three (33) isolated artefacts were recorded across the survey area (details provided in Appendix 2).

Neither the SGH archaeologists nor the South West Boojarah representatives expressed any particular importance or significance to these artefacts at the time of survey. As a consequence, they are not likely to be considered Aboriginal Sites under section 5 of the *Aboriginal Heritage Act* 1972 (AHA). They may still however be classified as 'objects' under section 6 of the AHA. While it is an offence under section 17 of the AHA to disturb, damage or conceal Aboriginal Sites (s17a), this protection is only extended to objects on or under an Aboriginal Site (s17b). Aboriginal objects, and therefore isolated artefacts, are not often protected under the current regime at the DPLH.

While there is the potential that Aboriginal objects may be protected as Aboriginal cultural material (as defined under Section 40 of the AHA), the isolated artefacts on this survey are not considered to meet any of the following criteria:

a) The South West Boojarah representatives did not express any sacred, ritual or ceremonial importance;

b) SGH do not consider them to be of archaeological or other special national or local interest and, based on (a) above, are unlikely to be of anthropological, or ethnographic interest; or

c) The survey team did not express the notion that any were of 'outstanding aesthetic value', either in words or action.

As a result, these isolated artefacts/Aboriginal objects are not likely considered to be 'Aboriginal cultural material' under Section 40 and are not subject to the restrictions identified in Section 43(1).

Based on the above, SGH would suggest that the isolated finds do not warrant special protection during the proposed works, although Doral is encouraged to seek advice from the DPLH and refer to their heritage agreement with the South West Boojarah people.

DISCUSSION

During discussions with Wayne Webb and Toni Webb, they consider that the general survey area has a low potential for sites as the landscape used to be wetlands and as such would not have been suitable for occupation, although hunting would have been undertaken in the area. They suggested that areas with a higher potential for archaeological materials are likely to exist on the few areas of higher ground (though within the survey area, this is limited to a few low rises at best). It is considered that there is some potential for sub-surface artefacts given the amount of trampling and the nature of the sands that exist under the grasses.

It was noted that there were very few areas where older yellow sands are visible through the overlying fine white sands (part of the Pinjarra Plain). It has been suggested that these older sands have the potential for older sub-surface archaeological deposits and therefore should be targeted where they are visible. A pocket of exposed yellow sand was noted in Lot 292 (along a branch of the Sabina River), but access to this Lot was restricted and further investigation could not be undertaken at the time of survey.

Desktop investigations suggest that the Abba and Sabina rivers often have archaeological sites in close proximity (for example, DPLH Site 4401 Woddidup Mission/Mulgarnup Mission, DPLH Other Heritage Place 16609 Sabina River Artefact Scatter, DPLH Other Heritage Place 30946 RGC Sues Rd A1 (Artefact Scatter) and DPLH Other Heritage Place 17355 Uligugillup Mission). These sites are all along the banks of either the Abba or Sabina Rivers to the north-west of the survey area. This, and the presence of nearby isolated artefacts found on the surface, allude to the potential for subsurface stratified assemblages to be located along the Abba River. Monitoring of ground disturbance works in this area in particular is necessary. This finding is consistent with Wayne Webb's recommendations, saying that while he considers monitoring to generally be unnecessary in most areas of the Yalyalup Mineral Sands Project survey area, monitors should be used for work around the Abba River, where Doral are proposing a haul road crossing to connect the mineral sands operations to Ludlow-Hithergreen Road to the east. The haul road is proposed to be 170 m wide except where it crosses the Abba River, where the haul road/river crossing is reduced to a 20 m width.

While skeletal material/burials are not expected within the Yalyalup Mineral Sands Project survey area, it does remain a possibility. The survey area is located 7.5 km from the current coastline and, as mentioned above, skeletal material is registered on the DPLH AHIS database at as much as 10.5 km from the coast (DPLH ID 16001 Pioneer Graves, to the north of Yelverton).

