

Appendix H – Aboriginal Heritage Survey (Brad Goode and Associates 2018)



**REPORT OF AN ABORIGINAL HERITAGE
SURVEY FOR THE TALISON LITHIUM
MINE EXPANSION M01/2, M01/3, M01/6,
M01/7 & L01/1 GREENBUSHES,
WESTERN AUSTRALIA**

*A report prepared for GHD Pty Ltd upon behalf of
Talison Lithium Australia Pty Ltd.*

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- Mr Steve Green – Talison Lithium Australia Pty Ltd (Manager of Safety and Environment)
- Ms Carmel Griffin – Talison Lithium Australia Pty Ltd (Stakeholder Engagement Officer)
- Ms Tahn Donovan – South West Aboriginal Land and Sea Council (Heritage Officer)
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Ethnographic survey informants:

- Mr Jack Hill
- Mr David Pell
- Ms Wendy Williams
- Mr Wayne Webb
- Mr Glen Councillor
- Ms Sue Kelly
- Mr Mark Colbung

Archaeological assistants:

- Mr Wayne Webb

DISCLAIMER

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***Note:** This report, in terms of its assessment under Section 5 of the Western Australian *Aboriginal Heritage Act 1972*, should be read in conjunction with the archaeological report by O'Reilly (2018).

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MAPPING

Datum Used: GDA 1994 MGA Zone 50. Handheld GPS Unit Garmin 64ST (+/- 10m)

GLOSSARY OF TERMS

The Proponent – Talison Lithium Australia Pty Ltd
The Consultant – Brad Goode & Associates Pty Ltd
The Agent – GHD Pty Ltd
ACMC – Aboriginal Cultural Material Committee
AHA – Western Australian *Aboriginal Heritage Act 1972*
BP – Before Present
CHMP – Cultural Heritage Management Plan
DPLH – Department of Aboriginal Affairs
DPaW – Department of Parks and Wildlife
Ha – hectares
Km – kilometres
NSHA – Noongar Standard Heritage Agreement
NTC – Native Title Claim
SWALSC – South West Aboriginal Land and Sea Council
SWB – South West Boojarah
Talison Lithium – Talison Lithium Australia Pty Ltd – Greenbushes Operations
WA – Western Australia

EXECUTIVE SUMMARY

Talison Lithium Australia Pty Ltd ('Talison') is proposing to expand their Lithium mining operations and infrastructure requirements at their Greenbushes mine which is located in the Shire of Bridgetown-Greenbushes, Western Australia.

Specifically, Talison want to expand its current mine pit to the south and will also require land to be developed for waste dumps, processing plants, roads and associated infrastructure. The expansion will take within portions of mining leases M01/2, M01/3, M01/6, M01/7, M01/16 & L01/1 and Land Parcels Lot 8801 (P153533); Lot 9950 (P153707); Lot 11706 (P153533); Lot 8755 (P153525); and Lot 10632 (P153955).

Prior to proceeding the Talison wishes to determine if there are any sites or places of Aboriginal heritage significance as defined by Section 5 of the Western Australian *Aboriginal Heritage Act 1972* (AHA) that will be affected by this proposed work, thereby fulfilling their obligations under the AHA.

A search of the DPLH Aboriginal Sites and Places Register revealed that there is **one** registered DPLH site located within Talison Lithium survey area. Site ID 20434 'Blackwood River' has a tributary located to the south of the survey area and to the north west where a road is to be upgraded. However these tributaries **will not be directly affected** by the project proposals as they are currently planned.

In terms of significance Site ID 20434 'Blackwood River' is believed to have been created by the *Waugal*. It was reported that the entire Blackwood River and its tributaries was created by, and is home to, the *Waugal*, rendering the entire river system as a sacred site. This includes the South West Yarragadee Aquifer which directly feeds the Blackwood River and is therefore considered to be the same water containing the spiritual essence of the *Waugal*. The Blackwood River was also reported to be of customary significance as a *bidi* (path) from inland areas of Nannup to the west coast. An ochre deposit and a traditional ford are recorded at a crossing on Great North Road where ritual exchange of women took place. The Blackwood River was also recorded as a place of significance to Aboriginal people as a cultural boundary between the Pibelman and Wardandi language groups.

As a result of consultations held with 7 SWALSC nominated members of the South West Boorah #2 WC2006/004 Native Title Claim group it was found that there are **no new ethnographic sites** of Aboriginal heritage significance as determined by Section 5b, 5c, 39.2 and 39.3 of the Western Australian *Aboriginal Heritage Act 1972* located within the survey area and as such no approvals under the AHA are required to proceed.

During the survey requests were made for the company to create employment and economic opportunities for Noongar people. However as this is a social justice issue the Talison community relations officer will deal with this request which is not within the consultant's scope of work as it falls outside of the AHA.

In relation to the Western Australian *Aboriginal Heritage Act 1972* (AHA) the following recommendations can be made:

It is recommended that Talison Lithium Australia – Greenbushes Operations can proceed with their plans to conduct additional mining and infrastructure operations to the south of the current footprint without risk of breaching Section 17 of the AHA in relation to ethnographic Aboriginal heritage sites as defined by Section 5 of the AHA.

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REPORT

Report of an Aboriginal Heritage Survey for the Talison Lithium Mine Expansion M01/2, M01/3, M01/6, M01/7 and L01/1 Greenbushes, Western Australia

ISSUE

Talison Lithium Australia Pty Ltd ('Talison') is proposing to expand their Lithium mining operations and infrastructure requirements at their Greenbushes mine which is located in the Shire of Bridgetown-Greenbushes, Western Australia.

Specifically, Talison want to expand its current mine pit to the south and will also require land to be developed for waste dumps, processing plants, roads and associated infrastructure. The expansion will take in mining leases M01/2, M01/3, M01/6, M01/7, M01/16 & L01/1 and Land Parcels: ID's P153533, 8801; P153707, 9950; P153533, 11706; P153525, 8755 & P153955, 10632.

REPORT OBJECTIVES

To report on archival research in order to determine if any previously recorded Aboriginal Heritage sites or places will be affected by the above project proposal.

To report on consultations held with representatives of the South West Boojarah (SWB) #2 WC2006/004 Native Title Claim group in order to determine if any new Aboriginal Heritage sites or places will be affected by the above project proposal.

To report upon management recommendations should any sites or places of significance as defined by Section 5 of the AHA be identified to be located within the development areas.

To report upon any recommendations and/or the significance assessments of the sites or places should the proponent be required to make application under Section 18 of the AHA for consent to use the land that may contain an Aboriginal site or place under Section 5 of the AHA

BACKGROUND

On the **20th February 2018** Mr Stephen Green (Manager of Safety and Environment) from Talison made contact with Brad Goode & Associates Pty Ltd ('BGA') by phone to request that an Aboriginal heritage survey is conducted for the proposed expansion of mining and infrastructure to the south of the current operation within portions of mining leases M01/2, M01/3, M01/6, M01/7 and M01/16 & L01/1 and Land Parcels Lot 8801 (P153533); Lot 9950 (P153707); Lot 11706 (P153533); Lot 8755 (P153525); and Lot 10632 (P153955).

Mr Green advised that the work would be commissioned by GHD Pty Ltd in Bunbury as they had been engaged to manage all approvals that may be required for the project.

Subsequently Ms Amine Callegari (Senior Environmental Engineer) from GHD Pty Ltd requested that BGA provide a fee proposal to assist the company with all tasks related to the conduct of the survey and in particular liaison with SWALSC to determine a survey team under the NSHA and any approvals that may subsequently required under the AHA.

As a result of the above scope of work an archaeological inspection of the survey area was conducted By Mr Thomas O'Reilly, Ms Sally McGann (BGA Archaeologists) and Mr Wayne Webb (SWB) between the 3rd and the 6th April 2018 and an ethnographic consultation with the

seven nominated SWB representatives on the 19th April 2018 was conducted by Brad Goode (Anthropologist) and Leah Mackie (Ethnographic Assistant).

Present during the survey from Talison were Mr Craig Dawson (Manager Operations Greenbushes) Mr Steve Green (Manager of Safety and Environment) and Ms Carmel Griffin (Stakeholder Engagement Officer) to explain the proposal and to provide logistical support.

Present also was Ms Tahn Donovan (Heritage Officer) from SWALSC to assist the SWB claim group.

The following reports details the results of these surveys.

LOCATION

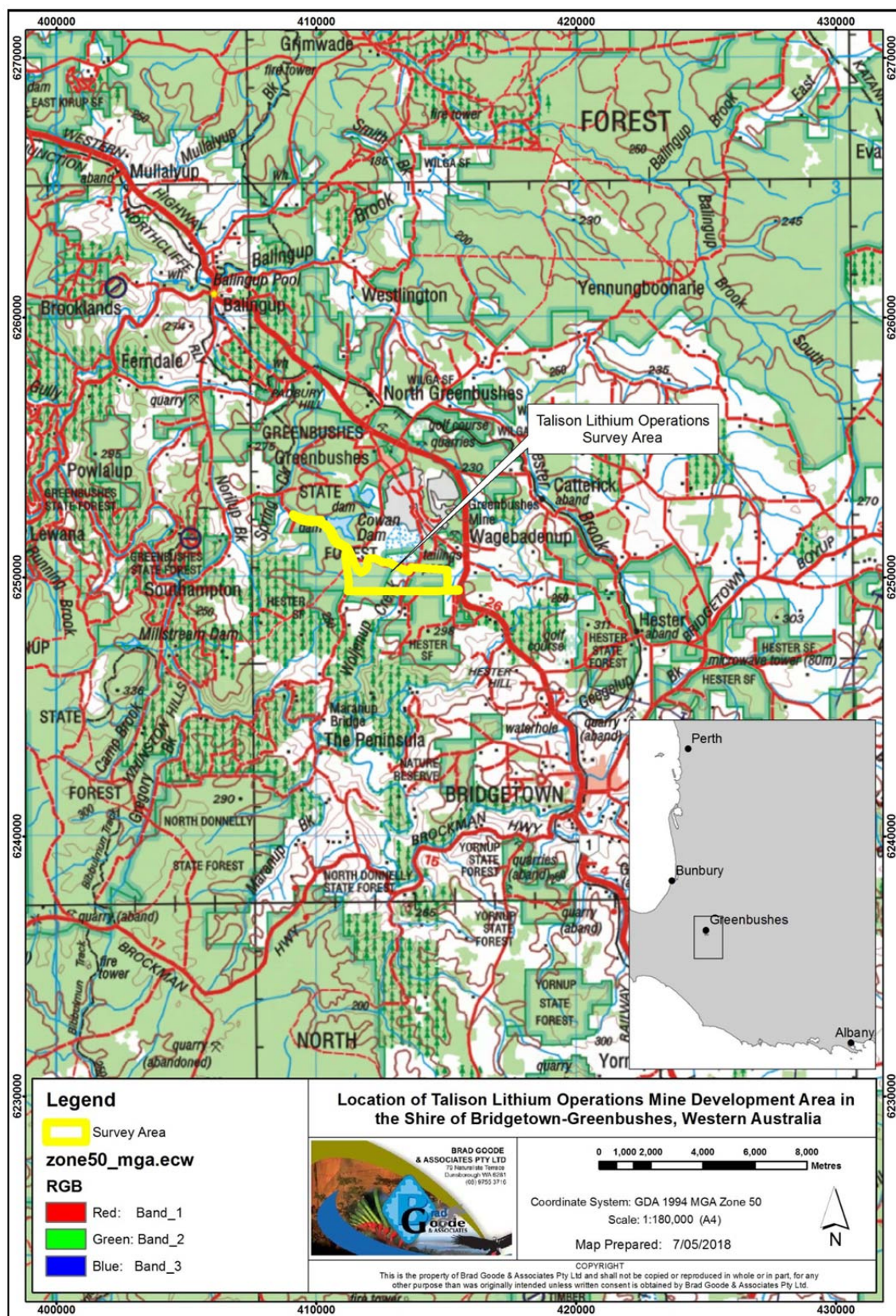


Figure 1: Location of the survey area.

ETHNOGRAPHIC & HISTORICAL BACKGROUND

TRADITIONAL NOONGAR CULTURE

The Bibbulmun Noongar people share a common language with 13 local dialect variations and inhabit the area to the west of a line drawn roughly from Jurien Bay in the north to Esperance in the south east. Tindale's (1974) research identified three language groups occupying the upper Blackwood area near Greenbushes.

The group to the north and the east were identified as the *Kaneang* (Tindale 1974: 244). This group occupied the upper Blackwood area including the headwaters of the Warren and Frankland rivers, with the northern boundaries running approximately from Collie to Katanning, and the southern boundary passing from Nannup through Mandurah and eventually to Cranbrook (ibid). The name may have been taken from a term for 'west' (*kunniung*) and therefore simply means 'western people' (Bates 1985: 47).

The group south of the Blackwood River were identified as the *Pibelman* (Tindale 1974: 225). The name of this group has been recorded in various sources as '*Pepleman*, *Pibelman*, *Bibbulmun*' or similar linguistic variants (ibid). The area inhabited by the *Pibelman* is described as the Lower Blackwood River; chiefly on the hills in country between the Blackwood and Warren Rivers, East to Gardner River and Broke Inlet; on the Scott River; inland to Manjimup and Bridgetown (ibid).

The group north of the Blackwood River towards to coast to the west was identified as the *Wardandi* (Tindale 1974: 259). Tindale (ibid) describes the Wardandi territory as being from Bunbury to Cape Leeuwin, chiefly along the coast at Geographe Bay to Capel in the north in the vicinity of Nannup following the Blackwood River to Bridgetown.

Traditional initiation practices varied from those of their inland neighbours. The Bibbulmun Noongars practiced nasal septum piercing and ciatricision of the upper body rather than circumcision as an initiation rite (Bates 1984: 151). These initiation practices have been described by Berndt and Berndt as being of the 'Old Australian Tradition' (Berndt & Berndt 1979: 84).

The Bibbulmun Noongar people recognised two primary moieties, the *Manichmat* or 'fair people of the white cockatoo' and the *Wordungmat* or 'dark people of the crow' (Bates 1985: 74; Berndt & Berndt 1979: 82). These formed the basis for marriage between a further four class subdivisions, the *Tondarup*, *Didarruk* and *Ballaruk*, *Nagarnook* (ibid). Bates (1985: 74) describes the only lawful marriage to be "the cross-cousin marriage of paternal aunts' children to the maternal uncles' children", and states that the four clan groups and relationships, under different names, are "identical in every tribe in Western Australia, east, north, south and south west".

Berndt & Berndt (1999) elaborate on the significance of kin systems in Aboriginal societies stating,

In Aboriginal societies, most relationships are articulated in kin terms. All activities are carried out in the company of persons who are bound to one another in conventionally defined ways. They not only know what to expect from others, and how they will respond to certain situations, but are reasonably sure that participation and co-operation will be forthcoming if the occasion demands. Over and above the network of obligations and responsibilities linking persons together in, more or less, a mutually satisfying system, there is an atmosphere of familiarity and intimacy possible only in a group which disallows the concept of stranger for anyone within its midst, and even well outside its own social limits (Berndt and Berndt 1999: 90).

The traditional Aboriginal notion of boundaries was much more fluid than the rigid land boundaries that are imposed as part of the Native Title Process. Aboriginal people throughout all of Australia have historically held two distinct and complementary forms of relationship to the land: esoteric (sacred, ritual, mythological and ceremonial) and economic (biographical, historical and habitation). Stanner (1965) clarifies their differences by using the terms 'estate', 'range' and 'domain'. Estate refers to the home ground or Dreaming place of a particular descent group whilst range refers to the tract of country over which the group travelled for hunting and foraging, and included their estate (Stanner 1965: 2). In short, a group's range provided economic boundaries whilst estate offered a sense of place and of spiritual meaning for both the individual and the group as a whole. A descent group's domain refers to the combination of both estate and range (Stanner 1965: 2). The strength of attachment to a particular place would vary from person to person and/or family to family but the associations with the land were, and remain today, crucial elements of Aboriginal society.

The basis for Aboriginal spirituality, land use and ownership lies in their Dreaming. In the Dreaming ancestral beings created the world and all within it thereby defining spiritual, social, moral and territorial division for its inhabitants (Berndt & Berndt 1999: 137). The ancestral beings not only transformed the landscape but also infused it with living spirit, creating sacred sites that continue to link all Aboriginal generations with the Dreaming and the eternal spirit beings themselves (ibid: 137). Noongars held one central creator spirit, the *Waugal* (sp. Moore 1842: 75; Berndt & Berndt 1979: 85) or *Woggal* (sp. Bates 1966: 149), who created and is still present in all sources of water in the South West.

Bates (1985) reports,

It [the *Waugal*] made all the big rivers of the Southwest. Wherever it travelled it made a river. The places where it camped in these travels were always sacred. All those places in the South where it rested were made known by the presence of lime, which was its excreta, and certain salt pans now found in inland districts were formed from its urine (Bates 1985: 221).

In addition to the *Waugal* other ancestral Dreaming beings exist throughout Aboriginal Australia who "established the foundations of human socio-cultural existence. They also attended to that environment, and in many cases were responsible for forming it" (Berndt & Berndt 1999: 137). In addition to creating the physical landscapes, the Dreaming beings imbued the country and its features with their spirit. Berndt & Berndt (1999) report,

They are associated with territories and with mythic tracks, and in many cases were themselves transformed into sites where their spirits remain; or they left sites which commemorated their wanderings – in which case, part of their spiritual substance remains there. So, all land was (and is) full of signs. And what they did and what they left is regarded as having a crucial significance for the present day. But more than this, they are considered to be just as much alive, spiritually, as they were in the past (Berndt & Berndt 1999: 137).

