

**REPORT ON AN ARCHAEOLOGICAL SURVEY OF THE
BUNBURY OUTER RING ROAD (SOUTHERN SECTION)
PROJECT AREA, BUNBURY, WESTERN AUSTRALIA**



Prepared for GHD Pty Ltd on behalf of Main Roads WA

by



on behalf of

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EXECUTIVE SUMMARY

In January 2012, GHD Pty Ltd on behalf of Main Roads Western Australia, commissioned an archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area, centred approximately 9km SSE of the Bunbury City centre. It comprises a single discrete survey area that is irregularly shaped and which traverses an area that comprises cleared paddocks and road reserve corridors with some patches of remnant bush. GHD Pty Ltd on behalf of Main Roads Western Australia proposes to construct a dual carriageway and associated overpasses and service roads within the Bunbury Outer Ring Road (Southern Section) Project Area.

The Bunbury Outer Ring Road (Southern Section) Project Area extends for approximately 9km from South Western Highway near the intersection of Centenary Road to Bussell Highway between Woods Road and Calinup Road and varies in width from 50m to 150m.

The archaeological survey discussed in this report was undertaken to identify and record any Aboriginal archaeological sites that may be located within the Bunbury Outer Ring Road (Southern Section) Project Area, in order that GHD Pty Ltd and Main Roads Western Australia 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 Indigenous Affairs to proceed with activities that may disturb Aboriginal heritage sites.

The archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area included research at the Heritage and Culture Division, Department of Indigenous Affairs (WA) to assess and investigate the results of any previous archaeological surveys and investigations undertaken in the immediate 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 Bunbury Outer Ring Road (Southern Section) Project Area was conducted.

As a result of research at the Heritage and Culture Division, Department of Indigenous Affairs (WA) and a search of their Aboriginal Sites Database, it was established that no registered Aboriginal archaeological sites or sites with an archaeological component, are located within the survey area. However, it was established that one 'other heritage place' (Bunbury Bypass Archaeological Site 1) has been registered at a position that abuts and is encompassed by the survey area. It is noted here that information pertaining to the Bunbury Bypass Archaeological Site 1 (DIA 18884) 'other heritage place' has been reported to the Registrar of Aboriginal Sites and assessed by the Site Assessment Group. This is not the final assessment. The final assessment is yet to be determined by the Aboriginal Cultural Material Committee. Consequently, the Bunbury Bypass Archaeological Site 1 (DIA 18884) appears on the Department of Indigenous Affairs' Aboriginal Sites Database as 'Other Heritage Place'. Despite this, the provisions of the *Aboriginal Heritage Act 1972* still apply to this other heritage place until it is assessed as a place to which the *Aboriginal Heritage Act 1972* does not apply.

The Bunbury Bypass Archaeological Site 1 (DIA 18884) was initially identified during an archaeological survey of the proposed Bunbury Bypass Road over fifteen years ago (Hammond and O'Reilly 1995). During the course of fieldwork associated with the archaeological survey described in this report, the Bunbury Bypass Archaeological Site 1 (DIA 18884) other heritage place was visited and scrutinised for the presence of Aboriginal archaeological material. As a consequence, it was established that the Bunbury Bypass Archaeological Site 1 (DIA 18884) other heritage place is a very sparse artefact scatter which abuts and is encompassed by the survey area. The Bunbury Bypass Archaeological Site 1 (DIA 18884) other heritage place was subsequently re-recorded and its precise location and extent determined. Its extent, location and artefact assemblage were found to be consistent with the descriptions and data recorded when this other heritage place was initially identified over fifteen years ago.

The Bunbury Bypass Archaeological Site 1 (DIA 18884) artefact scatter was identified within what appears to have been a dam structure where an area of yellow sand has been excavated and either removed or used to construct the southern dam wall. It is estimated to contain not more than twenty artefacts and has an artefact assemblage manufactured exclusively on quartz and dominated by flaked pieces and flake fragments. While a single quartz backed blade was identified, no grinding material or other retouched/utilised artefacts were observed at this site and although artefacts may be present below the surface, there is little or no potential for it to contain stratified cultural deposits. The artefact assemblage at the Bunbury Bypass Archaeological Site 1 artefact scatter is very small, unremarkable and generally typical of other artefact scatters located in the wider region. As a result of its size, limited artefact assemblage and disturbed context, the Bunbury Bypass Archaeological Site 1 artefact scatter is assessed here as having very low archaeological significance.