Recommendations for management

Doral should ensure that all relevant staff/contractors are informed of the location and registered status of the Abba River (DPLH Site 17354), a Registered Aboriginal Site on the DPLH Aboriginal Heritage Register. This site has historical and mythological importance and has been assessed by the ACMC to be an Aboriginal Site under section 5 of the *Aboriginal Heritage Act 1972*. As such, it is afforded protection under section 17 of the AHA, which makes it an offence for a person or company to excavate, destroy, damage, conceal or in any way alter any Aboriginal site without prior authorisation from the Registrar of Aboriginal Sites under section 16 or the consent of the Minister for Aboriginal Affairs under section 18 of the AHA. In the first instance, Doral should submit an application under section 18 of the AHA to the Minister of Aboriginal Affairs for consent to use the land prior to the conduct of any ground disturbing works. SGH also recommends monitoring of ground disturbing works along the Abba River by representatives of the South West Boojarah people.

Should skeletal materials be uncovered during the course of ground disturbance and excavation works, Doral staff/contractors should stop work immediately and contact the police and the DPLH to inform them, as per section 15 of the AHA and section 17 of the *Coroners Act 1966*, of the existence of the skeletal material/burial.

Finally, Doral is reminded of their obligations (also under section 15 of the AHA) to report the discovery of any cultural material to the DPLH and should stop work immediately.

CONCLUSION AND RECOMMENDATIONS

As a result of the archaeological field investigation:

- The archaeological survey within the Yalyalup Mineral Sands Project survey area is complete;
- One Registered Aboriginal Site, the Abba River (DPLH Site 17354) lies across the proposed haul road; and
- No new Aboriginal archaeological places were identified or recorded; and
- A total of 33 isolated artefacts were recorded across the survey area.

Based on these results, a series of recommendations are proposed:

1) It is **recommended** that Doral ensure that all relevant staff/contractors are informed of the location and registered status of the Abba River (DPLH Site 17354) on the DPLH Aboriginal Heritage Register. This site has historical and mythological importance and has been assessed by the ACMC to be an Aboriginal Site under the *Aboriginal Heritage Act 1972*;

2) Doral should continue to avoid the above mentioned Aboriginal archaeological site where possible.

3) It is **recommended** that should Doral require to use the land on which the above Aboriginal archaeological site exists:

    a) an application under section 18 of the *Aboriginal Heritage Act 1972* should be submitted to the Minister for Aboriginal Affairs for consent to use the land prior to the conduct of any ground disturbing works;

    b) should consent under section 18 be granted, it is **recommended** that Doral engage monitors (selected by the South West Boojarah people and SWALSC) to oversee ground disturbance works along the Abba River to ensure that no archaeological materials (surface or sub-surface) are disturbed.

4) Should any cultural materials or skeletal materials/burials be identified during ground disturbance works, Doral is reminded of their obligations under section 15 of the *Aboriginal Heritage Act 1972* to report the discovery of any cultural material and/or skeletal remains/burials to the DPLH (and, in the case of skeletal materials, the police) and should stop work immediately.

5) It is **recommended** to the ACMC that the 33 isolated artefacts are not considered to be Aboriginal sites under section 5 or section 6 of the *Aboriginal Heritage Act 1972*.

6) It is **recommended** to Doral that the work may proceed as planned, subject to the above recommendations, within the Yalyalup Mineral Sands Project survey area (as listed in Appendix 1 – Completed Survey Area Boundary Coordinates).

Doral is reminded that the above recommendations may be subject to change as the AHA is currently under review. The proposed changes, if any, are currently expected to take place at the end of 2020.