SETTLEMENT AND SOCIAL DISRUPTION

The first recorded visit of Europeans to Bunbury, or *Gomborrup* as it was then known, occurred in 1803 when Commodore Nicolas Baudin and Captain Hamelin anchored in *Koombana* Bay (Sanders 1975: 1). Settlement in Western Australia began in 1829 when Captain Charles Fremantle landed with a party at the Swan River with the purpose of annexing the, "whole of the Western part of Australia in the name of Britain" (May 1997: 7). Albany had a garrison stationed there two years earlier but it was the founding of the Swan River Colony that saw an influx of settlers and the beginning of European farming in Western Australia (Cresswell 1989: 35). The area around Perth was settled first followed by Albany, Augusta, then the Vasse

region, the Bunbury area and the land to the east of the Darling Range (Green 1984: 44-48). To some extent the thick forests and the hilly country of the Darling Range and Blackwood area were bypassed as the settlers took up land that was easier to establish farms on.

In 1854 Walter Padbury established a pastoral run near Balingup and during the 1850s John Blechynden and Edward Hester were led to the area around Bridgetown by Aboriginal guides (Frost 1979: 6). Both men were looking for country that was free from the Heartleaf plant (*Gastrolobium*), which is poisonous to cattle. Aboriginal guides led both men separately, and from different locations, to country around Bridgetown where Heartleaf did not grow (McAlinden 1952: 96). John Blechynden came to the area from East Beverly while Edward Hester was shown the area by Aboriginals from Bunbury who led him through Donnybrook to the Blackwood River (McAlinden 1952: 89). John Blechynden established a pastoral run based from a small hut he built near the site of the Bridgetown Bridge (McAlinden 1952: 90-91). His timber hut was replaced by a brick structure sometime around 1857-58 (Gibbs 1995: 5). During the same period Edward Hester was also establishing a pastoral lease northwest of Bridgetown on the Peninsular (McAlinden 1952: 101-103). Blechynden chose to build his hut, and later his house, with the help of local Aboriginals just above a rough ford over the Blackwood River as this was the only possible crossing place for a considerable distance either upstream or down (Gibbs 1995: 5; McAlinden 1952: 98). This may have made Bridgetown an important link in the seasonal travels of the traditional Noongar people.

Reports of local Noongar groups during the 1860s were often conflicting as European settlers established farms in the area. The Noongar people were forced off their traditional land and away from the best hunting areas, and subsequently had to adapt to survive. Attempts to retain contact with their traditional lands often resulted in reprisals led by the Europeans which further created resentment amongst the Noongar people and conflict often replaced early good will. There are several recorded accounts of reprisal attacks by the early settlers on the Noongar people. This can be seen from local accounts, such as in the Bridgetown area where, “the natives were very troublesome, calling at the houses of settlers to ask for tea, flour and tobacco, travelling as a tribe and accompanied by a great many dogs the settlers were often scared of the local Aborigines” (McAlinden 1952: 92). As the settlers expanded their farming operations and took up more and more land, the pressure on the Noongar people increased as the two lifestyles met. The settlers’ valuable cattle were speared and vegetable gardens, pastures and crops were burnt by the Noongar people as they carried on their traditional ‘fire stick farming’ (Tilbrook 1983: 6-7). Food and other items were stolen and some settlers were attacked. One European item that the Noongar people saw as desirable were horse tails for use in their corroborees.

...on one occasion cut the hair off the tails of Mr John Blechynden’s horses. They were arrested by Constable Moulton and taken to Jayes, the home of James Lee Steere, J.P., where First Constable McAlinden was. They were given twelve months at Rottnest (McAlinden 1952: 93).

Amidst ongoing tension as indigenous and colonial people jostled to retain their own cultural practices, massacres are known to have occurred in the area including an account of a massacre taking place during the 1860’s at the Eight Mile Well on the Bridgetown Boyup Brook Road (Hadley 1995). This attack reportedly took place prior to any police being stationed in Bridgetown and was carried out by a group of settlers. The survivors of the attack were reported to have relocated to Three Acre Pool on the Blackwood River above Bridgetown (ibid). They subsequently caught chicken pox and, in an attempt to cool their fever, they bathed in the river, which in turn gave them pneumonia that eventually killed them (Hadley 1995). Constable Moulton arrived in Bridgetown in 1865 where he established the first police station in the district. He was assisted by another constable and two Aboriginal assistants. At that time there were large numbers of Noongar people living in the area, groups of up to 200 were recorded to have camped beside the river in Bridgetown (Fisher 1992).

Gradually as farms spread throughout the region, towns developed along the road that connected Bridgetown and Manjimup to Bunbury. The road had been constructed during the 1850s using convict labour and was slowly extended and upgraded (Frost 1976: 13). By 1882 there were nineteen families in the Boyup Brook area (Boyup Brook Tourism Association, 2005: 1). As settlement and European contact increased, disease caused much suffering and a great many deaths among the Noongar population. The measles epidemic of the 1880s caused a significant decline in the southwest Aboriginal population (Cresswell 1989: 13). Despite this, during the 1880s and 1890s a substantial population of Noongar people still lived throughout the region with Frost (1979: 10) reporting, “there were many Aborigines around Balingup and it was a common sight to see groups of natives wandering through the town carrying their spears and kylie”.

The Doust family settled in Bridgetown in 1864 (McAlinden 1952: 107). Alfred, then aged 14, and his brother Henry worked on the construction of the second bridge over the Blackwood River, before they were joined by another brother Clarence, aged 15, in 1873 (McAlinden 1952: 107). One anecdote told by one of their descendants, Mr Roy Doust, tells of an incident which is dubiously humorous but which also indicates traditional laws and customs were being followed at that time by the Noongars residing in the area,

Amongst the goods given to Moulton (the police constable) was a wheel barrow and when he landed at the Blackwood with the wheel barrow and all the rest of his things, there were between two and three hundred aborigines camped along the river at that stage... The natives would spend hours wheeling this wheel barrow around thoroughly enjoying it and giving each other a ride in it. Well one chap apparently got sleeping sickness and he was dead – *gengi gengi*. He had a sleeping sickness and the natives came over and asked Moulton to let them have the wheel barrow so they could wheel him away on wheels. But fortunately for the *gengi gengi*, the wheel barrow going over rough ground on the way to the burial ground he woke up. Immediately he woke up he rushed straight back to the police station and asked to be locked up because he knew that he would be killed because natives never went back on the tribal customs and that man had to die because that man did die and came up so he had to be killed. But this poor beggar after a week or two, and by the way, all the natives had cleared out in the meantime, they had all gone, gone bush or somewhere but not a native could be seen, so after a few days or a few weeks, he got very tired of being locked up all the time and only coming out and sitting on a box outside so in the end Moulton would drag in wood and leave it outside his cell and he would chop it up. He enjoyed that but he got a little bit venturesome as weeks went by and he would walk into the bush to get a stick or a lump of wood and bring that back and chop it up. Then one day they suddenly missed him and all they found were some blood stains in the bush away from the cell. As soon as Moulton saw it he happened to look up and see a smoke signal. Within a day or two the natives came in and held a big corroboree but he never found out really what happened to the man (Mabey pers. comm. 1976).

Farmers across Western Australia regularly employed Aborigines as a convenient and cheap source of labour. Some Noongar families specialized in work such as shearing while most simply did whatever was available. Heavily relied upon to support the foundation of European farming techniques, Noongars were generally offered little if any payment for work and were often given goods such as flour, sugar and tobacco in exchange for farm labour and domestic help (Tilbrook 1983: 19). This source of food increasingly replaced the traditional bush foods which were becoming harder to procure (ibid: 22). Hunting and food gathering continued to play a major part in Noongar life but work for food on farms soon replaced these practices. Noongars often lived in fringe camps, following seasonal farm work along their traditional lands and supplementing their diet with bush tucker and game they hunted (ibid: 20, 22). Haebich (1998) summarised the relationship that developed from Noongar employment stating,

Aborigines were employed from the earliest days of the stations (in the mid 1840s) and their bush skills and intimate knowledge of the country made them valued workers. For the Aborigines, work on the stations provided an alternative support as traditional foods were depleted by stock. It also enabled them to remain in their home territories and to retain aspects of their traditional way of life. Most stations had a small core of permanent Aboriginal workers together with a floating population combining a life of hunting with seasonal work on the stations. Over the years an exploitative paternalistic relationship developed between employers and Aborigines which was based on the former's fundamental belief in white superiority, the acceptance of widely differing living conditions for Europeans and Aborigines and the prolonged dependence of Aboriginal workers on their employers (Haebich 1988: 1).

Many of the early settlers were assisted by the Noongar people in many ways. The Scott family who settled near the Donnelly River during the 1870s were helped by friendly Noongars and recall that when their grandfather came to the area, he was left alone in charge of a herd of cattle at the age of 15. An old Noongar man used to regularly visit the stockyard and hut to keep an eye on the young boy, "One old fellow used to come down every morning to see if grandfather was all right, Gaffa his name was. Even if he didn't see him, if he saw his tracks he would know he was about, he would know how old the tracks were" (Kelly 1995). The early settlers often relied on the extra labour the Aborigines were able to provide in order to establish European farming techniques,

Grandfather Dickson, he came at the [1970s] he used to grow wheat, there was a big hill there, he used to plough that and put wheat in, and in around November, they [Noongars] would come around, he would say to them a certain date before Christmas, they would come and he would give them flour and sugar and tea, and he would say "Now you come back at a certain time and reap for me". He used to have a sickle and they would gather an armful of wheat and they used to tie them into bundles, others would tie them into sheaves, when they'd finished he would give them another lot of tea and that sort of thing, and that would bind them over for the next year, and they'd come back again and so the thing went on" (Kelly 1995).

The importance of Noongar workers on farms was verbally acknowledged when in 1883 John Forrest stated, "Colonization would go on with very slow strides if we had no natives to assist us" (Goddard & Stannage 1984: 53). Ironically, Noongar people have often been instrumental in helping the European farmers in their agricultural successes on the land that once was theirs. Working at shearing, hay carting and clearing farmland were typical jobs for the Noongar people and combined with hunting and camping it has meant that many Noongars have retained an unbroken sense of living off and of being one with the land. This lifestyle predominated for many Noongar people until the late 1960s.

Before 1890 the South West region supported only small pockets of agriculture as well as a young timber industry and both were strained by extreme transport difficulties (de Garis 1993: 110). During the 1890s, the railway system between Bunbury and Donnybrook, and Bunbury to Perth was constructed, and in 1891 a rail-link from Bunbury to Boyanup was built, before in 1898 a rail-link between Bridgetown and Bunbury to Perth was established (Frost 1976: 7).

The townsite of Greenbushes, located in the south west between Balingup and Bridgetown, was gazetted in 1889 (Landgate 2016). Tin had been discovered near Greenbushes in 1888 with the railway from Donnybrook to Bridgetown opened in 1898 (ibid). The Surveyor-General decided to create a townsite at the railway station, and following the survey of lots, a new Greenbushes townsite was gazetted in May 1899 (ibid). Greenbushes was seemingly named so due to the particularly green bushes in the area which stood out from the local grey Eucalyptus species present (ibid).

An examination of the history of European settlement in the South West clearly depicts the disruption caused to Noongar traditional lifestyle. These disruptions were exacerbated in a series of Government Acts that were passed which increasingly eroded the Aboriginal peoples' civil liberties. The *Industrial Schools Act 1874* empowered managers of Aboriginal Missions to keep Aboriginal children to the age of 21 and place them as domestic servants or apprentices without their parent's permission (Haebich 1988: 51). The *Aborigines Protection Act 1886* introduced controls over Aboriginal employment (ibid: 47). In 1889, the *Constitution Act* was introduced, specifying that 5000£ or 1% of the annual colonial gross revenue, whichever was greater, was to be used to provide for the Aboriginal people (ibid: 51). The *Aborigines Act 1897* repealed the *Constitution Act 1889* and transferred control of Aboriginal affairs to the West Australian Government which acted through the Aborigines Department which was formed in the same year (ibid: 52). Following the Roth Royal Commission in 1904, in which Roth described the Western Australian Police's treatment of Aboriginals as "most brutal and outrageous" and described the conditions experienced by many Aboriginals as "resembling cruelties committed in the Dark Ages", the *Aborigines Act 1905* was introduced (ibid: 79). The *Aborigines Act 1905* allowed the government to remove Aboriginal people to live in mission camps such as Roelands and Carrolup, and to control many aspects of their lives including marriage and employment, as well as making it, "illegal for anyone classified as non-Aboriginal to associate with an Aboriginal" (Tilbrook 1983: 5). Other hardships for the Aboriginal population included the *Dog Act 1903*, which forced Aboriginal people to license their dogs or risk their destruction (Haebich 1988: 88). As the Noongar people used the dogs to aid in hunting and providing for themselves, the *Dog Act 1903* represented a blow to their means of survival.

Between 1890 and 1915 the population of Western Australia increased from 48,502 to 276,675 people, which included the assisted immigration of 55,000 'Britons' between 1903 and 1915 (Haebich 1988: 10). The increased population, combined with the restrictions of the *Aboriginal Act 1905*, meant that employment opportunities were limited or denied to many Aboriginal people in the region. In 1910 Thomas Muir informed the Aborigines Department that Aboriginal families from the Frankland district in the south-east were moving onto his land while other Noongars were said to be moving from Manjimup to Busselton in search of work (Haebich 1988: 105). Due to the increased population of Britain immigrants by the turn of the twentieth century over half of the Aboriginal population in the South West was of mixed race descent (ibid: 47). Colonial rulers saw children of one British parent as having potential if they could be trained to live as Europeans and introduced the *Industrial Schools Act of 1874* which forcibly removed children of mixed descent to missions where they were prepared for servant hood or menial apprentice work in the European community (ibid: 67).

Whilst the Noongar traditional way of life was irrevocably repressed through the forced displacement from traditional lands, government policies, changing economic circumstances and increased morality, the continuation of culture and customary values of those working and residing on farming land led to a gradual redefinition of traditional custodians in terms of land boundaries. Additionally, the forced displacement of Aboriginal children through the stolen generations and the resulting intermarriages of Aboriginal coastal and inland kin groups in the south-west led to the creation of Indigenous intercultural practices and further redefined traditional custodian lands. These practices ensured that traditional Aboriginal cultural values and practices were retained to some extent, enabling a continuation of Noongar culture often still recognised today.

ARCHIVAL RESEARCH

Archival research involved an examination of the DPLH Sites Register, a review of any relevant site files and a review of any unpublished ethnographic reports that relate to the survey area in Greenbushes, Western Australia.

SITES REGISTER SEARCH

The DPLH Aboriginal Sites Register categorises places reported to be of importance and significance to Aboriginal people into two separate categories.

The first category contains sites classified as **‘Registered.’** Registered sites have been assessed by the ACMC as meeting the definition of Section 5 of the AHA and are fully protected under the law. Disturbance to land that contains such sites requires a Section 18 application for ministerial consent should proponents wish to use the land that contain these sites.

‘Other Heritage Places’ is the second category of places contained upon the Aboriginal Sites Register. These types of places include reported places **‘Lodged’** and awaiting ACMC assessment, and places where the information has been assessed but there is **‘Insufficient information’** to make a final determination under Section 5 of the AHA but there is enough information to warrant these places temporary protection in Law. Disturbance to land that contains such places requires a Section 18 application for ministerial consent should proponents wish to use the land that contain these places.

Within the category of ‘Other Heritage Places’ the final category is **‘Stored Data.’** Such places have been assessed by the ACMC but fail to meet the definition of Section 5 of the AHA. Places in this category are not sites under the AHA and are not protected in Law. Proponents have no further legal requirements for such places should they wish to use the land unless further information is reported which would lead to such a place being reassessed as a site in terms of the definition of Section 5 of the AHA.

In relation to this survey a search of the DPLH Aboriginal Sites and Places Register was conducted on the **20th February 2018** in order to determine if there were any previously recorded Aboriginal heritage sites or places that would be affected by the project proposal (see Appendix 1: Sites Register Search).

The search revealed that there is **one** registered DPLH site and **no** ‘Other Heritage Places’ located within Talison Lithium survey area.

Site ID 20434 ‘Blackwood River’ is located in tenement P70/1701 adjacent to the southern boundary of survey area and within tenement L01/1 & M01/2 near a road upgrade to the northwest. However as the mining upgrade is currently planned these tributaries of the Blackwood River will not be directly affected by the project.

Table 1: Summary of Aboriginal heritage sites and places within the project area.

ID	Name	Status	Access	Restriction	Location (GDA94 Zone 50)*		Type
					mE	mN	
Registered Aboriginal Sites							
20434	Blackwood River	R	O	N	423713	6243153	Myth

* Please note: Coordinates are indicative locations that represent the centre of sites as shown on maps produced by the DPLH – they may not necessarily represent the true centre of all sites.

LEGEND

R – Registered Site, **I** – Insufficient Information, **S** – Stored Data/Not a Site, **L** – Lodged awaiting assessment,
O – Access Open, **C** – Closed Access, **N** – File Not Restricted.

REVIEW OF RELEVANT SITE FILES

Site ID 20434 - Blackwood River

This site was first reported by S. & R. Parker from Australian Interaction Consultants in May 2003 during a survey for the Water Corporation Blackwood Plateau Investigation Drilling Program. The site file contains an extract from the survey report. In the ethnographic discussion the report states,

The Elders reiterated the cultural and spiritual significance of waterways in the area, particularly the entire Warren-Blackwood River System including all tributaries up to their high water mark. This reconciles, and is consistent with, the Nyiiting (or Dreaming) stories previously provided to AIC by a range of [Noongar] Elders regarding the activities of the [Waugal] and his journeys through the south west of Western Australia (AIC 2003: 11).