No other Aboriginal archaeological sites or material were identified as a result of the archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area.

It is therefore recommended that GHD Pty Ltd and/or Main Roads Western Australia be allowed to proceed with their proposal to construct a dual carriageway and associated overpasses and service roads within the Bunbury Outer Ring Road (Southern Section) Project Area, on the condition that they avoid any impact upon or disturbance to the heritage place Bunbury Bypass Archaeological Site 1 (DIA 18884). If any impact upon or disturbance to the heritage place Bunbury Bypass Archaeological Site 1 (DIA 18884) cannot be avoided then GHD Pty Ltd and/or Main Roads Western Australia, as required under Section 18 of the Western Australian *Aboriginal Heritage Act 1972*, need to seek the consent of the Minister for Indigenous Affairs to proceed with activities that may disturb Aboriginal heritage sites.

INTRODUCTION

An archaeological survey for Aboriginal archaeological sites was commissioned by GHD Pty Ltd on behalf of Main Roads Western Australia, in January 2012. The primary aim of this survey was to examine the Bunbury Outer Ring Road (Southern Section) Project Area, south-southeast of Bunbury (WA) 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 GHD Pty Ltd and Main Roads Western Australia 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 Indigenous Affairs to proceed with activities that may disturb Aboriginal heritage sites.

The area designated by GHD Pty Ltd to be surveyed was an irregularly shaped corridor that extends for approximately 9km from South Western Highway near the intersection of Centenary Road to Bussell Highway between Woods Road and Calinup Road and varies in width from 50m to 150m. In the following pages this is referred to as the survey area. GHD Pty Ltd proposes to construct a dual carriageway and associated overpasses and service roads within the survey area. Knowledge of the location and extent of any Aboriginal archaeological sites that exist within the survey area will facilitate the making of management decisions that will ensure that these sites are not inadvertently impacted upon by any road work or related activities.

As part of the archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area, data was gathered from reports on previous archaeological surveys and investigations undertaken in the vicinity of this area and in the wider region. Details of previously recorded and/or registered Aboriginal archaeological sites in the region were obtained from the relevant site files held at the Heritage and Culture Division, Department of Indigenous Affairs (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. Thomas O'Reilly and Stuart Johnston undertook the fieldwork associated with the archaeological survey in January 2012.

LOCATION OF THE SURVEY AREA

The Bunbury Outer Ring Road (Southern Section) Project Area is centred approximately 9km SSE of the Bunbury City centre and comprises a single discrete survey area (Figure 5). It is irregularly shaped and extends for approximately 9km from South Western Highway near the intersection of Centenary Road to Bussell Highway between Woods Road and Calinup Road and varies in width from 50m to 150m (Figure 6).

The Bunbury Outer Ring Road (Southern Section) Project Area traverses an area that comprises cleared paddocks and road reserve corridors with some patches of remnant bush.