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APPENDICIES

APPENDIX 1 – COMPLETED SURVEY AREA COORDINATES

Survey Area	Point	Easting (mE)	Northing (mN)	Point	Easting (mE)	Northing (mN)
Yalyalup Mineral Sands Project	1	360651.00	6271738.00	44	360807.00	6271590.00
	2	360657.00	6271716.00	45	360794.00	6271590.00
	3	360658.00	6271714.00	46	360783.00	6271598.00
	4	360659.00	6271712.00	47	360771.00	6271608.00
	5	360660.00	6271710.00	48	360741.00	6271657.00
	6	360661.00	6271708.00	49	360741.00	6271668.00
	7	360662.00	6271707.00	50	360721.00	6271668.00
	8	360663.00	6271705.00	51	360681.00	6271665.00
	9	360664.00	6271704.00	52	360681.00	6271649.00
	10	360665.00	6271703.00	53	360681.00	6271648.00
	11	360681.00	6271687.00	54	360681.00	6271646.00
	12	360681.00	6271685.00	55	360682.00	6271644.00
	13	360707.00	6271688.00	56	360682.00	6271642.00
	14	360741.00	6271688.00	57	360682.00	6271640.00
	15	360741.00	6271699.00	58	360683.00	6271639.00
	16	360741.00	6271701.00	59	360684.00	6271637.00
	17	360741.00	6271703.00	60	360685.00	6271635.00
	18	360741.00	6271705.00	61	360711.00	6271588.00
	19	360741.00	6271706.00	62	360707.00	6271568.00
	20	360740.00	6271708.00	63	359390.00	6271547.00
	21	360739.00	6271710.00	64	359303.00	6271546.00
	22	360739.00	6271712.00	65	359304.00	6271546.00
	23	360738.00	6271714.00	66	359303.00	6271546.00
	24	360737.00	6271716.00	67	359313.00	6270900.00
	25	360736.00	6271717.00	68	359814.00	6270914.00
	26	360734.00	6271719.00	69	359832.00	6269753.00
	27	360733.00	6271720.00	70	358335.00	6269242.00
	28	360733.00	6271721.00	71	358315.00	6269241.00
	29	360715.00	6271739.00	72	357448.00	6269199.00
	30	361254.00	6271746.00	73	356645.00	6269176.00
	31	361256.00	6271597.00	74	356362.00	6269995.00
	32	361215.00	6271597.00	75	356338.00	6270869.00
	33	361172.00	6271596.00	76	356101.00	6270862.00
	34	361115.00	6271595.00	77	356101.00	6270869.00
	35	361054.00	6271594.00	78	355514.00	6271654.00
	36	361024.00	6271594.00	79	355490.00	6271653.00
	37	361000.00	6271593.00	80	355480.00	6271653.00
	38	360974.00	6271593.00	81	355475.00	6271864.00
	39	360944.00	6271592.00	82	359477.00	6271923.00
	40	360916.00	6271592.00	83	359383.00	6271719.00
	41	360879.00	6271591.00	84	359383.00	6271719.00
	42	360851.00	6271591.00	85	360651.00	6271738.00
	43	360822.00	6271590.00			

Datum: GDA94 Zone 50.