Concern was expressed that the entire river inclusive of its tributaries had not been recorded by the DPLH as a significant Aboriginal site and the informants had previously provided information to record this site. The report (AIC 2003) recommended that the DPLH place the Warren and Blackwood rivers on the Interim Register of Aboriginal sites.

Further information regarding the Blackwood River as an Aboriginal heritage site was recorded by Brad Goode in the report, Goode (2003b) *An Addendum to a Desktop Preliminary Aboriginal Heritage Survey for Water Corporations Proposed Development of the Yarragadee Aquifer Extending to the Blackwood Groundwater Area*, an unpublished report prepared for the Department of Environment Protection, Waters and Rivers Commission. In this report, members of the South West Boojarah Native Title Claim group requested that the Blackwood River be reported to the DPLH as a site of mythological significance in association with *Waugal* beliefs. The Blackwood River site report was based upon the notion of generalised significance. No traditional story about the Blackwood River's creation was given by the Aboriginal informants who made the report. The Aboriginal informants stated that they had a sacred belief that the entire Blackwood River and its tributaries was created by and was home to a *Waugal*. In this report the Blackwood River was also reported to be a *bidi* (path) from inland areas of Nannup to the west coast. An ochre deposit and a traditional ford were also recorded at the crossing on Great North Road. The Blackwood River was also recorded as a place of significance to Aboriginal people as a cultural boundary between the Pibelman and Wardandi language groups of the Noongar people. The ford was also reported to be a place where different moieties traditionally exchanged wives across a recognised cultural boundary.

In August 2003, Goode conducted further work recording the significance of the Blackwood River in a report entitled '*South West Yarragadee-Blackwood Groundwater Aboriginal Cultural Values Survey*' (Goode 2003a). In this report the above information was reinforced by the Aboriginal community and it was stated that as the Blackwood River was directly fed by the South West Yarragadee Aquifer and that the aquifer itself was considered a part of the site as the water represented the same spiritual essence of the *Waugal* that was said to have created the Blackwood River. As a result the DPLH assessed the information contained within this report and the South West Yarragadee Aquifer was added to the heritage place database as Place ID 24293 and accessioned as 'Stored Data.'

The extent of the Blackwood River site is currently captured as the entire river, its embankments and immediate surrounds, 30m from the normal high water mark.

The Blackwood River is currently listed as a registered site under Section 5(b) and Section 39.2(a) and (c) of the *Aboriginal Heritage Act 1972*.

Site ID 20434 'Blackwood River' is located in tenement P70/1701 adjacent to the southern boundary of the survey area and within tenement L01/1 & M01/2 near a road upgrade to the

northwest. However as the mining upgrade is currently planned these tributaries of the Blackwood River will not be directly affected by the project.

REVIEW OF RELEVANT ETHNOGRAPHIC REPORTS

BGA conducted an Aboriginal Heritage Survey for Talison Lithium Australia Pty Ltd in 2016 and the results were reported by Huxtable & O'Reilly (2016). This report is reviewed below.

Archival research has revealed that there have been a number of ethnographic and archaeological reports undertaken in the vicinity of the Talison Lithium Greenbushes Operations and mine expansion survey area (see Table 2) which were reviewed previously by Huxtable & O'Reilly (2016: 20-24, 51-56).

Table 2: Table of heritage reports in the survey area.

Report ID	Report Title	Report Authors	Area in relation to the current survey area	Survey Type
18778	Ethnographic Survey of the Donnybrook to Manjimup section of the South Western Highway, Western Australia	Goode, B. 2000	200m wide corridor centred on the South Western Highway from Donnybrook to Manjimup. Survey area overlays a portion of M01/7.	Ethnographic
21769	Report of an archaeological investigation of Aboriginal Sites Donnybrook to Manjimup Section of the South Western Highway	Quartermaine, G. 2001	200m wide corridor centred on the South Western Highway from Donnybrook to Manjimup.	Archaeological
24047	An Addendum to an Aboriginal Heritage Survey of the Proposed Water Supply Link – Millstream to Greenbushes: in Western Australia	Goode, B. 2012	A pipeline from Camp Brook to Greenbushes as part of the Bridgetown Regional Water Supply Scheme. Survey area overlays portions of tenements M01/3 and M0 1/6.	Archaeological & Ethnographic
28612	An Aboriginal Heritage Survey of the Proposed Water Supply Link – Millstream to Greenbushes in Western Australia	Goode, B. & Harris, J. 2010	Millstream to Greenbushes in Western Australia.	Archaeological & Ethnographic
102073 & 102074	Western Australia Regional Forest Agreement Aboriginal Consultation Vol 1 & 2, Nov. 1997.	Centre for Social Research 1997	Regional study. Overlays the entirety of Talison's mining tenements.	Ethnographic
104000	Warren-Blackwood Regional Planning Study: Report of an Aboriginal Heritage and Planning Guidelines Sub-Study, September 1995.	McDonald, Hales & Associates 1995	Shires of Boyup Brook, Bridgetown-Greenbushes, Manjimup and Nannup. Overlays the entirety of Talison's mining tenements.	Archaeological & Ethnographic

Report ID	Report Title	Report Authors	Area in relation to the current survey area	Survey Type
104200	Environmental Assessment and Management for the Proposed Installation of the Bunbury to Bridgetown Optic Fibre Cable, March 1991	Ove Arup & Partners 1991	5m wide corridor of the Optic fibre cable route that extended for 80km from Bunbury to Bridgetown. Overlays portions of tenements M01/6 and M01/7.	Archaeological & Ethnographic

Huxtable, L. and O'Reilly, T. 2016, *Report of an Aboriginal Heritage Survey of Areas within Talison Lithium Greenbushes Operations at Greenbushes, Western Australia*, a report prepared for Talison Lithium Australia Pty Ltd, February 2016.

This Aboriginal Heritage Survey was conducted by BGA in 2016 for Talison Lithium Australia Pty Ltd which comprised of both ethnographic and archaeological surveys. The ethnographic component of the survey was conducted by Mr Brad Goode and Ms Louise Huxtable (BGA Anthropologists) in January 2016. The archaeological survey was conducted by Mr Tom O'Reilly in December 2015.

The survey considered Talison's proposal to realign part of Maranup Ford Road as part of an upgrade to an existing tailing facility, as well as undertaking mining and infrastructure operations within the existing mining footprint in Greenbushes. Specifically the proposed works were within mining tenements M01/3, M01/6, M01/7, G01/1, G01/2, and M01/16. Additionally, Talison wished to review current and future requirements under the AHA in relation to their remaining tenements at M01/5, M01/4, M01/9, M01/8, M01/11, M01/18, M01/2, L01/1, M01/3, M01/16, G01/1, G01/2, M01/16, M01/7, M01/10 and M70/765.

Archival research conducted for this proposal revealed that one previously registered DPLH Site ID 20434 Blackwood River was located within mining tenements M01/5, M01/4, M01/2, L01/1 and M01/10. It was determined that this site would not be directly affected by the proposed project.

The survey areas were overlapped by three NTC groups – the Gnaala Karla Booja WC1998/058, the South West Boojarah #2 WC2006/004 and the Wagyl Kaip WC1998/070 NTC groups. Consultations were conducted with nine representatives from these groups on 20th January 2016 which found that there were no new ethnographic sites of significance located within the survey area (Huxtable & O'Reilly 2016: 35).

The report recommended that Talison can proceed with their plans to realign Maranup Ford Road and undertake additional mining and infrastructure operations within the existing mine footprint at Greenbushes without risk of breaching Section 17 of the AHA. It was also recommended that Talison engage Aboriginal monitors during the ground disturbing works for the realignment of Maranup Ford Road and that Indigenous employment opportunities be provided where possible in relation to the project (Huxtable & O'Reilly 2016: 35).

In relation to the current survey, the Huxtable & O'Reilly (2016) survey area extends north from the current survey area (2018) and comprised of the existing mine footprint northwards to Greenbushes, eastwards to the South Western Highway and westwards to Spring Road in Greenbushes State Forest.

OUTCOMES OF ARCHIVAL RESEARCH

In relation to this survey a search of the DPLH Aboriginal Sites and Places Register was conducted on the **20th February 2018** in order to determine if there were any previously recorded Aboriginal heritage sites or places that would be affected by the project proposal (see Appendix 1: Sites Register Search).

The search revealed that there is **one** registered DPLH site and **no** 'Other Heritage Places' located within the Talison Lithium survey area.

Site ID 20434 Blackwood River is located in tenement P70/1701 adjacent to the southern boundary of survey area and within tenement L01/1 & M01/2 near a road upgrade to the northwest. However as the mining upgrade is currently planned these tributaries of the Blackwood River will not be directly affected by the project.

IDENTIFICATION OF SPOKESPEOPLE

THE RIGHT TO SPEAK ON HERITAGE ISSUES

Various authors have discussed the contemporary problem of who in the Aboriginal Community has the authority to speak on heritage issues within an area. O'Connor, et al. (1989: 51) suggest that when this question is posed to people in Aboriginal Australia, answers are usually framed by such terms as 'the traditional owners', i.e., those people who are defined by place of birth, or descent. Myers (1986: 128) presents a broader and more contemporary view of 'ownership' based upon descent and association:

An estate, commonly a sacred site, has a number of individuals who may identify with it and control it. They constitute a group solely in relationship to this estate... Identification refers to a whole set of relationships a person can claim or assert between himself or herself and a place. Because of this multiplicity of claims, land holding groups take essentially the form of bilateral, descending kindreds. Membership as a recognised owner is widely extended, and therefore groups are not a given.

Myers further clarifies the current perception of 'ownership' when he states:

....such rights exist only when they are accepted by others. The movement of the political process follows a graduated series of links or claims of increasing substantiality, from mere identification and residual interest in a place to actual control of its sacred association. The possession of such rights as recognised by others, called 'holding' (*kanyininpa*) a country, is the product of negotiation (Myers 1986: 128-129).

While the notion of descent is clearly an important criterion within Myers analysis, it must be seen in terms of the contemporary Noongar situation. Noongar tradition in the south west has been seriously eroded since colonisation, lines of descent have been broken and previously forbidden and mixed marriages have interconnected many Noongar groups who would not have traditionally had a close association (Machin 1993: 20). Consequently, in contemporary times the criteria of historical 'association' may in some cases also be regarded as a 'right to speak' on heritage issues within an area:

Traditional subsistence no longer sufficed to support Aboriginals so they combined this with menial work on farms and over time new relationships to land developed. As a consequence, the more recent history associated with their involvement with European agriculture and labour patterns is often more relevant than the pre-contact mode of attachment to an old way of life and the roots of the identity as original owners of the land. Biographical associations are often tied to post-settlement labour patterns and identification. These can predominate. This is part of a dynamic process of ethnicity, identity and tradition (Machin 1995: 11).

O'Connor, et al. (1989) identified several criteria for determining contemporary community spokes people. A spokesperson must have a long-term association with an area, usually as a young person, and had extensive contact with a member or members of the 'pivotal generation of the culture transmitters'; those people whom, as children themselves, had contact with people who could pass on their traditional knowledge. A spokesperson must also demonstrate knowledge of the region's natural resources, its hunting, fishing and camping grounds, its local water sources, and the flora. This is important because a person without this knowledge is unlikely to be seen by their fellow Noongar's as truly being from that country, despite having been born or lived in that area. In some cases, people from outside a specific region have established themselves by political activism. They are accepted by their fellow Noongar because they may have participated in mainstream white pursuits, such as advanced education, or legal and political careers, that have empowered them within the broader community. As such, these people are a valuable resource to the local Aboriginal Community. The people consulted in this survey fulfil at least one of these criteria.

NATIVE TITLE CLAIMS OVER THE SURVEY AREA

Currently lodged with the Register of Native Title Claims and the Schedule of Applications, held by the Commonwealth Native Title Tribunal, there are three registered Native Title applications that overlays the project area. The Schedule of Applications includes registered applications, unregistered applications and applications still undergoing the registration test.

- **South West Boojarah #2 WC2006/004 WAD253/06 (Registered)**
Applicants: Mr W. Webb, Mr D. Hayward, Mr B. Williams, Mr W. Thompson, Ms M. Culbong, Ms B. Corbett-Councillor Stammner, Ms W. Williams

SELECTION OF SPOKESPEOPLE FOR THIS SURVEY

To select spokespeople for this survey contact was made with the South West Aboriginal Land & Sea Council (SWALSC) who is the legal representative body for the South West Boojarah #2 WC2006/004 Native Title Claim group.

Under the terms of the Noongar Standard Heritage Agreement (NSHA) Mr Peter Nettleton (Legal Officer) from SWALSC provided Talison with a list of nominated appropriate spokespeople for the survey on 10th April 2018 (HER 0136).

As a result of this selection process the following Noongar representatives attended the ethnographic Aboriginal heritage survey:

Mr Jack Hill was born in Manjimup to parents Mr Leslie Joseph Hill, born in Busselton, and Mrs Gloria Hill nee Jones, born in Woodanilling. Mr Hill's grandparents were Edward and Mary Hill (nee Isaacs) who were born in Karridale and Busselton. Mr Hill is the Director of the South West Boojarah Ward at SWALSC. Mr Hill has held a number of government positions throughout his life in the Ministry of Justice, Family and Children's Services, the Australian Bureau of Statistics. Mr Hill was selected to participate in this survey by SWALSC.

Mr David Pell was born in Busselton to Mrs Rosie Pell (sister of Miss Ellen Hill). Mr Pell's brother, Mr John Pell, sits upon the working party for the South West Boojarah #2 WC2006/004 Native Title Claim as a representative of the Pell family. Mr Jack Hill and Mr David Pell are first cousins. Mr Pell was selected to participate in this survey by SWALSC.

Mr Glen Councillor is the son of Mrs Barbara Corbett Stammer Councillor who was born in 1938 at the Picton Junction. Mr Councillor's grandparents are Mr Frank Corbett and Ms Leah Newell. Mr Frank Corbett and his brother Mr Dan Corbett were schooled at the Bussell family's Ellensbrook Mission at the turn of the 19th century. Mr Glen Councillor is a member of the South West Boojarah #2 WC2006/004 Native Title Claim group and was nominated by SWALSC to participate in this survey.

Mrs Suzanne Kelly was born to Mr George Froome from Busselton, whose parents were Mr Henry Froome from Quindalup and Ms Alice Hill from Karridale. Mrs Kelly has traditional ties to the survey area through her father's parents who were related to the matrilineal side of the Webb family. Mrs Kelly is actively involved in the preservation of Aboriginal heritage of the region and is the co-author of a book with Mr Angus Wallam of traditional mythological stories about the lower south-west. Mrs Kelly is also a founding member of the Manjimup Aboriginal Corporation where she currently resides. Ms Kelly's son, Mr Glen Kelly, is the CEO of SWALSC. Mrs Kelly is a working party member of the South West Boojarah #2 Native Title Claim group and a named site informant for the Blackwood River. Mrs Kelly was nominated by SWALSC to participate in this survey.

Mrs Wendy Williams (nee Colbung) was born at the Mt Barker Aboriginal Reserve to parents Mr Tim Colbung from Mt Barker and Ms Ethel Krakouer of Cranbrook. Mrs Williams attended

school at Uriminup and undertook employment at the Mt Barker hospital before moving to Perth. Mrs Williams claims historical ties to the area as her Grandfather Billy Colbung drove cattle for the Muir family through the region where he took Nina and Clara Brockman as wives. Mrs William's great-great grandmother *Midan* was also from Warren River in the Manjimup area. Mrs Williams is an applicant to the South West Boojarah #2 WC2006/004 Native Title Claim group and was nominated by SWALSC to participate in this survey.

Mr Mark Colbung is the brother of Mrs Wendy Williams and shares the same familial connections. Mr Colbung is a member of the South West Boojarah #2 WC2006/004 Native Title Claim group and was nominated by SWALSC to participate in this survey.

Mr Wayne Webb was born in Busselton to parents Mrs Vilma Webb (nee Gillespie) and Mr George Webb. Mrs Vilma Webb was born in Northam to parents Mr James Gillespie Jnr, born on the banks of the Swan River in Guildford, and Ms Evelyn Hill, born in Bridgetown. Mr Webb is a Bibbulmun man who has been involved in Aboriginal heritage surveys as an archaeological assistant for nearly 20 years and is widely respected as a competent and knowledgeable field archaeologist. Mr Webb is actively involved in the preservation and teaching of his culture to young Noongar people throughout the region. As well as contributing as a field archaeologist in a number of surveys Mr Webb has also provided anthropologists with detailed mythological information regards to the significance of water to Noongar people in many cultural values studies. Mr Webb currently resides in Walpole and was nominated by SWALSC to participate in this survey as a member of the South West Boojarah #2 WC2006/004 Native Title Claim group.

COMMUNITY CONSULTATION

AIMS

- To establish contact with Aboriginal people who retain traditional or current knowledge pertaining to the region.
- To determine if there are any sites or places of significance, as defined by Section 5 of the AHA, within the project area.
- To record any ethnographic information provided about identified sites or places.
- To generate consensual recommendations from the Aboriginal community representatives in regards to any Section 18 requests and to record management strategies for identified ethnographic and archaeological sites.

METHOD

To arrange the survey the selected informants were contacted by phone and by registered mail and invited to attend a meeting at the Talison mine site office. At the commencement of the meeting the informants were briefed as to the details of the project by way of a power point presentation. In the field they were constantly orientated to the project with a large scale air photo map showing the location of the survey area and Aboriginal sites and places.

During the field work ethnographic information was recorded in a notebook and photographs of the survey process were taken. GPS coordinates of any cultural features were recorded in the field and transferred to mapping software ArcView V10 where final maps were produced.