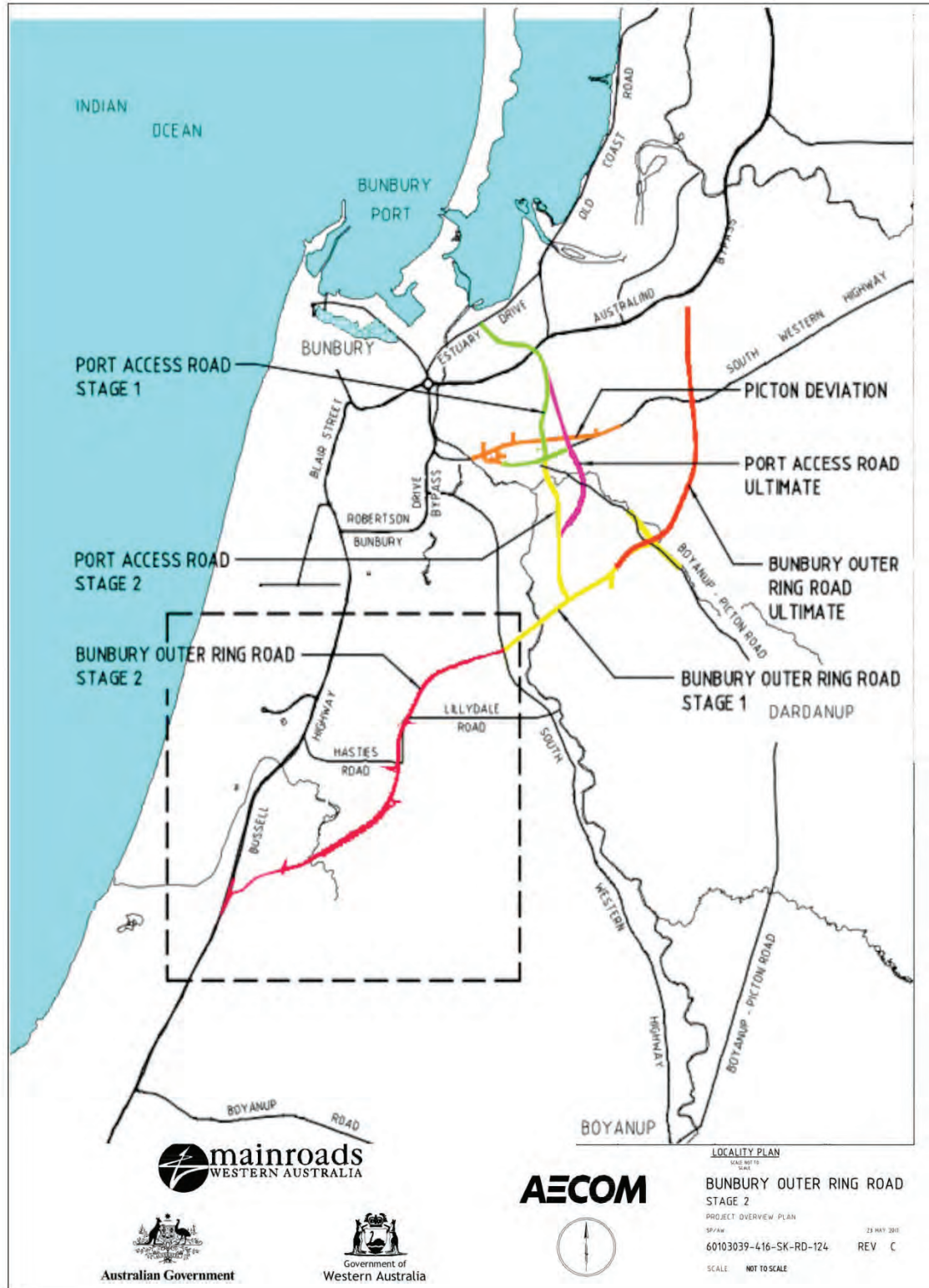


Figure 5: Location Plan: Bunbury Outer Ring Road (Southern Section) Project Area.