APPENDIX 2 – ISOLATED ARTEFACTS DATA

ID	Easting	Northing	Artefact Type	Lithology	Maximum Length	# of Retouched Edges	% Perimeter Retouched	Comments
1	360653.00	6271732.00	Complete Flake	Quartz	10			
2	360655.00	6271739.00	Complete Flake	Quartz	9			
3	356311.00	6271402.00	Single Platform Core	Quartz	36			
4	358837.00	6270539.00	Distal Flake Fragment	Quartz	5			
5	358838.00	6270540.00	Debris	Chert	12			Fossiliferous chert
6	358840.00	6270537.00	Debris	Chert	5			Fossiliferous chert
7	358847.00	6270521.00	Multiple Platform Core	Quartz	19			
8	358843.00	6270519.00	Multiple Platform Core	Quartz	22			
9	358860.00	6270519.00	Complete Flake	Quartz	18			
10	358928.00	6270262.00	Multiple Platform Core	Quartz	27			
11	358362.00	6269523.00	Complete Flake	Quartz	18			
12	358397.00	6269489.00	SPC Single Platform Core	Quartz	12			
13	358376.00	6269461.00	Complete Flake	Quartz	6			
14	358382.00	6269501.00	Complete Flake	Quartz	11			
15	358384.00	6269490.00	Complete Flake	Quartz	13			
16	358375.00	6269489.00	Complete Flake	Quartz	3			
17	358383.00	6269488.00	Complete Flake	Quartz	3			
18	358373.00	6269464.00	Debris	Quartz	9			
19	358382.00	6269498.00	Debris	Quartz	3			
20	358376.00	6269477.00	Complete Flake	Quartz	8			
21	358382.00	6269476.00	Multiple Platform Core	Quartz	8			
22	359033.00	6269860.00	Single Platform Core	Quartz	21			
23	359616.00	6270850.00	Debris	Quartz	8			
24	359611.00	6270857.00	Other	Quartz	15			Core fragment
25	359608.00	6270861.00	Complete Flake	Quartz	13			
26	359617.00	6270845.00	Debris	Quartz	11			
27	359617.00	6270839.00	Complete Flake	Quartz	8			
28	359616.00	6270851.00	Proximal Flake Fragment	Quartz	12			
29	359616.00	6270841.00	Debris	Quartz	6			
30	359618.00	6270838.00	Debris	Quartz	11			
31	359608.00	6270838.00	Single Platform Core	Quartz	31			
32	359615.00	6270841.00	Complete Flake	Chert	33			Fossiliferous chert
33	359573.00	6270850.00	Complete Flake	Quartz	8			

Datum: GDA94 Zone 50.

APPENDIX 3 – AHIS SEARCHES WITHIN 200 M OF THE SURVEY AREA

Reports

Aboriginal Heritage Inquiry System

List of Heritage Surveys

Search Criteria

3 Heritage Surveys containing 3 Survey Areas in Shapefile - ENV_GOV_YAL_Dev_Envelope_rev3_20190923

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.

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 heritageenquiries@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): South West Boojarah #2 People ILUA.

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.dpc.wa.gov.au/swnts/South-West-Native-Title-Settlement/Pages/default.aspx.

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

Copyright

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.