COMMUNITY CONSULTATION PROCESS

On the 19th April 2018 BGA consultants, Mr Brad Goode (Anthropologist) and Mrs Leah Mackie (Ethnographic Assistant) met 7 SWALSC nominated members of the South West Boojarah #2 WC2006/04 NTC group, Mr Jack Hill, Mr Glen Councillor, Mr David Pell, Ms Sue Kelly, Ms Wendy Williams, Mr Mark Colbung and Mr Wayne Webb at 11am at the Talison mine site office. Representatives of Talison, Mr Craig Dawson (Manager Operations Greenbushes), Mr Steve Green (Manager of Safety & Environment) and Ms Carmel Griffin (Stakeholder Engagement Officer) were also in attendance to provide the technical details in regards to the proposed mine expansion. Ms Tahn Donovan (Heritage Officer) from SWALSC was also present at the survey to represent the SWB Native Title interests.

Mr Steve Green commenced the meeting by providing an overview of the current Talison mine operations, presenting details regards the history of the company and the expansion plans. This was done on a screen with a power point presentation.

Mr Green stated that Talison Lithium is a 100% owner of the Greenbushes mine which was acquired from the Sons of Gwalia in 2007. Mr Green stated that Talison Lithium is joint venture between two international companies Tianqi and Albemarle that have 51% and 49% respectively. The Greenbushes Talison Lithium Operations is the world's biggest hard-rock lithium mine that provides the largest and highest grade mineral resource globally. The mine has been operating for the last 130 years at Greenbushes; originally tin was mined from 1886 to 1960, followed by Tantalum in 1960 to 2006 and Lithium from 1983 to present. Mr Green stated that there is a 20 year mine life remaining for the open pit mine and then they may extend the mine life by going underground. The mine provides a technical grade product that is used for glass components in phones and other products. Talison provides 30-40% of the world's lithium.

Mr Green advised that lithium is not a natural product; it is extracted from Spodumene and is a commodity now in demand for the battery and renewable energy market. Mr Green stated that Talison are now operating at full capacity and can't fill the demand so there is a need to expand to fulfil the needs of the market that is rapidly expanding to service the electric car market. Mr

Green explained that Talison are now also looking at investing in downstream processing facilities in Kwinana and Kemerton to meet this demand and to add value to their product.

In relation to this expansion Mr Green stated that \$330million would be spent with 90% of the expenditure being in the state and that local contractors are engaged with over 400 people employed. Mr Green explained that the company does not have an on-site residential camp; however, when specialists are needed temporarily Talison sets up camps to accommodate them.

In terms of the specific project, Mr Green advised that a new standalone 4.8Mtpa wet processing facility will be constructed that will have two independent 2.4Mtpa processing trains, identical to the current CGP2 facility, with common shared infrastructure and utilities. The proposed plant area footprint, inclusive of Fine Ore Stockpile, is approximately 350m x 1000m and the orientation of the plant must be configured to allow the commonality of plant services. In addition, access roads will be designed to allow for high daily truck movements. Mr Green advised that as part of ongoing feasibility studies, geotechnical investigations will also be required to define the extent of the resource in the expansion area. Mr Green said that the expansion would be south of the current mine as this area is mostly private land with regrowth vegetation where environmental issues are minimal as the area was previously logged and subject to small scale mining historically. Mr Green advised that this area will be mostly used for infrastructure unless exploration drilling defines the resource to be extensive through the area.



Figure 2: the briefing conducted at the Talison mine conference room regards the mine expansion proposal.

Ms Sue Kelly asked if there a maximum depth for this proposed drilling.

Mr Green advised that the depth will be 400-500m depending on what is found will determine whether to go deeper in the pit.

Mr Jack Hill enquired whether blasting is used to which Mr Green responded yes.

At this point in the briefing Ms Wendy Williams asked, “Where do the Noongar people fit into this job?” [Meaning what opportunities are there for employment & economic engagement].

Ms Tahn Donovan asked if Talison operate internationally. Mr Steve Green advised that Talison only operates in Australia; however the Joint venture partners operate internationally.

In connection with Ms Williams’ enquiry, Ms Tahn Donovan asked what have Talison done in terms of Noongar engagement so far.

Mr Steve Green advised that it has been limited to date in terms of entering into a NSHA regards heritage processes.

Ms Tahn Donovan asked what the current level of Aboriginal involvement is in the mine in terms of employment. Mr Steve Green advised he is unsure.

Ms Carmel Griffin then stated that at this stage the briefing is about giving a background to and an overview of the Talison Greenbushes Operations for the heritage survey purpose. Ms Griffin said that engagement issues such of these can be addressed at another time by discussions between the company and SWALSC.

Mr Glen Councillor asked if there was a downside to Lithium mining [meaning what are its environmental affects and are there any residual pollutants left].

Mr Steve Green advised that the process to separate the minerals from the hard rock consists of crushing and washing. The waste has no pollutants and is largely inert rock; however research in this regard is ongoing as it's quite a new industry.

In terms of the overall management of the mining environment Ms Carmel Griffin stated that Talison are committed to sustainable development and best practice rehabilitation. Previous owners and Talison have conducted several rehabilitation projects and received the Golden Gecko Award for rehabilitation efforts in 2006. Talison is also involved in community projects such as Schwentke's Dam Waterbird Project as offsets to impacts from mining.

Mr Brad Goode then addressed the group with the aid of an air photo map that described the area that was required to be surveyed which is 402.17 hectares in total.

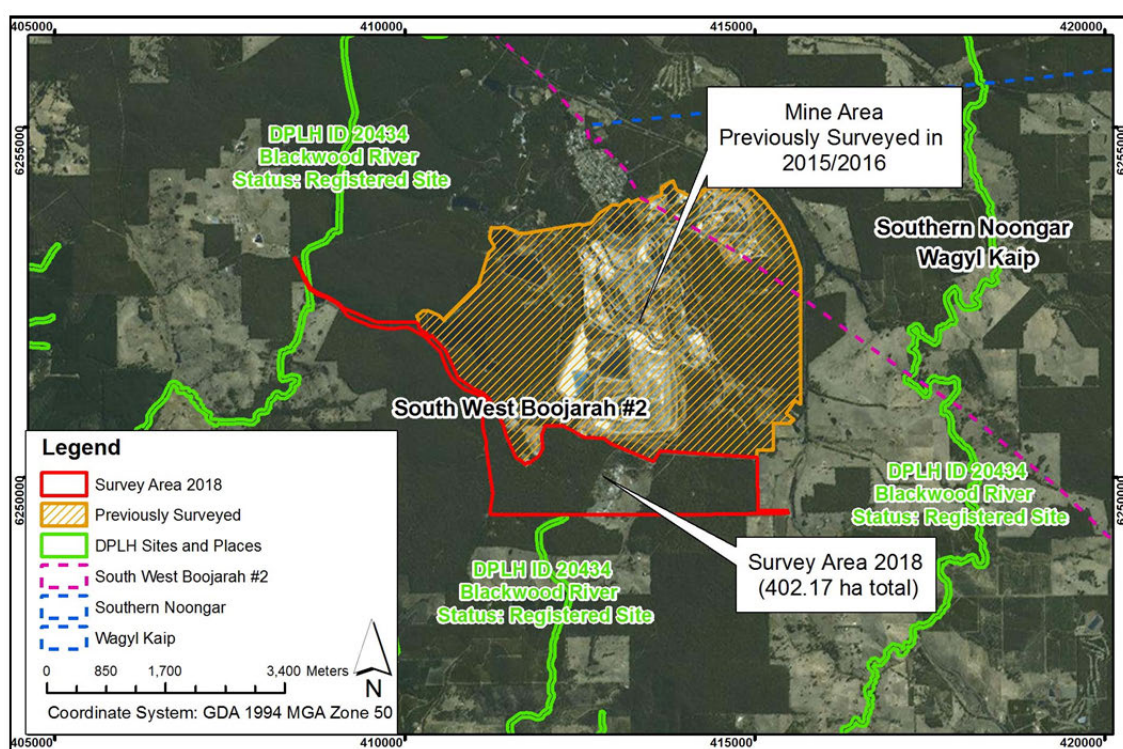


Figure 3: The field map showing the required survey area in relation to Aboriginal sites and places and in relation to the area surveyed in December 2015/January 2016.

Mr Goode advised that this area was a follow on from the larger survey that had been undertaken by his company in December 2015 and January 2016. Mr Goode stated that in 2015 the larger area which is now mostly developed for the mine expansion had been devoid of any Aboriginal heritage sites and cultural material due to the landscape type which was disturbed Jarrah/Marri forest where there were no watercourses, no soaks and no springs. Mr Goode said

that the lack of potable water made the area unsuitable for hunter gather occupation and that this combined with the level of disturbance left no archaeological signature in the area. Mr Goode advised that the areas to the North West towards the Blackwood River was a more suitable environment and was likely to be where more sites would be found. Mr Goode said the previous survey team did not identify any ethnographic sites or issues in the area.

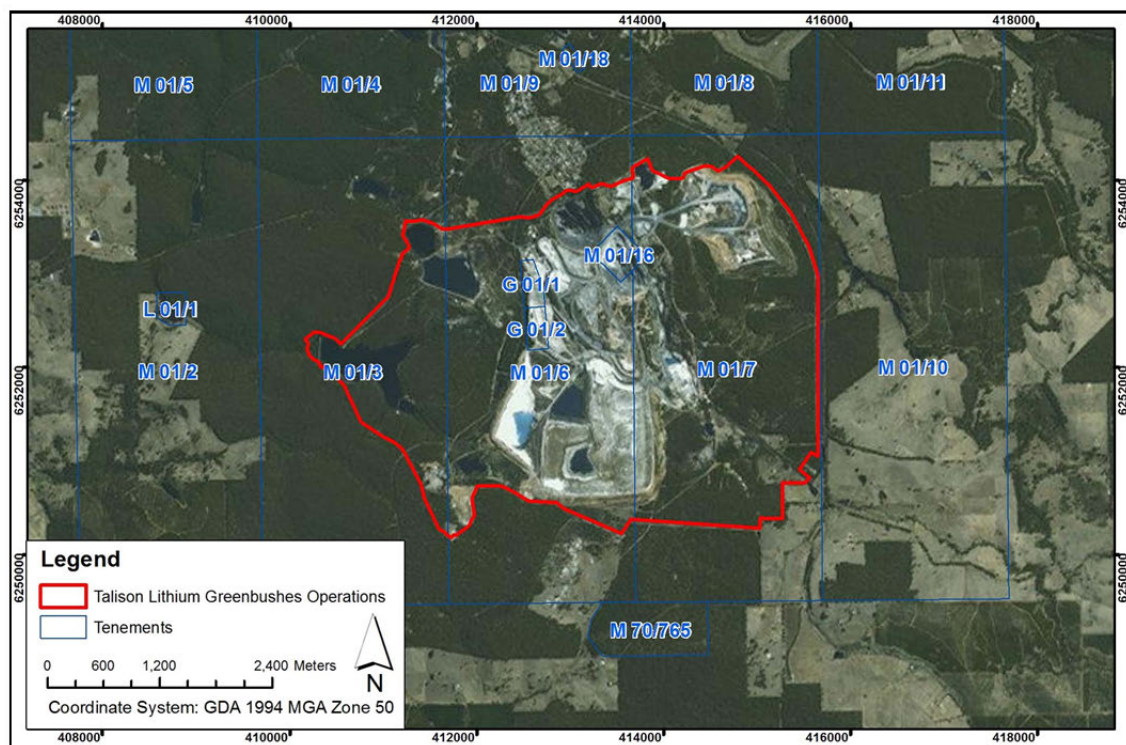


Figure 4: The area surveyed archaeologically in December 2015 and ethnographically in January 2016.



Figure 5: the orange shaded areas depict the areas walked by archaeologists in 2015.

Mr Goode then stated that resulting from the current survey no archaeological material was found and the archaeologist reported that there is limited potential for subsurface material, probably due to the dryness of the landscape and the lack of suitable stone for tool production (see O'Reilly 2018).

Ms Sue Kelly then asked how big the actual area was that was surveyed by the archaeological team.

Mr Goode said that the area is depicted in figure 3, but it is 402.17 hectares and consists of regrowth or rehabilitated forest with some farmland in the central area. A small corridor that runs to the northwest and connects to Spring Road is also considered for mine access for trucks to cart material from the processing area.

Mr Goode then advised that the purpose of the day's site inspection was to talk about the ethnographic values, what is known about the Aboriginal history of the area, and the Aboriginal associations with the timber industry and how people moved on after working in these mills.

Mr Goode stated that resulting from the previous ethnographic survey several informants identified camps to the north and east of Greenbushes town but not in the mining area. All advised that the Blackwood River was sacred but acknowledged that it was a long way from the mine. The purpose of this survey is to determine if any such places exist in the southern extension.

Mr Jack Hill asked why was the survey area rehabilitated, was it because of tin mining?

Mr Steve Green said yes, tin was mined in a shallow surface so it was dredged. Mr Green explained that the new area that is being looked at today is not for mining, it is mostly about constructing a tailings area and plant.

Mr Wayne Webb said that historically most of the wood was taken out from this area, and it was cut with broad axes. Everything was done manually, by old practices at the turn of the century that was the way that they took the wood out. Mr Webb said that members of his family worked in the Mills at Greenbushes. Mr Webb said that to his knowledge they had no camps or sites in this new survey area.

Mr Jack Hill asked where were the original timber mills located?

Mr Steve Green said that he thought they were near the South West Highway, which is outside of the survey area.

Mr Jack Hill stated that his father was involved in the timber industry in the region and he worked at the timber mills in Bridgetown. Mr Jack Hill asked Mr Green what will happen to the big hole in the ground in 20 years' time when the mine is finished.

Mr Steve Green said it will still be here. There is still an ore body present below the depth that can be accessed by open cut mining. Mr Green stated that Talison may continue to mine underground from the pit when the open cut mining is finished. Eventually the pit may be allowed to fill with water when mining is over, however that is yet to be determined by the government and scientific studies to see if it would leave a lake with acceptable water quality. There are however, no plans to backfill the mine pits after mining.

Mr Brad Goode then advised the group that they would now embark on the field survey. Mr Goode stated that they would travel in three 4x4 vehicles which would be led by Mr Green. The survey team would travel in convoy following tracks through the survey area from the west to the east, periodically stopping to discuss the proposal and orientate the group to the location

within the survey area. Mr Goode advised that during the process people could ask questions of the Talison staff and that if they had any issues that relate to the AHA that they should discuss these with the anthropologists.

The survey team left the mine site office and drove in convoy south along Maranup Ford Road and entered the survey area via a track to the south at 411 237mE & 6251 086mN. The survey team were told on the radio that they were traveling south along the north western boundary of the survey area with the bush on their right out the car window being where development is proposed. The survey team followed the boundary east for 1.4km until they reached a gate where the track forked and where the group could stop safely to inspect the maps at 412832mE & 6250554mN.



Figure 6: the survey team stop adjacent to the northern boundary of the survey area to discuss the area of bush to be developed to the west. Mr Goode talks to the group about the findings of the archaeological team that walked transects across the area.

Here Mr Steve Green orientated the group to the area on the maps.

Mr Goode asked the group if they are aware of any Aboriginal heritage sites as defined by Section 5 of the AHA within this area. “No” was the response from the group.

Mr Goode asked if anyone has any stories or family history that they would like to share or if there are any known mythology that talks about this landscape.

Mr David Pell said, “I remember living here [meaning Greenbushes] but can’t remember exactly where our house was. My family worked on the mill at Greenbushes, Kirup and Nannup”.

Mr Jack Hill asked if Talison is not going to disturb the Blackwood River.

Mr Steve Green said no, the river is a long way away to the North West and the small tributaries are outside of where Talison propose development.

Ms Tahn Donovan asked whereabouts the tailings will be situated. Mr Steve Green said that a large amount of this land would be used to stock pile tailings.

Mr Goode asked Mr Webb about the archaeological inspection of the western section. Mr Webb said that there was nothing there, it has all been logged.

Mr Mark Colbung asked if Aboriginal people would be employed on the mine. Mr Green said they are welcome to apply as there will be a need to increase the workforce.

In relation to the timber present on the land, Mr Green advised that the Forest Products Commission have the rights to the timber, they would be responsible for maximising that resource.

Ms Wendy Williams asked how long ago was it cleared, to which Mr Green responded he was not sure exactly, but he knew that it was done in recent years. Ms Carmel Griffin stated that these trees were less than 30 years old.

Mr David Pell asked if mineral sand mines can be rehabilitated, why this mine can't do the same. Mr Green advised that sand mines have shallow mine areas and are easily revegetated, whereas this mine is a completely different process. Filling in a mine pit would not be feasible or beneficial and the environmental impact can be more damaging than just leaving it. However, Mr Green stated that some areas will be reshaped and revegetated. Ms Griffin advised that the concept or model of rehabilitation is different from sand mining rehabilitation and that Talison are currently working on a model design to come up with a rehabilitation plan.

The survey team proceeded to drive to the next stop by continuing east along the track for 900m, then followed Perry Road south for 1.8km and then north-east along Forest Park Avenue for 800m. The vehicles then entered Forest Lot F20 by driving north along a track for 300m. Mr Wayne Webb advised the group to not proceed any further into this lot as the archaeological survey team encountered bee hives located further north along this track within this block of forest. The survey team stopped at 414121mE 6249759mN.



Figure 7: Mr Wayne Webb and Mr David Pell viewing the field map at the second stop at 414121mE 6249759mN.

Mr Goode asked Mr Green if all this forest was going to be cleared and if all the farm land and infrastructure that they passed while driving to this location would be acquired by Talison.