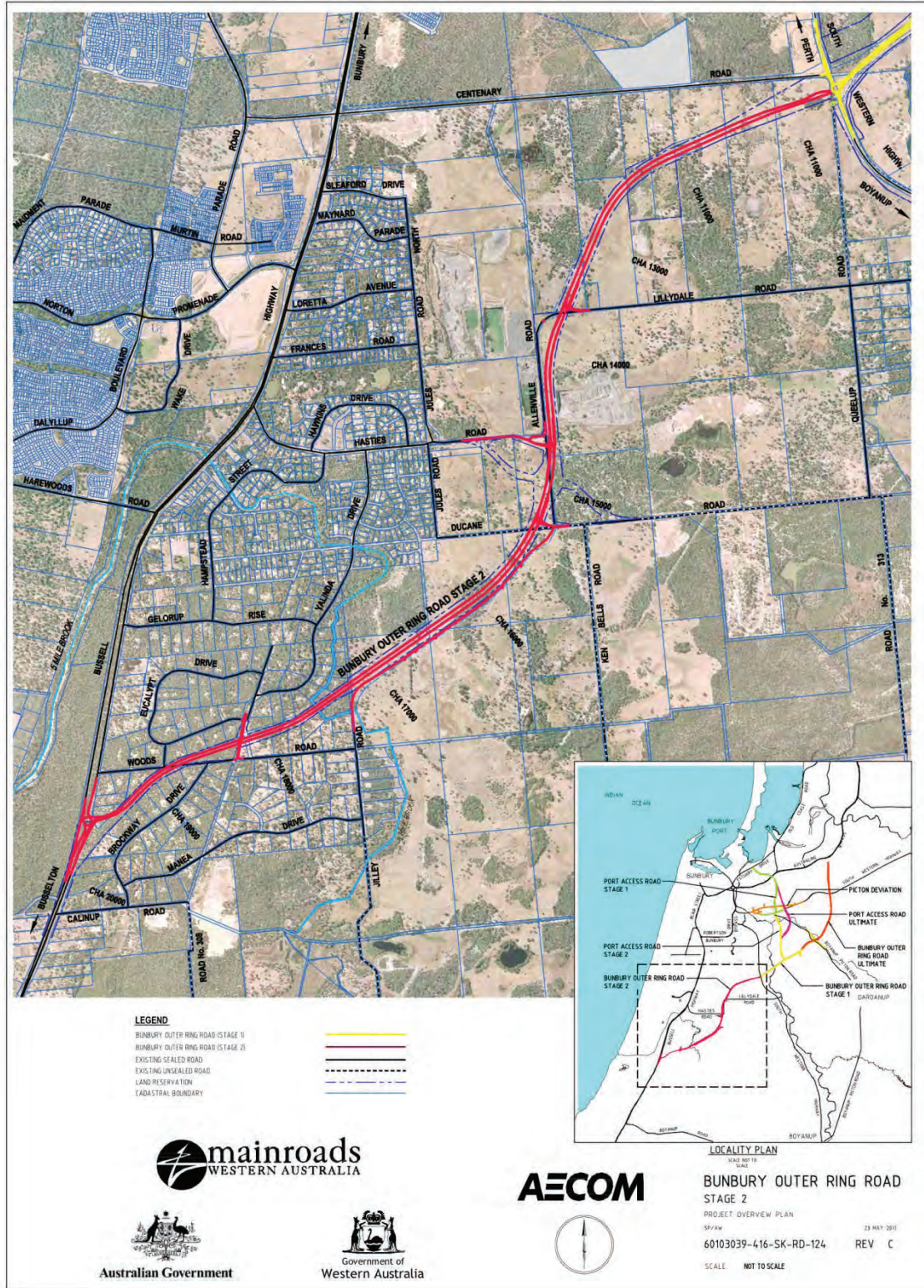


Figure 6: Bunbury Outer Ring Road (Southern Section) Project Area.

ENVIRONMENTAL BACKGROUND

CLIMATE

The survey area lies within a Dry Mediterranean climatic zone averaging between five and six dry months per year (Beard 1981). Climatic recording stations located at Bunbury have recorded weather conditions in the area for over a century. During the winter months (June-August) the long term average maximum temperature is 17.2°C, and the long term average minimum is 8.7°C. In summer (December-February) the equivalent temperatures are 27.0°C maximum and 14.8°C minimum (Bureau of Meteorology, Australia 2012). It is likely that average temperatures in and near the survey area follow a similar trend to those recorded in Bunbury.

The survey area and its surrounds lie within a region that has received an average annual rainfall of approximately 718mm since 1995. Approximately 57% of this rain falls in the winter months, and less than 5% in the summer, the rest being distributed between spring and autumn (Bureau of Meteorology, Australia 2012). Typically there is a summer drought of several months duration, when high evaporation exacerbates the shortage of surface water.

GEOLOGY AND LANDFORMS

The geology of the area in and around the survey area has been mapped and described in detail on the Collie 1:250 000 map sheet and accompanying notes (Wilde and Walker 1982) with a more detailed account given on the Bunbury-Burekup 1:50,000 urban geology map sheet (Geological Survey of Western Australia 1981).

In general, the survey area is located on the western edge of the Perth Basin, a polycyclic basin consisting of a Silurian to early Neocomian sequence deposited in an interior-fracture setting, and an overlying late Neocomian Quaternary sequence laid down in a marginal sag basin (Cockbain 1990:495). That part of the Perth Basin that lies between the Darling Fault and the Indian Ocean is known as the Swan Coastal Plain, a narrow strip of land between 15 and 30km wide, that extends from around Jurien Bay southwards to Busselton (McArthur 1991). Most of the Swan Coastal Plain is covered by Quaternary sediments of fluvial and aeolian deposits, deposited in a series of geomorphic entities zones sub-parallel to the present coastline (McArthur and Bettenay 1974). Five geomorphic entities are recognised by McArthur and Bettenay (1974) the most westerly of which is the Quindalup Dune System that borders the present coastline. This is bounded to the west by the Spearwood Dune System with the Bassendean Dune System lying between this and the Pinjarra Plain.