Basemap Copyright

Aboriginal Heritage Inquiry System

List of Heritage Surveys

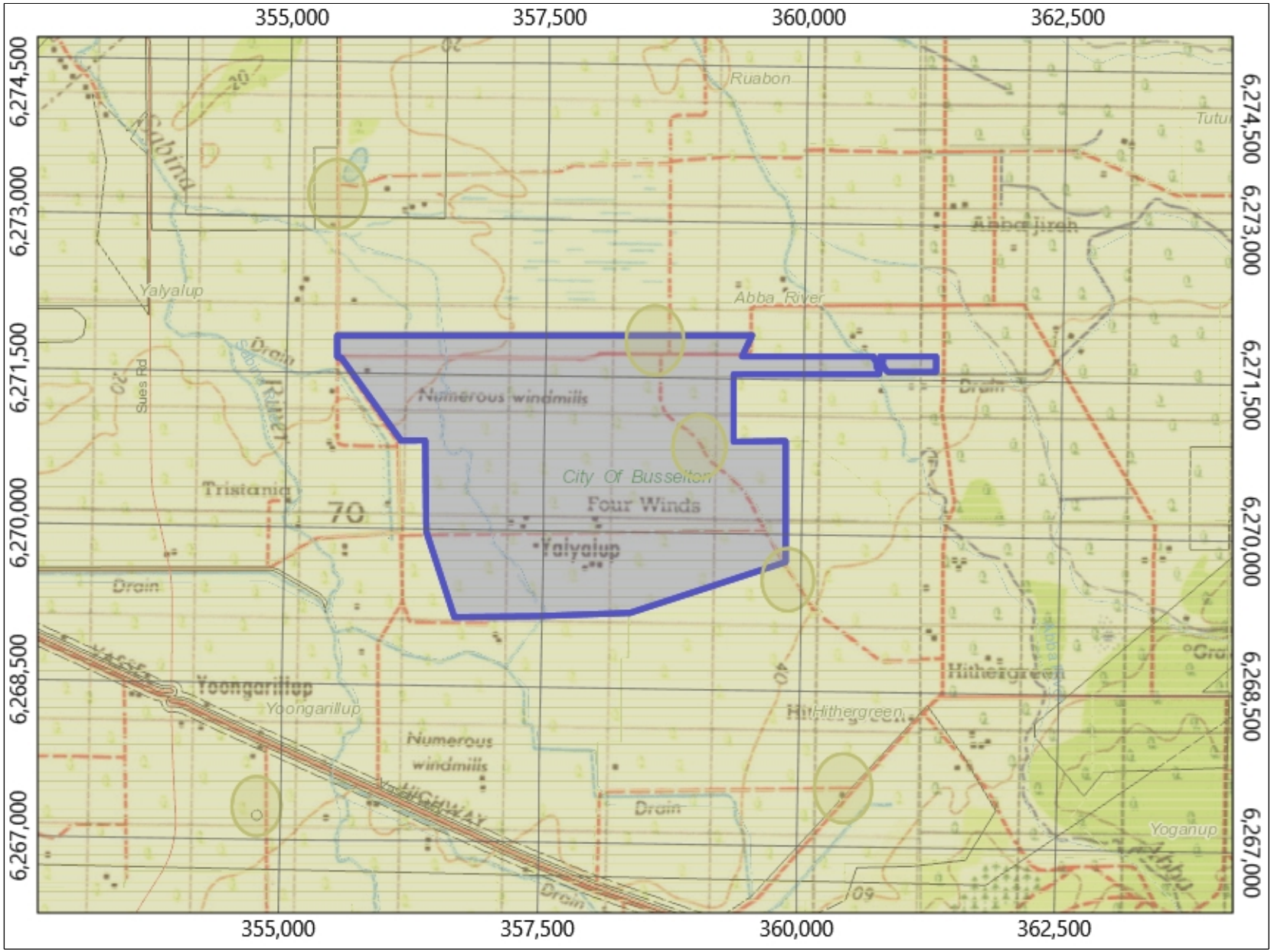
Survey Report ID	Report Title	Report Authors	Area Number	Survey Type	Area Description	Spatial Accuracy	Field / Desktop
20283	An addendum to a desktop preliminary Aboriginal heritage Survey for Water Corporations proposed development of the Yarragadee Aquifer extending to the Blackwood Groundwater area	Goode, Brad	1	Archaeological & Ethnographic	The desktop survey area comprises the Yaragadee Aquifiers Study Area, as shown in Figure 2.	Unreliable	Field and Desktop
23294	An Aboriginal Heritage Survey for the Drilling Program and Bore Installation on the Swan Coastal Plain, Dunsborough to Capel, Western Australia	Goode, Brad	1	Archaeological & Ethnographic	Drilling Program and Bore Installation on the Swan Coastal Plain, Dunsborough to Capel	Unreliable	Field and Desktop
101971	National Estates Grants Programme Aboriginal Sites in the Lower Southwest Heritage Study. July 1995.	McDonald, Hales and Associates.	1	Archaeological & Ethnographic	The study area encompasses an area of approximately 5,600 square kilometres, bounded by Capel River to the north, the Indian Ocean to the west, the Vasse Highway to the east, and the Donnelly River and Southern Ocean to the south as shown in Fig. 1.1 Survey sample area consisted of 146.9 linear kilometres or 0.96 square kilometres in the study area.	Unreliable	Field and Desktop

Department of Planning, Lands and Heritage

Aboriginal Heritage Inquiry System

Map of Heritage Survey Areas

For further important information on using this information please see the Department of Planning, Lands and Heritage's Disclaimer statement at https://www.dplh.wa.gov.au/about-this-website



Legend

- Heritage Survey Area
- Search Area
- Town
- Road
- River
- Local Government Authority

2.21 kilometres

Map Scale 1 : 67,100

MGA Zone 50 (GDA94)

Registered sites

Aboriginal Heritage Inquiry System

List of Registered Aboriginal Sites

Search Criteria

1 Registered Aboriginal Sites in Shapefile - ENV_GOV_YAL_Dev_Envelope_rev3_20190923

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.