Mr Green advised that approximately 50% of it will be cleared and that Talison will maximise the already cleared farming areas and will limit going into the north forest. This would be purely for storage of tailings and possibly a mine workshop, however, he advised that there were a lot of constraints regarding noise and access roads that needed to be addressed before this could go ahead.

In terms of timing, Mr Green advised that Talison would like to commence this project next year.

From here the survey team decided to inspect the western portion of the survey area which required driving back to Greenbushes town by traveling east along Forest Park Avenue for 1.4km and then north-northwest for 9.8km along the South Western Highway. From Greenbushes town, the vehicles then drove south-west along Spring Gully Road for 4.4km and then south/south-east along Ashcroft Road for approximately 1.2km, stopping at 409225mE 6252270mN.



Figure 8: Survey team viewing the field map at Ashcroft Road at 409225mE 6252270mN; view to the south.

Here Mr Goode asked the group if they had any stories or family history for this portion of the survey area that they would like to share or if any mythology is known for this part of the landscape.

The group did not have any stories to contribute.

Mr Green advised that the existing road here would require some upgrades during this project.

In relation to approvals under the AHA, Mr Goode advised that as the proposed works would not directly affect the water course associated with Site ID 20434 Blackwood River and the road has previously been disturbed no approvals would be required under the AHA.

Mr Goode asked if they had any further questions.

Mr Jack Hill asked if there were any wild pigs in the forest at this location, to which Mr Green replied yes.

Mr Goode then advised the group that they can speak with Ms Carmel Griffin regarding engagement issues as it is her job to liaise with SWALSC regarding these issues.

This concluded the ethnographic survey and the survey team drove back to Talison Mine Site Office to have lunch.



Figure 9: From the left, Ms Tahn Donovan, Mr Jack Hill, Mr Glen Councillor, Mr Brad Goode, Ms Wendy Williams, Ms Sue Kelly, Mr Steve Green, Ms Carmel Griffin, Mr David Pell, Mr Wayne Webb and Mr Mark Colbung.

COMMUNITY CONSULTATION OUTCOMES

As a result of consultations held with 7 members of the South West Boojarah #2 WC2006/004 Native Title Claim group it was found that there are **no new ethnographic sites** of Aboriginal heritage significance as determined by Section 5b, 5c, 39.2 and 39.3 of the Western Australian *Aboriginal Heritage Act 1972* located within the survey area and as such no approvals under the AHA are required to proceed.

During the survey requests were made for the company to create employment and economic opportunities for Noongar people. However as this is a social justice issue the Talison community relations officer will deal with this request which is not within the consultant's scope of work as it falls outside of the AHA.

RECOMMENDATIONS

In relation to the Western Australian *Aboriginal Heritage Act 1972* (AHA) the following recommendations can be made:

It is recommended that Talison Lithium Australia – Greenbushes Operations can proceed with their plans to conduct additional mining and infrastructure operations to the south of the current footprint without risk of breaching Section 17 of the AHA in relation to ethnographic Aboriginal heritage sites as defined by Section 5 of the AHA.

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**REPORT ON AN ARCHAEOLOGICAL HERITAGE SURVEY FOR
THE TALISON LITHIUM GREENBUSHES MINE EXPANSION
M01/2, M01/3, M01/6, M01/7 & L01/1 GREENBUSHES, WESTERN
AUSTRALIA**



A report prepared for GHD Pty Ltd on behalf of Talison Lithium Australia Pty Ltd

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May 2018

EXECUTIVE SUMMARY

In February 2018, GHD Pty Ltd, on behalf of Talison Lithium Australia Pty Ltd, commissioned an archaeological survey of the Talison Lithium Greenbushes Expansion Project Area at Greenbushes, Western Australia. This area, referred to below as the survey area, is covered by parts of the mining tenements M01/2, M01/3, M01/6, M01/7 and L01/1 and is located immediately south and west of Talison Lithium Australia's current mining operations at Greenbushes.

The survey area is irregularly shaped and covers 407.04ha and includes a relatively narrow corridor that extends approximately 3.66km from the northwest corner of the main part of the survey area, to Spring Gully Road. The main part of the survey area has maximum dimensions of 1.6km north-south and 3.83km east-west. It is bounded to the west by Maranup Forest Road while Forrest Park Avenue coincides with the eastern end of its southern boundary. Talison Lithium Australia Pty Ltd proposes to expand their mining operations and associated infrastructure within the survey area.

The archaeological survey discussed in this report was undertaken to identify and record any Aboriginal archaeological sites that may be located within the survey area in order that Talison Lithium Australia Pty Ltd can avoid disturbing them or, as required under Section 18 of the Western Australian *Aboriginal Heritage Act 1972*, seek the consent of the Minister for Aboriginal Affairs to proceed with activities that may disturb Aboriginal heritage sites.

The archaeological survey of the survey area included research at the Department of Planning, Lands and Heritage (WA) to assess and investigate the results of previous archaeological surveys and investigations undertaken in the vicinity of this area as well as in the wider region. Sources of environmental information were also utilised before a systematic archaeological survey of the project area was conducted.

As a result of research and a search of the Department of Planning, Lands and Heritage (WA) Aboriginal Sites Database, it was established that **no** registered Aboriginal sites with an archaeological component have been registered at positions that place them within the survey area. Furthermore, as a result of a search of the Department of Planning, Lands and Heritage (WA) List of Other Heritage Places, it was established that **no** Other Heritage Places with an Aboriginal archaeological component have been identified at positions that place them within the survey area.

The survey area was surveyed for Aboriginal archaeological sites by undertaking a series of systematic pedestrian transects. Over the main part of the survey area these transects had a general east-west alignment with archaeologists and traditional owners spaced at approximately 50m intervals. Within the relatively narrow corridor that extends from the northwest corner of the main part of the survey area to Spring Gully Road, transects followed the general alignment of the corridor with archaeologists and traditional owners spaced at not more than 50m intervals. Where the corridor narrowed, the spacing was much closer. In addition to this, any areas of interest identified from maps, or areas identified as having a high probability of containing Aboriginal archaeological sites, were targeted during the field survey. Given the degree of surface visibility throughout and the intensity of coverage, it is considered that the archaeological survey was sufficient to locate any Aboriginal archaeological sites present on the surface.

As a result of the archaeological survey of the Talison Lithium Greenbushes Expansion Project Area at Greenbushes, Western Australia, **no** Aboriginal archaeological sites or material were identified. **It is therefore recommended** that Talison Lithium Australia Pty Ltd be permitted to proceed with their proposal to expand their mining operations and associated infrastructure within the survey area as defined in this report.

It is also recommended that, in the event of any artefactual material or skeletal material being discovered in the course of the expansion of their mining operations and associated infrastructure and/or any other activities, work should stop while the Department of Planning, Lands and Heritage (WA) undertakes an investigation. In the case of skeletal material being uncovered, work must cease immediately and the Western Australian Police must be notified.

Furthermore, **it is recommended** that Talison Lithium Australia Pty Ltd personnel and contractors be advised of their obligations under Section 15 of the *Aboriginal Heritage Act 1972*, to report the discovery of any Aboriginal cultural material which may be uncovered in the course of their work or any other activities.

INTRODUCTION

An archaeological survey for Aboriginal archaeological sites was commissioned by GHD Pty Ltd on behalf of Talison Lithium Australia Pty Ltd in February 2018. The primary aim of this survey was to examine the Talison Lithium Greenbushes Expansion Project Area at Greenbushes, Western Australia, and to record and report any Aboriginal archaeological sites that may be located within it. A preliminary assessment of the archaeological significance of any such site(s) will be given and their extent determined in order that Talison Lithium Australia Pty Ltd can avoid disturbing them or, as required under Section 18 of the Western Australian *Aboriginal Heritage Act 1972*, seek the consent of the Minister for Aboriginal Affairs to proceed with activities that may disturb Aboriginal heritage sites.

The Talison Lithium Greenbushes Expansion Project Area, referred to below as the survey area, is covered by parts of the mining tenements M01/2, M01/3, M01/6, M01/7 and L01/1, and is located immediately south and west of Talison Lithium Australia's current mining operations at Greenbushes. Talison Lithium Australia Pty Ltd proposes to expand their mining operations and associated infrastructure within the survey area. Knowledge of the location and extent of any Aboriginal archaeological sites that exist within any of the survey area will facilitate the making of management decisions that will ensure that any such sites are not inadvertently impacted upon or disturbed by any proposed mining and/or mining related activities or any other activities.

As part of the archaeological survey of the Talison Lithium Greenbushes Expansion Project Area, data was gathered from reports on previous archaeological surveys and investigations undertaken in the vicinity of this survey area and in the wider region. Details of previously recorded and/or registered Aboriginal archaeological sites in the vicinity of the survey area and in the wider region were obtained from the relevant site files held at the Department of Planning, Lands and Heritage (WA) and, where possible, from unpublished reports on previous archaeological surveys. In addition to this, a review of maps, environmental information and academic research carried out within the wider region was also undertaken. The fieldwork associated with the archaeological survey was conducted in April 2018 by archaeologists Mr Thomas O'Reilly and Ms Sally McGann with assistance from South West Boojarah field assistants Mr Wayne Webb and Mrs Toni Webb.

LOCATION OF SURVEY AREA

The survey area discussed in this report is located immediately south and west of Talison Lithium Australia's current mining operations at Greenbushes, Western Australia. The town of Greenbushes is located in the southwest region of Western Australia and is approximately 210km south of Perth and 60km from the present West Australian coastline (Figure 10). The southern edge of Greenbushes abuts the northern edge of Talison Lithium Australia's current mining operations (Figure 11).

The survey area is irregularly shaped and covers 402.17ha and includes a relatively narrow corridor that extends approximately 3.66km from the northwest corner of the main part of the survey area, to Spring Gully Road (Figure 12). The main part of the survey area has maximum dimensions of 1.6km north-south and 3.83km east-west. It is bounded to the west by Maranup Forest Road (Figure 13) while Forrest Park Avenue coincides with the eastern end of its southern boundary (Figure 14).



Figure 10: Location Plan: Greenbushes in the south west of Western Australia.

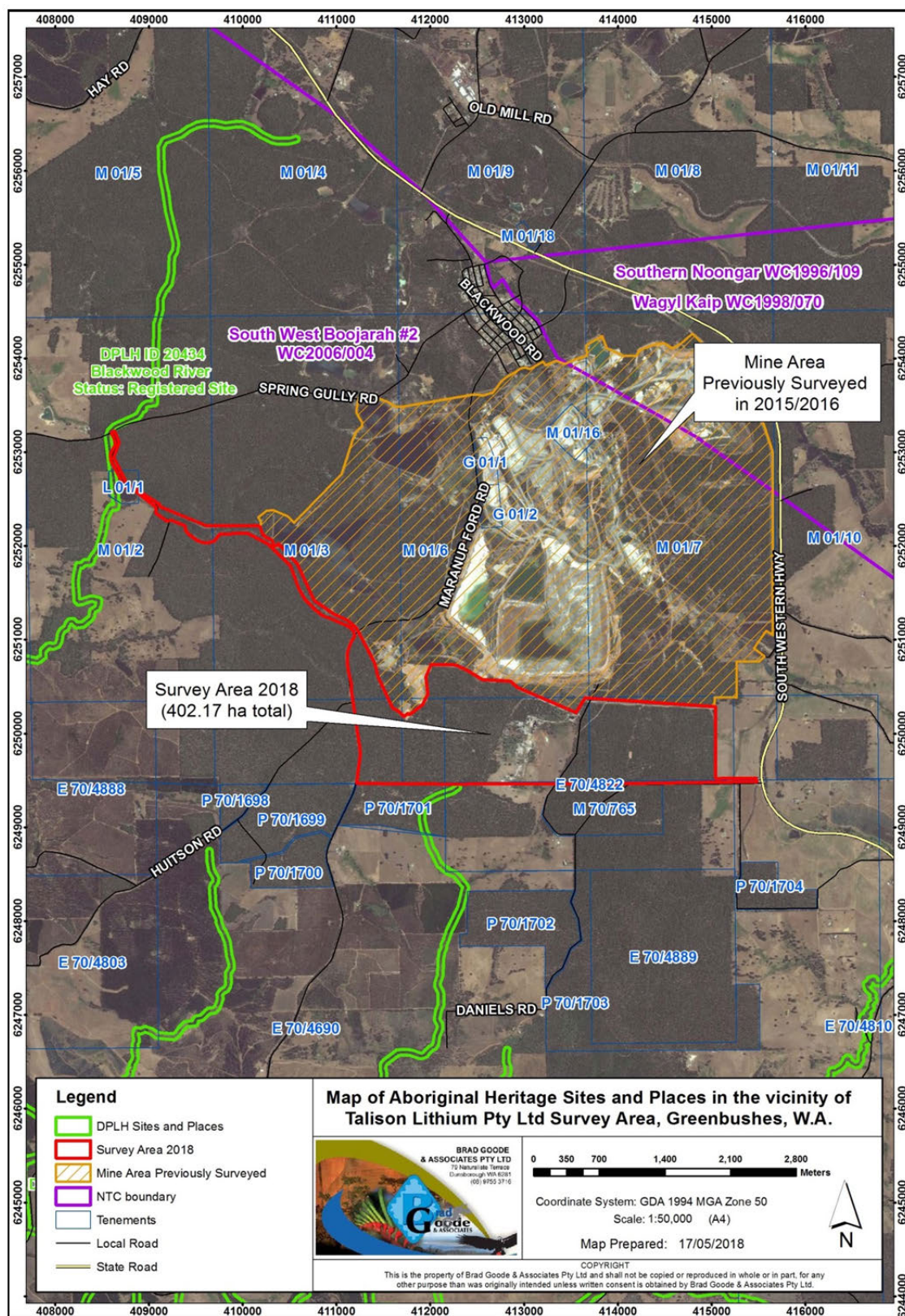


Figure 11: Talison Lithium Australia's active mining area and expansion survey area at Greenbushes.

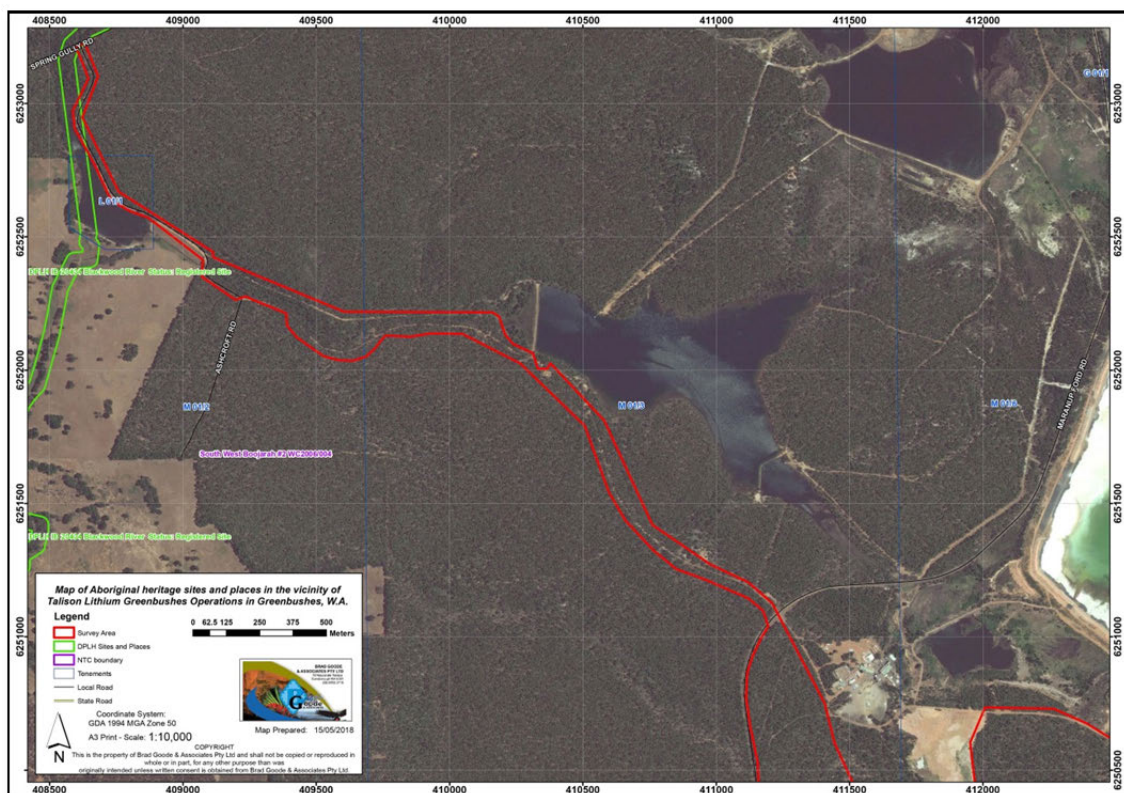


Figure 12: The survey area's narrow corridor.