Geologically, all but the western end of the survey area is located on the Bassendean Dunes System of the Swan Coastal Plain. This system, which occurs immediately to the west of the Pinjarra Plain, generally comprises low hills of siliceous sand interspersed with poorly drained areas (McArthur and Bettenay 1974). The surface geology can be characterised as grey alluvial sand within and adjacent to that part of the survey area located on the Bassendean Dunes.

The western end of the survey area is located on the Spearwood Dunes System of the Swan Coastal Plain. This system, which occurs immediately to the west of the Bassendean Dunes System, generally comprises “a core of aeoloanite with a hard capping of secondary calcite overlain by variable depths of yellow or brown sand” (McArthur and Bettenay 1974:13). The surface geology within and around the western end of the survey area can also be characterised as grey alluvial sand.

As stated above, the Bunbury Outer Ring Road (Southern Section) Project Area traverses an area that comprises cleared paddocks and road reserve corridors with some patches of remnant bush. With the exception of a large sand hill south of Ducane Road and more elevated ground west of Cokelup Road, the survey area is generally flat.

While some low lying areas were observed in the paddocks mentioned above, well defined drainage features were generally absent from the survey area. The exception to this is a narrow ephemeral drainage line that crosses the survey area between Cokelup Road and Jilley Road. This drainage feature was dry at the time of the archaeological survey discussed in this report.

The Bunbury Outer Ring Road (Southern Section) Project Area is located in a region that has been and still is utilised by the pastoral industry and to a lesser degree by a small residential urban population. As a consequence, the majority of the land in and adjacent to the survey area has been universally disturbed and modified.

VEGETATION

Beard (1981) notes the relationship between specific soil types and vegetation. The survey area and its surrounds are located in the Drummond Botanical Sub-district of the Darling Botanical District (Beard 1981).

Generally, the vegetation within the survey area would probably have been characterised by scrub vegetation with *Banksia* low woodland dominated by *Banksia attenuata*, *B. menziesii*, *B. ilicifolia*, *Eucalyptus todtiana* and *Nuytsia floribunda*, with a dense understorey of sclerophyll shrubs. However, as noted above, the majority of the land within and adjacent to the survey area has been universally disturbed and modified which has resulted in almost all the native vegetation having been cleared.

At the time of the archaeological survey, the vegetation within those parts of the survey area that traverse cleared paddocks, was dominated by a moderate to dense cover of low (<0.3m) grasses in some places and generally sparse grasses in others. Some *Eucalyptus* spp. trees to 15m, a small stand of pepper trees (*Agonis flexuosa*) to 4m and the occasional small paperbark tree (*Melaleuca* spp) to 3m were also observed in or adjacent to the survey area. As a consequence, surface visibility within that part of the survey area that traverses cleared paddocks was variable and ranged from <10% to approximately 40%. Areas of excellent visibility (>80%) were limited to cleared fire breaks, fence lines, tracks and other opportunistic exposures.

The vegetation on the large sand hill south of Ducane Road comprised numerous *Banksia* spp. trees to 10m over a sparse to moderate cover of low grasses. Visibility on this sand hill was generally good and averaged approximately 40%.

The vegetation within the remainder of the survey area comprised numerous areas of regrowth with *Eucalyptus* spp. trees to 10m over low shrubs to 1m, numerous grass trees (*Xanthorrhoea* spp.) to 1m and some grasses with a moderate to dense cover of leaf litter in some parts. Surface visibility within this part of the survey area was also variable and ranged from <10% to approximately 30%. It is noted here that where ground visibility was very low, adjacent cleared fence lines and fire breaks afforded excellent ground visibility at approximately 80%.

ARCHAEOLOGICAL BACKGROUND

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 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. Excerpts from the Act are included in Appendices 2 and 3. Most types of Aboriginal sites are described in more detail in Appendix 3. It is important to note that all sites are protected under the W.A. *Aboriginal Heritage Act 1972*, whether known or not, and that it is an offence to disturb or conceal a site, or remove artefacts, without appropriate consent.