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South West Settlement ILUA Disclaimer

Your heritage enquiry is on land within or adjacent to the following Indigenous Land Use Agreement(s): South West Boojarah #2 People ILUA.

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.dpc.wa.gov.au/swnts/South-West-Native-Title-Settlement/Pages/default.aspx.

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

Copyright

Coordinate Accuracy

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

Terminology (NB that some terminology has varied over the life of the legislation)

Place ID/Site ID: This a unique ID assigned by the Department of Planning, Lands and Heritage to the place.

Status:

- Registered Site: The place has been assessed as meeting Section 5 of the Aboriginal Heritage Act 1972.
- Other Heritage Place which includes:
  - Stored Data / Not a Site: The place has been assessed as not meeting Section 5 of the Aboriginal Heritage Act 1972.
  - Lodged: Information has been received in relation to the place, but an assessment has not been completed at this stage to determine if it meets Section 5 of the Aboriginal Heritage Act 1972.

Access and Restrictions:

- File Restricted = No: Availability of information that the Department of Planning, Lands and Heritage holds in relation to the place is not restricted in any way.
- File Restricted = Yes: Some of the information that the Department of Planning, Lands and Heritage holds in relation to the place is restricted if it is considered culturally sensitive. This information will only be made available if the Department of Planning, Lands and Heritage receives written approval from the informants who provided the information. To request access please contact heritageenquiries@dplh.wa.gov.au.
- Boundary Restricted = No: Place location is shown as accurately as the information lodged with the Registrar allows.
- Boundary Restricted = Yes: To preserve confidentiality the exact location and extent of the place is not displayed on the map. However, the shaded region (generally with an area of at least 4km^2) provides a general indication of where the place is located. If you are a landowner and wish to find out more about the exact location of the place, please contact the Department of Planning, Lands and Heritage.
- Restrictions:
  - No Restrictions: Anyone can view the information.
  - Male Access Only: Only males can view restricted information.
  - Female Access Only: Only females can view restricted information.

Legacy ID: This is the former unique number that the former Department of Aboriginal Sites assigned to the place. This has been replaced by the Place ID / Site ID.