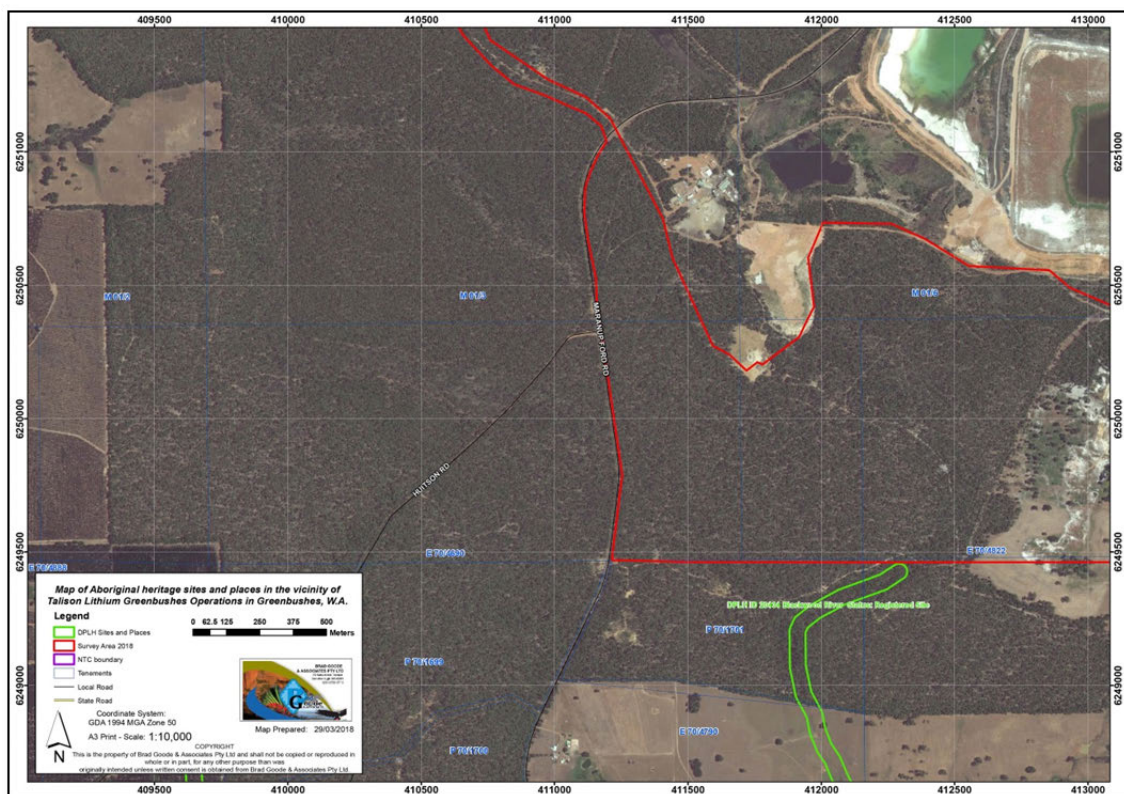


Figure 13: Western part of the survey area.

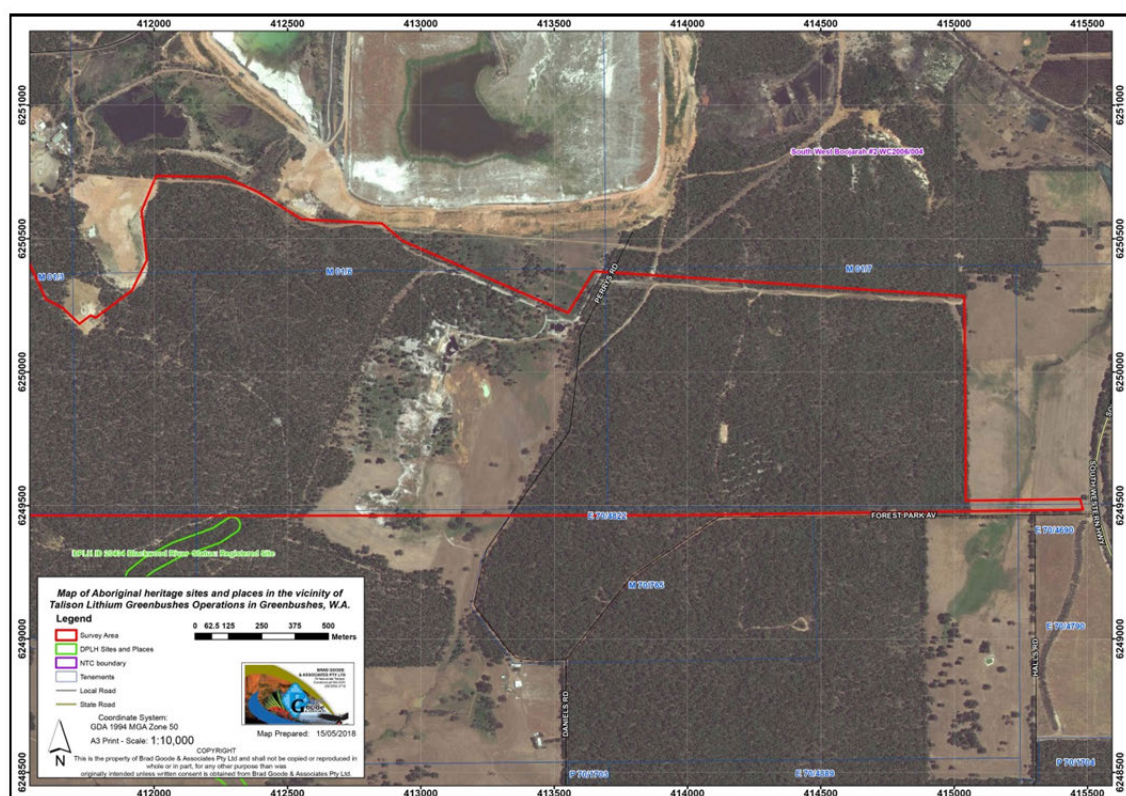


Figure 14: Eastern part of the survey area.

ENVIRONMENTAL BACKGROUND

Climate

The survey area and the region around it lie within a Dry Mediterranean climatic zone averaging between five and six dry months per year (Beard 1981). The climate in this zone is characterised by cool, wet winters and hot, dry summers.

The climatic recording station at Bridgetown, approximately 12km southeast of the survey area, have recorded weather conditions for over one hundred years. During the winter months (June-August) the average maximum temperature has been 16.4°C and the average minimum 4.7°C. In the summer (December-February) the equivalent temperatures have been 29°C maximum and 11.7°C minimum (Bureau of Meteorology, Australia 2018).

The survey area is within a region that receives an average annual rainfall of approximately 824mm. Approximately 49.9% of this rain falls in the winter months, and less than 6% in the summer, the rest being distributed between spring and autumn (Australian Bureau of Meteorology 2018).

Geology

The geology of the areas in and around the survey area has been mapped and described on the Collie 1:250 000 map sheet and accompanying notes (Wilde and Walker 1982). A more detailed account is given in the field guide to the geology of the western Yilgarn Craton and Leeuwin Complex (Wilde and Nelson 2001). In general, the survey area is located near the southern end of the Darling Plateau in the southwest corner of the Yilgarn Craton, a crustal unit that has been essentially stable since the Proterozoic (Griffin 1990).

The eroded western edge of the Darling Plateau is marked by the Darling Scarp, a geological feature that is the surface expression of the Darling Fault that separates Precambrian rocks of the Yilgarn Block from Phanerozoic strata of the Perth Basin (Wilde and Walker 1982). The Darling Plateau has been described as “an ancient erosion surface with an average elevation of 300m above sea level” and an “exhumed peneplain which was originally formed during the Proterozoic . . . and extensively lateritized during the Tertiary” (Wilde and Walker 1984:3).

Geologically, the survey area is located within the Balingup Terrane on the undulating surface of the Darling Plateau and are underlain by rocks of Archaean age that are capped by an extensive laterite profile that has been partially dissected by the present drainage (Wilde and Nelson 2001). In general, the surface geology within the survey area can be characterised as predominantly mixed pisolithic or lateritic gravel and soil. The exceptions to this are some small areas where dark grey sands are visible and other smaller areas where smaller patches of grey/white sands are visible. Active quarrying in the northern half of the cleared paddock contained within the survey area has exposed a variable sub-surface geology of grey/white sand and lateritic gravel in various places (Figures 15 & 16).

Soils within the survey area are predominantly dark grey sands mixed with lateritic gravel. It is noted here that large parts of the survey area have been universally disturbed as a result of past and present land use practices.



Figure 15: Looking north at exposed grey/white sand within cleared paddock in central part of the survey area.



Figure 16: Looking north at exposed lateritic gravel within cleared paddock in central part of the survey area.

Vegetation

Beard (1981) notes the relationship between specific soil types and vegetation. The survey area is located in the Menzies Botanical Sub-district of the Darling Botanical District. Generally, the vegetation within the Menzies Botanical Sub-district comprises jarrah (*Eucalyptus marginata*) forest on lateritic ironstone gravels and marri-wandoo (*E. calophylla* - *E. wandoo*) on loamy soils with sclerophyll understories (Beard 1981).

Vegetation within the survey area can be characterised as mixed jarrah marri woodland with *Eucalyptus* spp. trees to 10m over a sparse to moderately dense understorey of various shrubs and saplings to 2m with some grasses and a generally dense leaf litter. In general, the shrubs were lower and sparser in the northwest part of the main survey area (Figure 17) while the southeast part of the survey area contained more saplings and larger shrubs (Figure 18). While the vegetation was slightly variable, the surface visibility throughout the survey area was very low and generally averaged <10%. However, surface visibility was better along existing roads and cleared tracks where it averaged 100% while in the areas adjacent to them it averaged between 60%-70%. Numerous opportunistic areas of excellent ground visibility that averaged approximately 80% were encountered throughout various parts of the survey area.



Figure 17: Looking south at forest in the northwest part of the survey area.



Figure 18: Looking southwest at forest in the southeast part of the survey area.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

DEFINITIONS

The commonest Aboriginal archaeological materials found in Australia are discarded stone tools, or the debris from making such tools by knapping. These artefacts formed a small but durable part of the Aboriginal tool-kit. Often stone tools were used to manufacture other tools from organic materials that have not survived. Where numerous artefacts occur in context and in association they constitute an artefact scatter and together comprise the scatter's artefact assemblage.

Artefact scatters generally represent campsites. Large scatters are places that were regularly occupied, sometimes for long periods and represent the accumulation of many overlapping smaller camps. Small scatters are the remains of sites that were briefly occupied, probably on several occasions. Very small scatters may be evidence of an overnight camp, meal-time camp or work area where specific activities were carried out.

Many stone arrangements have been interpreted as ceremonial sites, but this rarely can be established. Stone arrangements can consist of hundreds of stones arranged in elaborate lines or in mounds, or can be a single line or small cluster. Solitary placed or standing stones may have served as a sign; for example, as a warning to avoid a specific site or as an indicator of water. Some stone arrangements are the remains of hunting hides or the bases of huts.

A place where stone was obtained for making stone tools is a quarry. Generally, quarries contain knapping centres or core reduction areas where knapping was intensive. Quarries are found at occurrences of highly siliceous stone, such as chalcedony, chert, silcrete, quartz, *etc.* Finished artefacts are not common at quarries and the vast majority of material found at this type of site is waste, called debitage or debris, from making tools or preparing cores for transport off the quarry for later use.

Apart from concentrations of artefacts at campsites, there are also solitary artefacts that are distributed at a very low density across the landscape. These solitary artefacts form a background scatter that probably represents evidence of dispersed hunting and gathering activities. In some instances, isolated finds are found beside watercourses in a long ribbon known as a 'creekline scatter'.

For the purposes of the survey discussed in this report, an archaeological "site" is defined as a place where "significant traces of human activity are identified" (Renfrew & Bahn 1991:42). In other words, where there is substantial *in situ* evidence of past Aboriginal occupation or activity. This is a scientific definition, not a legal definition.

The decision as to whether a place might or might not constitute a "site" under Section 5 of the W.A. *Aboriginal Heritage Act 1972* is made by the Aboriginal Cultural Material Committee. Most types of Aboriginal sites are described in more detail in 'Notes on the recognition of Aboriginal Sites' published by the Western Australian Museum, Aboriginal Sites Department (1987). It is important to note that all sites, whether known or not, are protected under the W.A. *Aboriginal Heritage Act 1972* and that it is an offence to disturb or conceal a site, or remove artefacts, without appropriate consent.

REGISTERED SITES AND OTHER HERITAGE PLACES

As a result of research and a search of the Department of Planning, Lands and Heritage (WA) Aboriginal Sites Database prior to the archaeological survey of the survey area, it was established that **no** Aboriginal archaeological sites or sites with an archaeological component are registered at positions that place them within any part of the survey area. Furthermore, it was

also established that **no** ‘other heritage places’ with an archaeological component have been identified at positions that place them within any part of the survey area.

In the wider region around the survey area, the Department of Planning, Lands and Heritage (WA) has files on one registered Aboriginal archaeological site and five ‘other heritage places’ that have or may have archaeological components, all of which are located within approximately 10km of the survey area. Details of the registered Aboriginal archaeological site are given in Table 3 while details of the other heritage places are given in Table 4. Additional information pertaining to the registered site and other heritage places was obtained from the relevant files and unpublished reports held at the Department of Planning, Lands and Heritage. A brief review of these will highlight the types of Aboriginal archaeological sites and other heritage places already known to exist in the vicinity of the survey area as well as their geomorphological context.

Table 3: Registered Aboriginal archaeological sites located within 10km of the survey area.

ID	Name	Status	Access	Restriction	Location (GDA94 Z50)* mEmN		Type
Registered Aboriginal Sites							
18442	Mullalyup One	R	O	N	405309	6262998	Artefact Scatter, Historical

* Please note: Coordinates are indicative locations that represent the centre of sites as shown on maps produced by the DPLH – they may not necessarily represent the true centre of all sites.

LEGEND

R – Registered Site, **I** – Insufficient Information, **S** – Stored Data/Not a Site, **L** – Lodged awaiting assessment,
O – Access Open, **C** – Closed Access, **N** – File Not Restricted.

The Mullalyup One site listed in Table 3 was initially identified and recorded during an archaeological survey of proposed road works on the Donnybrook to Manjimup section of the South Western Highway (Quartermaine 2001). According to Quartermaine (2001) and other information contained within the relevant site file, the Mullalyup One site was identified on both sides of the existing South Western Highway where it has been cut through lateritic and calcareous soils near the top of a hill and above a cleared paddock containing artificial dams that may have once been within a swampy area. It was recorded as covering an area approximately 350m (NS) x 20m (EW) and is reported to contain approximately 100 glass artefacts and a single sandstone grindstone (Quartermaine 2001).

It is noted here that information pertaining to those other heritage places listed in Table 4 and whose status is ‘Lodged’, has been lodged with the Registrar of Aboriginal Sites but has not yet been assessed under Section 5 of the *Aboriginal Heritage Act 1972*. Despite this, the provisions of the *Aboriginal Heritage Act 1972* **still apply** to these other heritage places until they are assessed as places to which the *Aboriginal Heritage Act 1972* does not apply. The Millstream other heritage place listed in Table 4 has the status ‘Stored Data/Not a Site’ but is included here and discussed below as its contents still provide useful information pertaining to past Aboriginal land use patterns in the wider area around the survey area.

According to information contained on the Department of Planning, Lands and Heritage’s List of Other Heritage Places, the Hester Creek other heritage place is a camp that may or may not have an archaeological component while the Geegeelup Ceremonial Grounds other heritage place has a ceremonial component as well as repository/cache, archaeological and camp components. As noted in Table 4, access to the relevant files pertaining to the Hester Creek and Geegeelup Ceremonial Grounds other heritage places is restricted and as a result no further details should be given here.

Table 4: Other heritage places with an archaeological component located within 10km of the survey area.

ID	Name	Status	Access	Restriction	Location (GDA94 Z50)* mEmN		Type
Other Heritage Places							
15114	Hester Creek	L	C	Y	Not available when location is restricted		Camp
21727	Geegeelup Ceremonial Grounds	L	C	Y	Not available when location is restricted		Ceremonial, Repository/ cache, Archaeological Deposit, Camp
21936	Bridgetown WTP 1	L	O	N	404241	6246622	Artefact Scatter
29690	Camp Brook	L	O	N	404310	6246852	Artefact Scatter, Archaeological deposit, Camp
32582	Millstream	S	O	N	404145	6247147	Artefact Scatter

* Please note: Coordinates are indicative locations that represent the centre of sites as shown on maps produced by the DPLH – they may not necessarily represent the true centre of all sites.

LEGEND

R – Registered Site, **I** - Insufficient Information, **S** - Stored Data/Not a Site, **L** - Lodged awaiting assessment,
O – Access Open, **C** - Closed Access, **N** – File Not Restricted.

The Bridgetown WTP 1 other heritage place was initially identified during the course of an archaeological survey associated with the Bridgetown Regional Water Supply Scheme (Australian Interaction Consultants 2004). This other heritage place is described as an artefact scatter that was identified in a cleared area within a pine plantation approximately 16km west of Bridgetown and 100m from a minor tributary of the Blackwood River near a permanent water hole. In 2004, it was reported to cover an area 20m (NS) x 15m (EW) and to contain ten visible lithic artefacts, all of which have been manufactured on white quartz (Australian Interaction Consultants 2004). The Bridgetown WTP 1 other heritage place was subsequently revisited during the course of an archaeological survey ahead of the construction of a water pipeline, tanks and pump stations between Millstream and Greenbushes (Harris and Webb 2010). At this time, fifty individual lithic artefacts comprising flakes and cores were identified and the size of the artefact scatter was redefined to cover an area 60m x 15m. Harris and Webb (2010) noted that the area containing the artefact scatter had been ‘stripped and cleared’ and that artificial barriers determined the extent of the artefact scatter.

The Camp Brook other heritage place was identified and recorded during the course of an archaeological survey ahead of the construction of a water pipeline, tanks and pump stations between Millstream and Greenbushes (Harris and Webb 2010). According to Harris and Webb (2010), the Camp Brook other heritage place is located on a cleared part of an alluvial plain 130m east of Southampton Road and approximately 160m west of the Blackwood River and within an area that had been utilised as a pine plantation. Harris and Webb (2010) describe the Camp Brook other heritage place as an artefact scatter that covers an area 175m (NS) x 80m (EW) and which contains between one and two thousand individual lithic artefacts. Observations made at the Camp Brook other heritage place at the time it was recorded revealed that its artefact assemblage included flakes and flake fragments that had been manufactured on a variety of lithologies including quartz, crystal quartz, basalt and silcrete (Harris and Webb 2010).