REGISTERED SITES

As a result of research undertaken at the Heritage and Culture Division, Department of Indigenous Affairs (WA) and a search of their Aboriginal Sites Database prior to the archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area, it was established that no registered Aboriginal archaeological sites or sites with an archaeological component are located within the survey area. However, it was established, on the basis of information given on the Department of Indigenous Affairs' Aboriginal Sites Database that one 'other heritage place' (Bunbury Bypass Archaeological Site 1) has been recorded at a

position that abuts and is encompassed by the survey area. It is noted here that information pertaining to the Bunbury Bypass Archaeological Site 1 (DIA 18884) 'other heritage place' has been reported to the Registrar of Aboriginal Sites and assessed by the Site Assessment Group. This is not the final assessment. The final assessment is yet to be determined by the Aboriginal Cultural Material Committee. Consequently, the Bunbury Bypass Archaeological Site 1 (DIA 18884) appears on the Department of Indigenous Affairs' Aboriginal Sites Database as 'Other Heritage Place'. Despite this, the provisions of the *Aboriginal Heritage Act 1972* still apply to this other heritage place until it is assessed as a place to which the *Aboriginal Heritage Act 1972* does not apply.

The Bunbury Bypass Archaeological Site 1 (DIA 18884) was initially identified during an archaeological survey of the proposed Bunbury Bypass Road over fifteen years ago (Hammond and O'Reilly 1995). According to Hammond and O'Reilly (1995), the Bunbury Bypass Archaeological Site 1 (DIA 18884) is located approximately 30m to the southwest of the intersection of Hasties Road and Allenville Road. They described it as a very low density artefact scatter situated within a large dam structure which measures approximately 50m x 100m. They identified two discrete artefact clusters on the dam wall, one in the southwest corner and one in the southeast corner which combined contained a total of fourteen artefacts. Hammond and O'Reilly (1995:31) subsequently recorded these artefacts and identified four complete flakes (28.6%), nine flake fragments (64.3%) and one core fragment (7.1%), all of which had been manufactured on quartz.

During the course of fieldwork associated with the archaeological survey described in this report, the Bunbury Bypass Archaeological Site 1 (DIA 18884) was visited and re-recorded. This artefact scatter is described and discussed in detail in 'Site Description' in the 'Results' section of this report.

Beyond the survey area but within approximately 3km of its boundaries, the Department of Indigenous Affairs has files on one registered Aboriginal archaeological site and twelve 'other heritage places' that have been registered as Aboriginal archaeological sites. Details of these registered sites and other heritage places are given in Table 2. Additional information was obtained from the relevant site files and unpublished reports held at the Department of Indigenous Affairs. 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.

The Bunbury 23 archaeological site and the Bunbury 10, Bunbury 15, Bunbury 16, Bunbury 17, Bunbury 18, Bunbury 24 and Bunbury 08 other heritage places listed in Table 2 were all initially identified and recorded in 1978 by staff from the Western Australian Museum during the course of an archaeological survey of the wider Bunbury region. The Bunbury 23 site is described in the relevant site file as an artefact scatter that was identified on grey sand along part of cleared firebreak and which comprises numerous quartz flakes.

The Bunbury 10, Bunbury 15, Bunbury 16, Bunbury 17, Bunbury 18, Bunbury 24 and Bunbury 08 other heritage places have all been registered as artefact scatters. According to the relevant site file, the Bunbury 10 artefact scatter was identified in an area of yellow sand 220m x 170m that had been cleared for residential development. At the time it was recorded its artefact assemblage comprised three quartz flakes and one piece of fossiliferous chert.

The Bunbury 15 artefact scatter was identified on the pale yellow sand embankment of a large road cutting approximately 0.4km along Moore Rd from the junction of South Western Highway. While no estimate of the site extent is given in the relevant site file, its artefact assemblage is described as comprising numerous small quartz flakes and chips on the southeast embankment and two quartz chips on the northwest embankment. A recent visit to this other heritage identified six small flakes and chips that had been manufactured on quartz and crystal

quartz (Harris and Johnston 2010). These were identified on a mixed yellow and white sandy embankment.