Aboriginal Heritage Inquiry System

List of Registered Aboriginal Sites

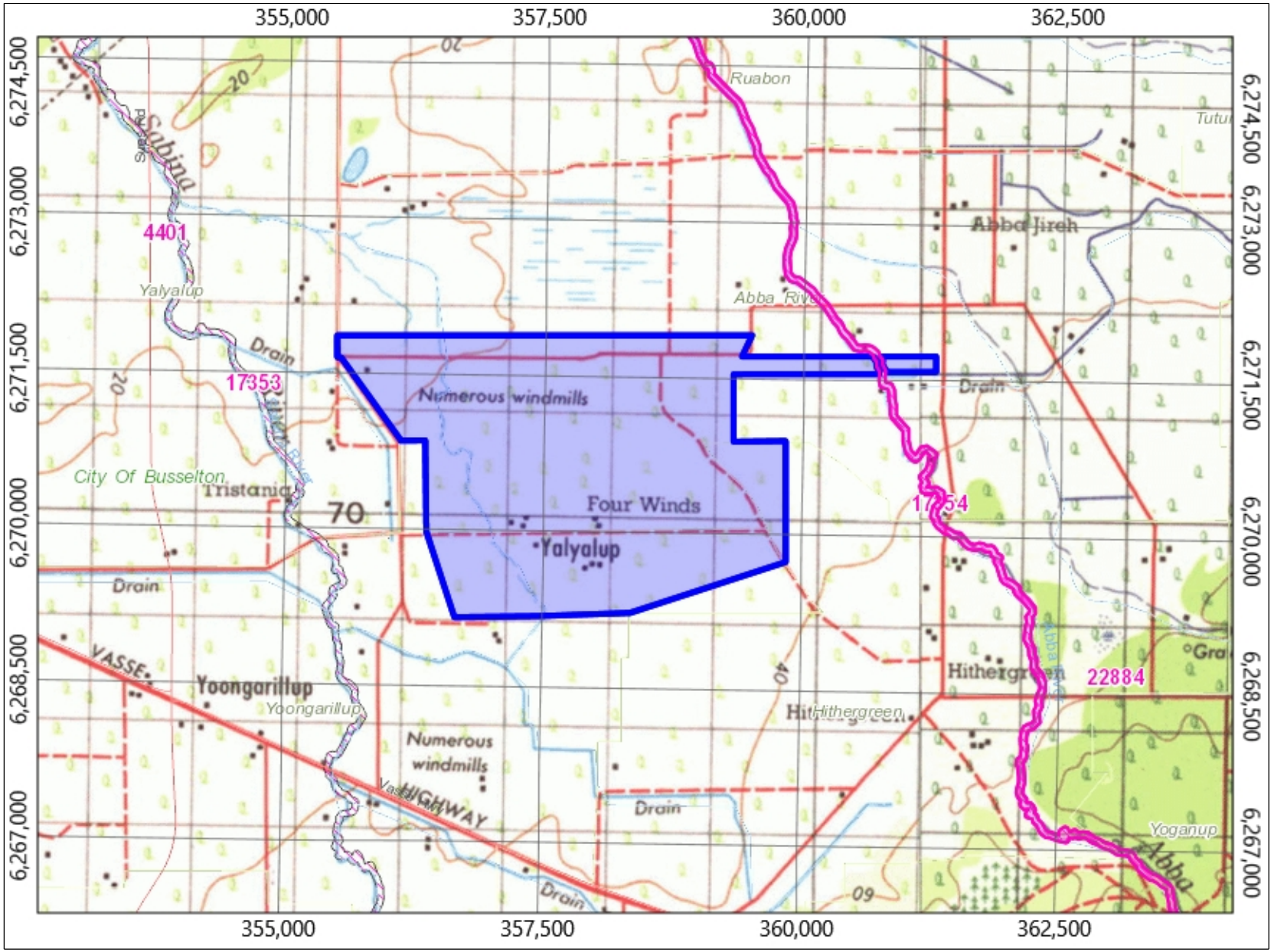
ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
17354	Abba River	No	No	No Gender Restrictions	Registered Site	Historical, Mythological	*Registered Knowledge Holder names available from DAA	360689mE 6270254mN Zone 50 [Reliable]	

Department of Planning, Lands and Heritage

Aboriginal Heritage Inquiry System

Map of Registered Aboriginal Sites

For further important information on using this information please see the Department of Planning, Lands and Heritage's Disclaimer statement at https://www.dplh.wa.gov.au/about-this-website



Legend

- Registered Aboriginal Site
- Search Area
- Town
- Road
- River
- Local Government Authority

2.21 kilometres

Map Scale 1 : 67,100

MGA Zone 50 (GDA94)

Other Aboriginal archaeological places

Search Criteria

No Other Heritage Places in Shapefile - ENV_GOV_YAL_Dev_Envelope_rev3_20190923

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Department of Planning, Lands and Heritage