The Millstream other heritage place was also identified and recorded during the course of an archaeological survey ahead of the construction of a water pipeline, tanks and pump stations between Millstream and Greenbushes (Harris and Webb 2010). According to Harris and Webb (2010), the Millstream other heritage place is located on a cleared part of an alluvial plain that has been used as an access track. It is 20m to 150m east of Southampton Road and approximately 70m west of the Blackwood River. Harris and Webb (2010) describe the

Millstream other heritage place as an artefact scatter that covers an area 25m (NS) x 100m (EW) and which is estimated to contain several hundred individual lithic artefacts. Observations made at the Millstream other heritage place at the time it was recorded revealed that its artefact assemblage included flakes and flake fragments that had been manufactured on a variety of lithologies including quartz, crystal quartz and glass (Harris and Webb 2010).

REVIEW OF RELEVANT ARCHAEOLOGICAL REPORTS

As a result of research and a search of the Department of Planning, Lands and Heritage (WA) Heritage Survey Database, it was established that six archaeological surveys and investigations have been undertaken in areas that are close to, coincide with or intersect a part of the survey area at Greenbushes. The reports on these surveys and investigations are reviewed here and their results presented.

O'Reilly, T. 2016, *Report on an archaeological survey of areas within Talison Lithium Australia's Greenbushes Mining Operations at Greenbushes, Western Australia*, Unpublished Report prepared for the South west Aboriginal land and Sea Council and Talison Lithium Australia Pty Ltd

The archaeological survey described by O'Reilly focused on sixteen discrete and irregularly shaped survey areas and a proposed realignment of a part of Maranup Forest Road, all of which were contained within the area of Talison Lithium Australia's mining operations at Greenbushes. The sixteen survey areas and the proposed road realignment survey area covered a combined area of approximately 400ha. The survey areas ranged in size from <0.5ha to approximately 115ha. Talison Lithium Australia Pty Ltd proposed to undertake mining and mining related activities within the sixteen survey areas and to realign a part of Maranup Forest Road to accommodate these activities. Some of the areas surveyed abutted the northern boundary of the Greenbushes survey area discussed in this report.

According to O'Reilly (2016:17) the survey areas were surveyed by undertaking a series of systematic pedestrian transects across all of the survey areas. Transects were undertaken in pairs with individuals spaced not more than 50m apart and transects spaced at approximately 100m intervals. Individuals' spacing and transect intervals were much closer in the smaller survey areas.

As a result of the O'Reilly (2016) survey, no Aboriginal archaeological sites were identified.

Quartermaine, G. 2001, *Report on an archaeological investigation for Aboriginal sites, Donnybrook to Manjimup section of the South Western Highway*, Unpublished Report prepared for Gutteridge Haskins and Davey Pty Ltd

The archaeological investigations described in Quartermaine's report were focused on a corridor that was 200m wide, 90.3km long (the survey corridor) and was centered on the existing South Western Highway from Donnybrook to Manjimup. At the time of the Quartermaine investigations, Main Roads Western Australia were proposing to undertake road works along the South Western Highway between Donnybrook and Manjimup.

According to Quartermaine (2001:8), the survey corridor was surveyed using a strategy that "consisted of a systematic and predictive sample survey" that comprised driving the alignment twice and undertaking pedestrian transects at 3km intervals. He describes these transects as being 1km long and consisting of "two 500 metre long transects performed concurrently in opposite directions parallel to both sides of the road" (Quartermaine 2001:8). In addition, "in areas with water features two people performed a single 500 metre transect, again parallel to the road".

While it is unclear from the report whether Quartermaine walked that section of the South Western Highway in the immediate vicinity of the survey area at Greenbushes discussed in this report, his results are still relevant.

As a result of the Quartermaine survey, two previously unrecorded and two previously recorded Aboriginal archaeological sites were identified. These sites are all artefact scatters that are relatively small and have limited artefact assemblages. The nearest to any of the Greenbushes survey areas discussed in this report is the registered Mullalyup One (Site Id. 18442) artefact scatter described above.

In addition to the four archaeological sites referred to above, Quartermaine (2001:11) also identified four 'sensitive areas' that he describes as areas "considered to have some potential to contain archaeological material because of their location near water sources but [where] surface vegetation cover at the time of the survey precluded closer inspection". The sensitive area closest to the Greenbushes survey area discussed in this report is approximately 2km to the northwest and comprises an area of what appears to be small lakes adjacent to the South Western Highway.

Harris, J. and Webb, W. 2010, *A report on an Archaeological Survey of a Water Pipeline, Tanks and Pump Stations – Millstream to Greenbushes*, Unpublished Report prepared for the Water Corporation.

The archaeological survey described by Harris and Webb (2010) focused on a proposed pipeline corridor from Millstream to Greenbushes that was approximately 17.5km long and 40m wide and which was centered on existing roads and tracks within existing cleared firebreaks or bush tracks. It also focused on a number of other areas where associated infrastructure (proposed tanks and pump stations) was to be located, the largest of which covered approximately 36 hectares.

The proposed pipeline corridor and associated infrastructure areas were all surveyed using a combination of predictive and systematic transects (Harris and Webb 2010). These were undertaken by two persons walking either side of a road or track within a firebreak along the proposed pipeline corridor and by three persons walking abreast at 30m apart in areas where the proposed infrastructure was to be located. In addition, intensive transects were conducted at specific areas of interest such as revegetated sections, river and creek lines and swamp areas.

It is noted here that part of the proposed pipeline corridor surveyed by Harris and Webb (2010) is centered along Maranup Ford Road. As a consequence, parts of this proposed pipeline corridor traverse the western margin of the survey area at Greenbushes discussed in this report. It was reported by Harris and Webb (2010) that the section of the proposed pipeline corridor along Maranup Ford Road had been severely modified by mining at Greenbushes and the construction of the road itself.

As a result of the Harris and Webb survey, one large artefact scatter, Camp Brook, was identified and recorded. This artefact scatter has been described above and is located approximately 6km west southwest of the Greenbushes survey area. No Aboriginal archaeological sites or material were identified by Harris and Webb (2010) in areas that coincided with or were adjacent to any of the Greenbushes survey area discussed in this report.

Harris, J. and Webb, W. 2012, *Addendum to Report on an Archaeological Survey of Water Pipeline, Tanks and Pump Stations – Millstream to Greenbushes*, Unpublished Report prepared for the Water Corporation.

Subsequent to the above archaeological survey, several amendments were made to the proposed pipeline corridor route from Millstream to Greenbushes and the placement of associated

infrastructure (proposed tanks and pump stations). Of particular interest here are the 800m of amended pipeline corridor off Maranup Ford Road and the 1000m amended pipeline corridor skirting Greenbushes. These two amendments are in close proximity to the survey area at Greenbushes discussed in this report. It was noted by Harris and Webb (2012) that the amended section of the proposed pipeline corridor skirting Greenbushes was highly disturbed as a result of mining and the placement of mining associated infrastructure at what is now Talison Lithium Australia's mining operations at Greenbushes.

The amended survey areas mentioned above were both 10m wide and were surveyed by one person walking along the length of each proposed amendment. Other 'amended' areas where infrastructure was to be placed were surveyed by two people who undertook transects at suitable spacings (Harris and Webb 2012).

As a result of the Harris and Webb survey, one artefact scatter, Millstream, was identified and recorded. This artefact scatter has been described above and is located approximately 8km west southwest of the Greenbushes survey area. No Aboriginal archaeological sites or material were identified by Harris and Webb (2012) in areas that coincided with or were adjacent to any of the Greenbushes survey areas.

McDonald, Hales and Associates 1995a, *Warren-Blackwood Regional Planning Study: Report of an Aboriginal Heritage and Planning Guidelines Sub-study*, Unpublished Report prepared for Department of Planning and Urban Development.

The Warren-Blackwood Regional Planning Study, commissioned by the Department of Planning and Urban Development, encompassed the shires of Nannup, Manjimup, Greenbushes-Bridgetown and Boyup Brook. It was anticipated that the plan would be used as a framework for land use and social and economic development consistent with responsible environmental management.

While no archaeological surveys were undertaken as part of the Warren-Blackwood Regional Planning Study, it did include a review of the archives held at the then Aboriginal Affairs Department, unpublished reports and other documentary resources. This review identified a total of 109 previously recorded Aboriginal archaeological sites across the whole study area. Of these sites 70% (n=76) are artefact scatters, 6% (n=7) are structures, 3% (n=4) are quarries, 3% (n=3) are burials, 2% (n=2) are engravings, 2% (n=3) are fishtraps, 1% (n=1) are modified trees and the remaining 13% (n=16) are classified as 'other' types of sites.

It is noted in the Warren-Blackwood Regional Planning Study report that, at the time of the study, only one systematic Aboriginal heritage survey had been conducted in any parts of the Shire of Bridgetown-Greenbushes. Of the 109 Aboriginal archaeological sites identified within the Warren-Blackwood Regional Planning Study area only 16 are located within the Shire of Bridgetown-Greenbushes. Of these 81% (n=13) are artefact scatters, 6% (n=1) are burials and the remaining 13% (n=2) are classified as 'other' types of sites. The majority of these sites (75%, n=12) were identified on sandy or lateritic tracks and paths running through open karri forest. One (6%, n=1) was identified on a lateritic access track running through low scrub while there is no information on the environmental context of the remaining sites (19%, n=3).

According to McDonald, Hales and Associates (1995a), the thirteen artefact scatters located within the Shire of Bridgetown-Greenbushes are very small. The majority (85%, n=11) comprise a single lithic artefact while the remainder (15%, n=2) have artefact assemblages comprising between two and four lithic artefacts. All artefacts contained within the thirteen artefact scatters had been manufactured on quartz.

It was concluded in the Warren-Blackwood Regional Planning Study report that Aboriginal sites were unevenly distributed across the study region and that this may be a function of past

Aboriginal land use patterns, regional preservation and taphonomic factors, the level and location of heritage research undertaken up to the time of the study, the level of community knowledge of and involvement in heritage matters and the nature of land tenure.

Ove Arup & Partners 1991, *Optical Fibre Cable Installation: Bunbury to Bridgetown*, Environmental Assessment and Management Report.

An archaeological survey of a proposed Telecom optic fibre cable route between Bunbury and Bridgetown was commissioned by Ove Arup & Partners in 1991 and undertaken by Gary Quartermaine. The proposed route followed Boyanup Road, the Bunbury-Northcliffe Railway line and the South Western Highway between Bunbury and Bridgetown. Of specific relevance here is that part of the proposed route that followed an SEC power line east and parallel to the highway through Greenbushes and that part of the route in the vicinity of Greenbushes and the northeast corner of the Greenbushes survey area discussed in this report.

The archaeological survey comprised a car being driven the length of the proposed route and inspections being made on foot at regular intervals across a 50m corridor of the route. In addition, areas identified as having archaeological potential, such as watercourses and areas of open sand, were also surveyed.

While no Aboriginal archaeological sites were identified within the proposed route, three artefact scatters were identified in close proximity to it. Two of these were reported to contain only a few lithic artefacts while one was reported to have an artefact assemblage that comprised three grinding fragments and more than 100 quartz artefacts. None of these artefact scatters are located in the vicinity of the Greenbushes survey area.

PREVIOUS ARCHAEOLOGICAL SURVEYS AND RESEARCH

Beyond the survey area in general, archaeological research undertaken in the south-west region of Western Australia documents, amongst other things, the antiquity of human occupation in this region. At present the earliest occupation date for the south-west of Western Australia is in the order of 47,000 years Before Present (BP) obtained from archaeological deposits at Devil's Lair (Dortch 2002), located approximately 20km north of Cape Leeuwin in the Leeuwin-Naturaliste Region. Some other sites of Pleistocene age recorded in the south-west include Upper Swan c.38,000 BP (Pearce and Barbetti 1981), Helena River c.29,000 BP (Schwede 1983) and Kalgan Hall c.18,000 BP (Ferguson 1985). There are at least 46 dated archaeological sites in south-western Australia which together span the period from c.47,000 BP to the present (*cf.* Smith 1993). In a wider regional context, these sites provide a more or less continuous record of human occupation of this region.

Archaeological research, surveys and investigations undertaken in the wider region around the survey area have resulted in the identification of numerous Aboriginal archaeological sites, the majority of which are small open artefact scatters. A number of these surveys have focused on areas of jarrah forest similar to that which covers the majority of the survey area. The results of these surveys (discussed below) can potentially provide useful information pertaining to possible site patterning characteristics that may be found in similar environments or adjacent areas. In addition, data contained in the relevant reports pertaining to site types, dimensions, assemblages and locations can be utilised in an assessment of the archaeological significance of any other Aboriginal archaeological sites which may be identified as a result of the archaeological survey of the designated survey area.

During the course of archaeological surveys of approximately 280km² of mainly jarrah forest near Boddington and Collie, approximately 123km and 57km north of the survey areas respectively, Pearce (1981, 1982) identified 262 archaeological sites. Of these sites, 257 (98%) are open artefact scatters with the majority identified on gently sloping ground in the vicinity of watercourses or swamps. These sites generally contained less than 100 artefacts with those

located near Collie containing only quartz artefacts with the exception of one chert flake and one silcrete flake. While the artefact scatters located in the vicinity of Boddington contain a wider range of lithic material, including dolerite, silcrete, chert, quartzite, calcrete and granite, quartz artefacts still dominated their assemblages. Artefact types noted at sites in both of these locations included flakes, chips, flaked pieces, steep-edged scrapers, bipolar cores and some backed tools.

In another survey of approximately 10km² of jarrah forest in the vicinity of the Harris River Dam, located 12km to 25km north of Collie, Veth *et al.* (1983) identified 53 archaeological sites. Of these sites, 48 (91%) are open artefact scatters with the majority being on flat or relatively flat and well-drained lateritic ground in the vicinity of watercourses or swamps. The majority (83%) of these sites contain less than ten artefacts all of which are quartz with the exception of a single fossiliferous chert flake. Flakes, chips and flaked pieces dominate the artefact assemblages at these sites.

During a survey of 25 km² in the South Canning jarrah forests south of Perth, Anderson (1982) identified 20 archaeological sites, 19 of which are artefact scatters. These artefact scatters are generally located within 100m of the South Canning River or one of its tributaries, on flat or very gently sloping ground with the majority containing less than 100 artefacts. With the exception of a single fossiliferous chert flake and one silcrete flake, artefacts at these nineteen sites are all manufactured on quartz. Artefact assemblages at each of these sites consisted of predominantly primary flakes and chips with a small number of flaked pieces also being observed. Other artefact types noted include flake scrapers, steep-edged scrapers, an adze slug and a single bi-polar core (Anderson 1982).

In the North Dandalup area, approximately 150km north of the survey areas, Anderson (1981) identified 10 archaeological sites in an area of 8km² and all within 100m of the North Dandalup River or its main tributary Kronin Brook. All of these sites are open artefact scatters and like those in the South Canning area, their assemblages have, with the exception of three flakes of European glass, been manufactured exclusively on quartz. The only artefact types present at these sites are flakes, chips or flaked pieces.

Anderson (1984) utilised data derived from the archaeological surveys discussed above to investigate the Aboriginal occupation of the jarrah forest in the region south of Perth. In doing this Anderson compared the occurrence and size of artefact scatters located in the jarrah forests with those located on the Darling Plateau to the east and on the Swan Coastal Plain to the west. Anderson (1984) demonstrated that the dominant site type located in the jarrah forests south of Perth is the small open artefact scatter of almost exclusively quartz artefacts. These sites are interpreted as representing short-term stops by small mobile groups of Aborigines moving through the jarrah forest. This is in contrast with larger sites on the coastal plain that sometimes also contain grinding material, which was not observed at any of the sites located in the jarrah forest, and a wider range of lithic resources. These larger sites represent localities that were visited either more frequently, for longer periods or by larger groups.

In addition to the above, archaeological research, investigations and surveys have also been undertaken in the Southern Forest Region of Western Australia which encompasses the forests around Manjimup, approximately 40km south of the survey area, and which includes most of the state's karri forest and southern jarrah forest. The archaeological research, investigations and surveys undertaken in the Southern Forest Region of Western Australia have produced results similar to those from the jarrah forests south of Perth discussed above. These investigations, surveys, and research are of interest here as they cover areas with generally similar climates, vegetation, surface geology and underlying geology as would have prevailed in and around the Greenbushes survey area in the past. As a consequence, the results of these, combined with those from the forests south of Perth discussed above, can be considered broadly reflective of the Aboriginal occupation of the West Australian jarrah-marri forests in general.

During the course of an Aboriginal Heritage Study of the Southern Forest Region of Western Australia, McDonald Hales and Associates (1994) sampled an area northeast of Manjimup and approximately 35km south-southeast of the survey area discussed in this report. The archaeological survey component of this study comprised walking 241km during which time archaeological sites and material were recorded. As a result of the survey, a total of forty-one artefact scatters, twenty-seven isolated artefacts, three stone arrangements and one shell midden were identified. Of these, sixteen artefact scatters, sixteen isolated artefacts and two stone arrangements were identified in 'Archaeological Zone 3' which included that area northeast of Manjimup (McDonald Hales and Associates 1994).

An average artefact density of 0.0065 artefacts/m² was recorded for 'Archaeological Zone 3' with the highest artefact densities being associated with vegetation interface zones such as those

. . . adjacent to wetlands and their fringing hydrophilic low woodland complexes. Lower, but comparable density figures were returned for 'specialised' vegetation associations located on granitic outcrops and the open jarrah/marri forests. The lowest artefact densities were recorded in the high open forests composed of karri and karri/tingle, where only isolated artefacts were recorded (McDonald Hales and Associates 1994:114).