The Bunbury 16 artefact scatter was identified in a road cutting 0.9km along Moore Road from South Western Highway on the west side of the junction of Moore Road and Wallrodt Road. At the time it was initially recorded the Bunbury 16 artefact assemblage was described as comprising mainly large unmodified quartz flakes, several modified quartz flakes and several chips. A more recent visit to the Bunbury 16 artefact scatter resulted in no artefacts being identified. According to Harris and Johnston (2010:49) it is possible that the entrance to Wallrodt Road may have widened over the years and, presumably, has resulted in the concealment of any artefacts that may have once been visible on the surface.

Table 2: Registered Aboriginal archaeological site and 'other heritage places' located within 3km of the survey area.

SITE ID.	Status	Access	Restriction	Name	Location (Zone 50)		Site Type
					East	North	
Registered Archaeological Site							
4873	R	O	N	Bunbury 23	377689	6306898	Artefact Scatter
Other Heritage Places							
4866	I	O	N	Bunbury 10	374639	6307648	Artefact Scatter
4876	I	O	N	Bunbury 15	380688	6307067	Artefact Scatter
4877	I	O	N	Bunbury 16	380380	6306751	Artefact Scatter
4878	I	O	N	Bunbury 17	380595	6306465	Artefact Scatter
4879	I	O	N	Bunbury 18	380293	6306026	Artefact Scatter
4881	I	O	N	Bunbury 24	373702	6303011	Artefact Scatter
4919	I	O	N	Bunbury 08	377439	6308148	Artefact Scatter
5169	S	O	N	Natgas 263	380639	6306648	Artefact Scatter
5814	I	O	N	Sand Dune Cutting Bunbury	374639	6307648	Artefact Scatter
5815	S	O	N	Bunbury Preston River	377639	6307648	Artefact Scatter
18884	L	O	N	Bunbury Bypass Archaeological Site 1	375149	6302418	Artefact Scatter
18965	L	O	N	Woodcrest Rise Development Marked Tree	374196	6305257	Modified Tree
21700	L	O	N	Hooper Place Burial	372852	6307081	Skeletal Material Burial

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

LEGEND

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

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

The Bunbury 17 artefact scatter was identified in a road cutting approximately 1.2km along Moore Road from its junction with South Western Highway. At the time it was initially recorded it was estimated that the Bunbury 17 artefact scatter comprised two quartz flakes on the eastern bank of the cutting and four quartz flakes on the western slope. These were all located on yellow sand.

The Bunbury 18 artefact scatter was identified in a road cutting 1.6km along Moore Road, southwest of the junction of South Western Highway and Moore Road. At the time it was initially recorded approximately a dozen quartz flakes, several quartz lumps, one chert flake and one silcrete flake were identified on the slopes of the road cutting. A recent search for the Bunbury 18 artefact scatter resulted in one silcrete flake being identified on a yellow sandy road cutting (Harris and Johnston 2010).

According to the relevant site file, the Bunbury 24 artefact scatter comprises several quartz waste flakes that were identified on yellow sand around a soccer field somewhere west of the Bussell Highway south of Bunbury and in the vicinity of the Bunbury Cathedral Grammar School.

The Bunbury 08 artefact scatter was identified in a yellow sandy road cutting on Boyanup Road approximately 400m southeast of its junction with Dodson Road. It is described in the relevant site file as comprising a sparse scatter of mainly quartz flakes.

According to the relevant site file the Natgas 263 artefact scatter was identified in a road cutting where artefacts appear to be eroding out from the Pinjarra/Bassendean Sands interface. Its artefact assemblage is described as comprising a number of amorphous quartz chips.

According to the relevant site file the Sand Dune Cutting, Bunbury other heritage place comprises flakes and cores that were identified in a road cutting. No other information pertaining to this place is available from the relevant site file. There is a similar dearth of information in the Bunbury/Preston River site file that, in 1974, was described as comprising four quartz artefacts identified in an eroding section of sand dune on high ground west of a bend in the Preston River.

The Woodcrest Rise Development Marked Tree other heritage place has been recorded as a marked tree and described by Parker and Lantzke (2001) as displaying footholds that old people had cut into its trunk to allow them to access a bee-hive in a hole left by a fallen branch.

The Hooper Place Burial is a prehistoric Aboriginal grave uncovered at 5-7 Hooper Place in suburban Bunbury (Corsini 2004).