Aboriginal Heritage Inquiry System

Map of Other Heritage Places

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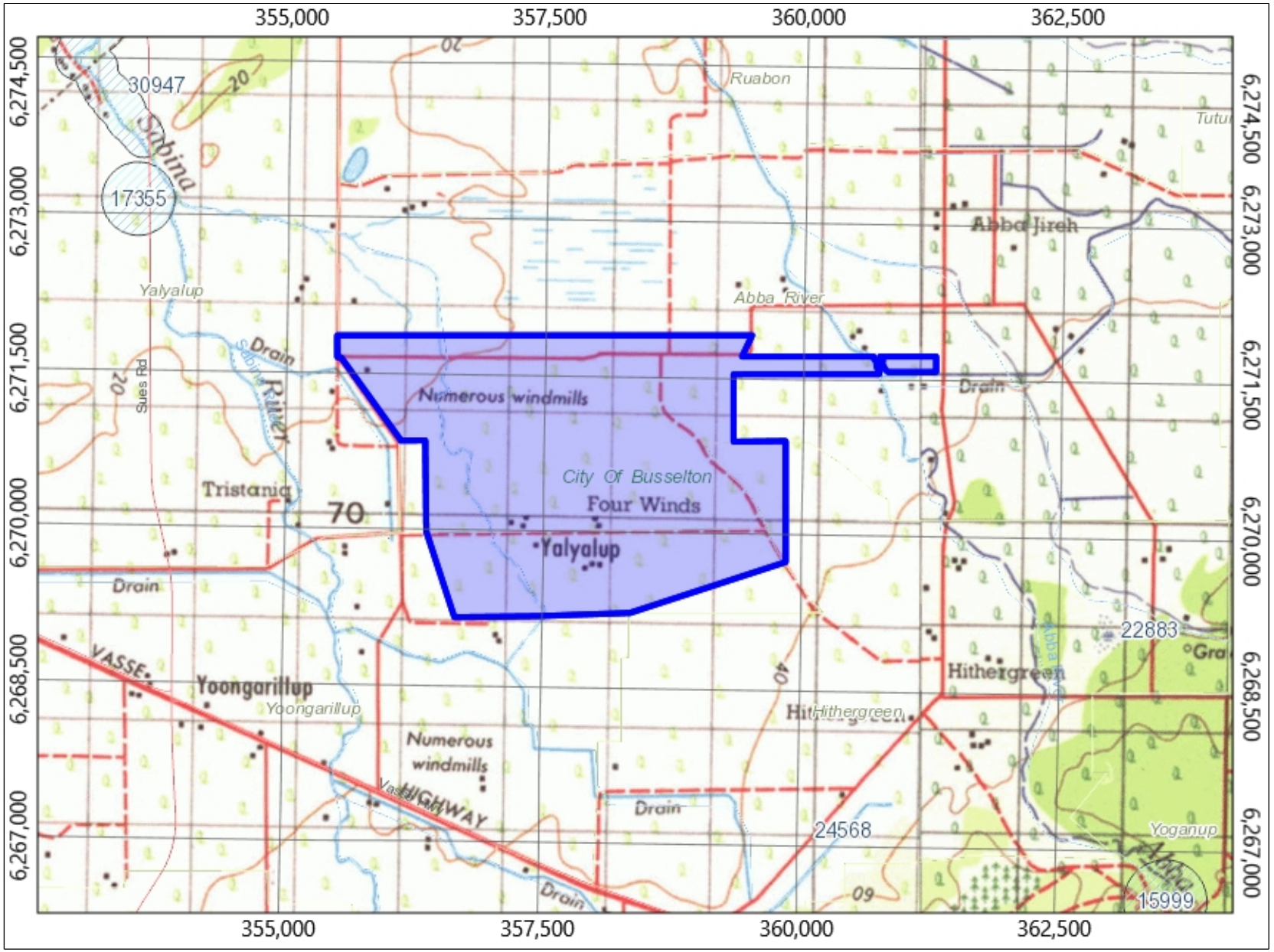

Legend

- Other Heritage Place
- Search Area
- Town
- Road
- River
- Local Government Authority

2.21 kilometres

Map Scale 1 : 67,100

MGA Zone 50 (GDA94)