The artefact scatters identified in 'Archaeological Zone 3' generally contained less than ten artefacts with approximately 95% of each artefact assemblage having been manufactured on quartz. Chert, silcrete and other raw materials were also represented in these assemblages but only in very small numbers. It is noted here that the two stone arrangements referred to by McDonald Hales and Associates (1994) comprise lizard traps associated with granitic outcrops.

On the basis of the results of their study, McDonald Hales and Associates (1994:129) stated that "the archaeological resource of the Southern Forest Region generally comprises small, low density artefact scatters situated in a wide variety of topographic and environmental contexts".

The area between the Southern Forest Region and the west coast, which includes large tracts of forest, was also the focus of previous archaeological investigations (McDonald Hales and Associates 1995b). These investigations resulted in thirty-four artefact scatters and twenty-nine isolated finds being identified with the artefact density in open forests calculated at approximately 0.00145 artefacts/m², which is less than that recorded in the Southern Forest Region (see above). The thirty-four artefact scatters identified generally contained less than fifteen artefacts each with at least 90% of each artefact assemblage having been manufactured on quartz (McDonald Hales and Associates 1995b). Chert and silcrete artefacts were also present but only in very small numbers.

Within the same general region investigated by McDonald Hales and Associates (1995b), Lilley (1993) surveyed part of the coastal plain and forest uplands which included parts comprised of jarrah-marri forest on the Blackwood Plateau. As a result of 50km of transects through approximately 100km² of jarrah-marri forest on the Blackwood Plateau and which encompassed the upper reaches of the Margaret River, "no unambiguous archaeological remains were discovered" (Lilley 1993:36). However, "a handful of undiagnostic quartz fragments was found, comprising pieces found in ones and twos in surface contexts where their prehistoric cultural origin could not be assured" (Lilley 1993:36). It was proposed by Lilley (1993:36) that these undiagnostic quartz fragments "may have been brought into the forest wedged in the treads of vehicle tyres, or created on rare pieces of naturally occurring quartz by forestry equipment or other means".

In addition to those referred to above, a number of other archaeological surveys and investigations have also been undertaken in the wider region around the survey area (*e.g.* Goode and Greenfield 2007; Greenfield and Webb 2006; Harris and Webb 2008; Parker and Corsini

1998a, 1998b; Parker *et al.* 2003) which, with the exception of several isolated artefacts, have generally resulted in no Aboriginal archaeological sites being identified.

From the above, the most likely type of archaeological site or material that may be found in the Greenbushes survey area would be very small artefact scatters dominated by artefacts manufactured on quartz, or isolated or individual quartz artefacts.

SURVEY METHODS

The fieldwork associated with the archaeological survey of the Talison Lithium Greenbushes Expansion Project Area was undertaken in April 2018 by archaeologists Mr Thomas O'Reilly and Ms Sally McGann with assistance from South West Boojarah field assistants Mr Wayne Webb and Mrs Toni Webb. The methods utilised prior to and during the archaeological survey are outlined below.

Prior to undertaking the field component of the archaeological survey, a search of the Department of Planning, Lands and Heritage (WA) Aboriginal Sites Database and was made to determine if any Aboriginal archaeological sites, or sites with an archaeological component, or any other heritage places with an archaeological component, are located within any part of the designated survey area. At the same time, site files pertaining to any registered Aboriginal archaeological sites or sites with an archaeological component in the vicinity of the survey area were also examined as were the files pertaining to other heritage places with an archaeological component. A review of reports detailing the results of previous archaeological surveys and investigations that overlapped or intersected any part of the Greenbushes survey area was also undertaken. Reports detailing the results of previous archaeological surveys and investigations carried out in the vicinity of the survey area were also reviewed as was the results of archaeological research conducted in the wider region.

Geological and vegetation maps were also examined prior to the field survey to ascertain the physical geography and geomorphology of the land within the survey area. Any areas of interest identified from these maps, or areas identified as having a high probability of containing Aboriginal archaeological sites would subsequently be targeted during the field survey.

The designated survey area was surveyed for the presence of Aboriginal archaeological sites by undertaking a series of systematic pedestrian transects across the survey area. Over the main part of the survey area these transects had a general east-west alignment with archaeologists and South West Boojarah field assistants spaced at approximately 50m intervals. Within the relatively narrow corridor that extends from the northwest corner of the main part of the survey area to Spring Gully Road, transects followed the general alignment of the corridor with archaeologists and South West Boojarah field assistants spaced at not more than 50m intervals. Where the corridor narrowed, the spacing was much closer. In addition to this, any areas of interest identified from maps, or areas identified as having a high probability of containing Aboriginal archaeological sites, were targeted during the field survey.

While ground visibility throughout the survey area was variable, it generally averaged <10% as a result of varying densities of leaf litter and vegetation cover. However, numerous opportunistic areas of excellent ground visibility (>80%) were encountered throughout the survey area such as along the margins of old and existing tracks, and in parts that had been cleared at some time in the past. These areas of high ground visibility were targeted during the course of the archaeological survey.

RESULTS

As a result of research and a search of the Department of Planning, Lands and Heritage (WA) Aboriginal Sites Database prior to the archaeological survey of the Talison Lithium Greenbushes Expansion Project Area, it was established that **no** registered Aboriginal archaeological sites or sites with an archaeological component, are located within any part of the survey area. It was also established that **no** 'other heritage places' with an archaeological component are located within any part of the survey area.

As a result of the archaeological survey of the Talison Lithium Greenbushes Expansion Project Area, **no** Aboriginal archaeological sites or material were identified.

CONCLUSIONS

DISCUSSION

An archaeological survey for Aboriginal archaeological sites within the Talison Lithium Greenbushes Expansion Project Area (the survey area) was undertaken on behalf of GHD Pty Ltd on behalf of Talison Lithium Australia Pty Ltd in April 2018. The fieldwork associated with the archaeological survey was undertaken by archaeologists Mr Thomas O'Reilly and Ms Sally McGann with assistance from South West Boorah field assistants Mr Wayne Webb and Mrs Toni Webb.

The survey area discussed in this report is irregularly shaped and contained within parts of the mining tenements M01/2, M01/3, M01/6, M01/7 and L01/1. It covers 402.17ha and includes a relatively narrow corridor that extends approximately 3.66km from the northwest corner of the main part of the survey area, to Spring Gully Road.

The survey area was surveyed and examined for the presence of Aboriginal archaeological sites and/or material by walking a series of systematic transects across or along the survey area. Given the degree of surface visibility throughout and the intensity of coverage, it is considered that the archaeological survey was sufficient to locate any Aboriginal archaeological sites present on the surface. It should be noted that sites can be exposed and/or concealed as a result of both wind and water erosion. It is also possible that archaeological material lies below the surface and may be exposed as a result of environmental factors or work undertaken within the surveyed area. Talison Lithium Australia Pty Ltd should be aware of this when undertaking mining and mining related activities within the designated survey area or any other ground disturbing work.

RECOMMENDATIONS

On the basis of the results of the archaeological survey of the Talison Lithium Greenbushes Expansion Project Area at Greenbushes, and the above discussion the following recommendations are made:

It is recommended that Talison Lithium Australia Pty Ltd be allowed to proceed with their proposal to expand their mining operations and associated infrastructure within the survey area as defined in this report.

It is also recommended that, in the event of any artefactual material or skeletal material being discovered in the course of work associated with the expansion of mining operations and associated infrastructure, and/or any other activities, work should stop while the Department of Planning, Lands and Heritage (WA) carry out an investigation. In the case of skeletal material being uncovered, work must cease immediately and the Western Australian Police must be notified.

Furthermore **it is recommended** that Talison Lithium Australia Pty Ltd personnel and contractors be advised of their obligations under Section 15 of the *Aboriginal Heritage Act 1972*, to report the discovery of any Aboriginal cultural material which may be uncovered in the course of their work or any other activities.

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APPENDIX 1: DPLH SITES AND PLACES REGISTER SEARCH

Search Criteria

1 Registered Aboriginal Sites in Shapefile - ENV_PRP_Expanded_Development_Area_20180122

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 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 Boorah #2 People ILUA, Wagyl Kaip Southern Noongar 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 Boorah, Ballardong People, South West Boorah #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/lantu/Claims/Pages/SouthWestSettlement.aspx>.

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

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 4km²) 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.

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Aboriginal Heritage Inquiry System

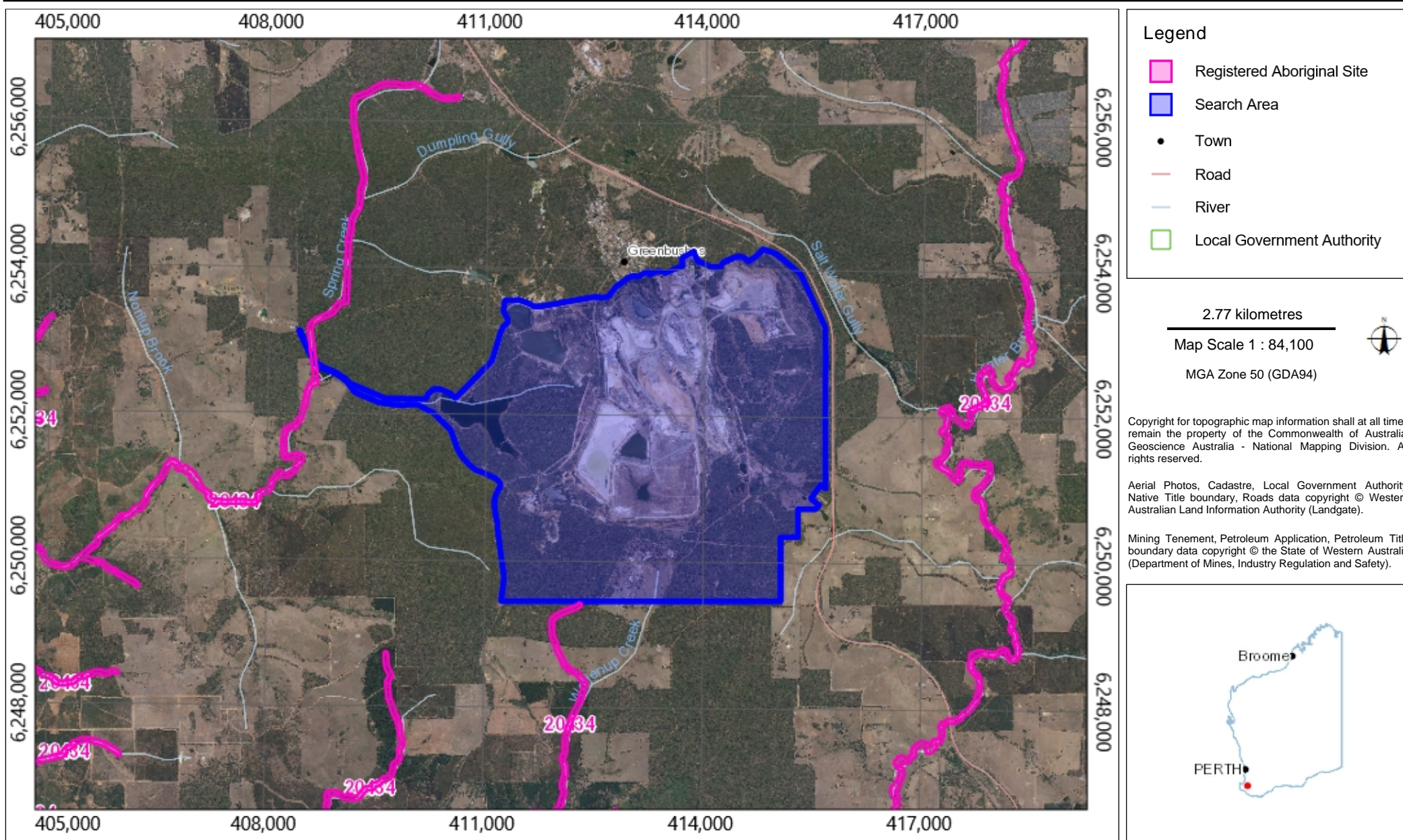
List of Registered Aboriginal Sites

ID	Name	File Restricted	Boundary Restricted	Restrictions	Status	Type	Knowledge Holders	Coordinate	Legacy ID
20434	Blackwood River	No	No	No Gender Restrictions	Registered Site	Mythological	*Registered Knowledge Holder names available from DAA	423713mE 6243153mN Zone 50 [Reliable]	

Aboriginal Heritage Inquiry System

Map of Registered Aboriginal Sites

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Search Criteria

No Other Heritage Places in Shapefile - ENV_PRP_Expanded_Development_Area_20180122

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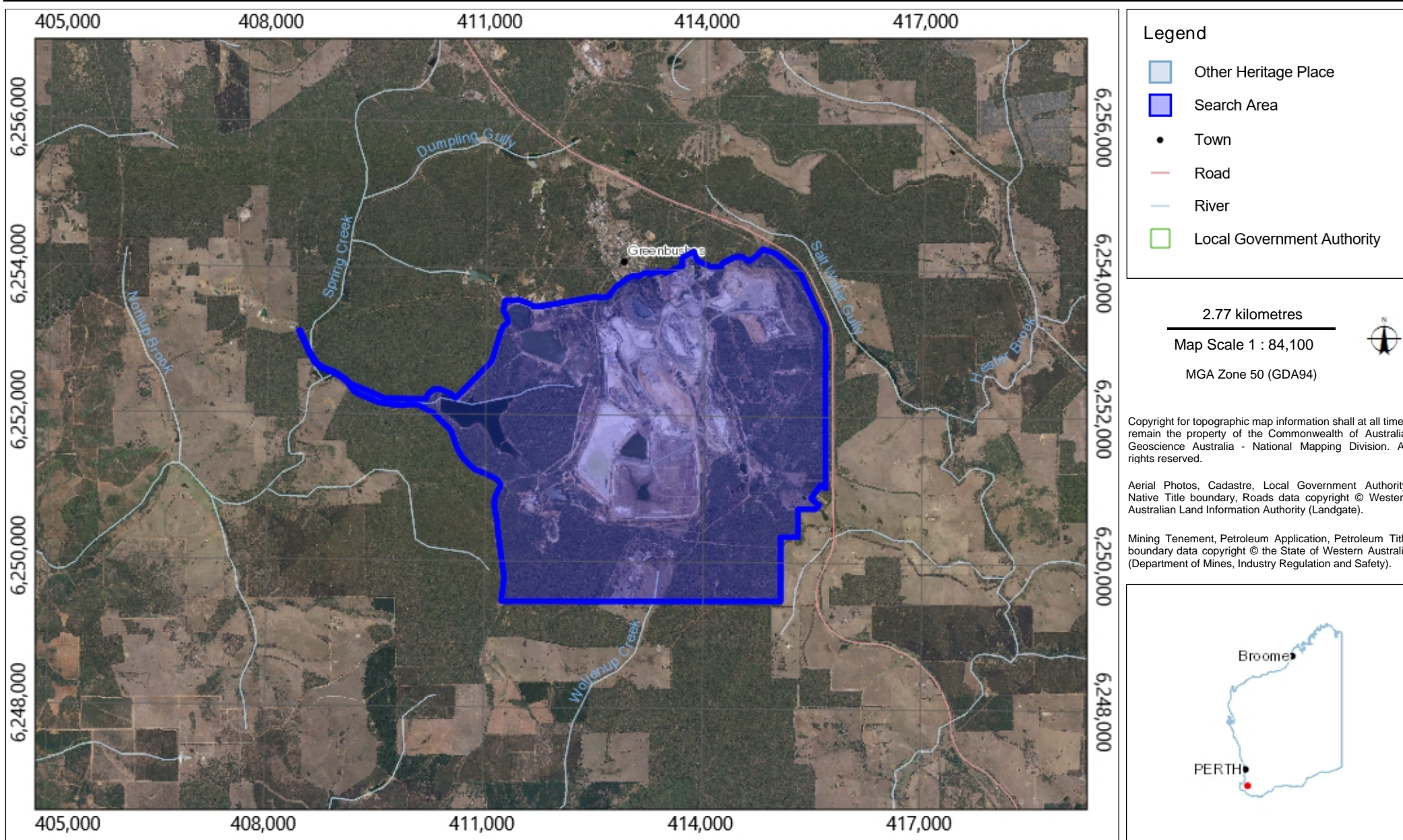
Satellite, Hybrid, Road basemap sources: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, HERE, DeLorme, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), MapmyIndia, NGCC, © OpenStreetMap contributors, and the GIS User Community.

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Aboriginal Heritage Inquiry System

Map of Other Heritage Places

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ABN: 41 134 732 040

We the undersigned have been consulted by Brad Goode & Associates Pty Ltd on behalf of Talison Lithium Pty Ltd regarding the Talison Lithium Greenbushes Operations survey area along Maranup Ford Road in Greenbushes. We would like to make the following recommendations in relation to the Western Australian Aboriginal Heritage Act 1972:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

South West Boojarah WC06/04 native title claim group		
Mark Colbung	19.4.2018	Mark Colbung
Glen Councillor	19.4.2018	Glen Councillor
Jack Hill	19.4.2018	Jack Hill
Sue Kelly	19.4.2018	Sue Kelly
David Pell	19.4.2018	David Pell
Wayne Webb	19.4.2018	Wayne Webb
Wendy Williams	19.4.2018	Wendy Williams

APPENDIX 3: MAP OF THE PROJECT AREA IN RELATION TO ABORIGINAL HERITAGE SITES