In addition to those referred to above, numerous other archaeological surveys and investigations have also been undertaken in the wider region around the survey area (*e.g.* Australian Interaction Consultants 2004; Edwards *et. al.* 1997; Goode 2002; Goode and Harris 2007, 2008; Greenfeld 2002, 2003; Harris 2001; Harris & Webb 2007; Martinick McNulty 2000; McDonald Hales 1998; McDonald *et. al.* 2000; Murphy 1999; Murphy *et. al.* 1990; O'Connor *et. al.* 1989; O'Reilly 2007, 2011; Parker and Lantzke 2002, 2003; Parker *et. al.* 2000; Tempus Archaeology 2007) which have resulted in the identification, recording and reporting of numerous Aboriginal archaeological sites, the majority of which are small open artefact scatters that are generally located near or adjacent to drainage features or other ephemeral water sources.

PREVIOUS ARCHEOLOGICAL RESEARCH

Bunbury in general and the survey area in particular, are located on the Swan Coastal Plain that is contained within the broader south-western region of Western Australia. Previous archaeological research conducted in the south-west 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.*38,000 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.

The artefact assemblages at the majority of previously recorded sites on the Swan Coastal Plain are dominated by quartz. Many sites also contain a proportion of fossiliferous chert, a superior raw material for artefact manufacture. The sources of this material, believed to lie off the Western Australian coast in the general vicinity of Mandurah, were submerged approximately 6,000 years ago with the last eustatic change, a 140 metre rise in sea level (Glover 1975). Although the timing of the loss of access to this resource is not precise, the presence of fossiliferous chert in an assemblage may indicate the relative age of a site. Hallam (1987) developed a relative dating scheme based on the relative proportions of lithic material and artefact types represented in artefact assemblages that is outlined as follows. Sites classified as Early Phase assemblages include artefacts of fossiliferous chert. Middle Phase assemblages contain backed artefacts and adzes, while Late Phase assemblages are quartz-rich with high proportions of chips. Final Phase assemblages are those with worked glass and/or ceramic artefacts. Assemblages could, of course, belong to more than one phase (Hallam 1987:20). Although there are obvious inadequacies with this approach it is one of the only methods available for assigning a relative date to open artefact scatters on the Swan Coastal Plain.

The majority of previously recorded archaeological sites on the Swan Coastal Plain are usually found on intact or deflated Holocene dunes and represent a general background scatter reflecting single activity episodes or ephemeral activities. Much of the internal complexity of these sites has been destroyed due to natural processes such as aeolian deflation, or from disturbance as a result of development.

The distribution of archaeological sites on the Swan Coastal Plain is not uniform. Larger sites and site clusters are found at highly favourable locations indicating that these locations were occupied repeatedly over a long time frame. Favoured locations on the coastal plain included areas of predictably high productivity such as those with reliable fish runs and large seasonal game resources (Anderson 1984; Meagher and Ride 1979). At times of plenitude this resource security facilitated the support of large gatherings which served to enhance group identity and cohesion (Gibbs 1987). These favourable locations correspond to the major wetlands, lakes and estuaries of the coastal plain and the rivers that drain into them. The vast majority of sites that have been located are within 500 metres of water sources, indicating that Aboriginal habitation of the area was closely linked to the availability of wetland resources. The high seasonal productivity and the availability of fresh water at wetlands would clearly have made them a focus for Aboriginal habitation.

The results of previous archaeological surveys and research, as well as the data on registered sites presented above, demonstrates the types of Aboriginal archaeological sites already known to exist in the wider region around the designated survey area. In addition to this, these results, together with the environmental information already discussed, enables predictions to be made about probable site locations and the types of archaeological material and/or sites which could reasonably be expected to be found as a result of the survey of the designated survey area. The underlying geology and the vegetation regime within the survey area preclude the likelihood of sites such as quarries, rock shelters, engravings or art sites being present. The types of archaeological sites or material, if any, that are most likely to be located within the designated survey area would be various types of lithic artefacts either singularly or in scatters and possibly skeletal material or burials.

SIGNIFICANCE OF ARCHAEOLOGICAL SITES

The scientific significance of an archaeological site is determined by its ability to provide information that can address regional and site specific questions and by its representativeness (Bowdler 1984). Unique sites are more significant than common sites and sites with stratified deposits are more significant than un-stratified sites. It should be noted that significance is a mutable quality, changing as more sites are recorded, as research questions are answered and as new research directions arise.

Some research questions that any archaeological sites in the survey area may address include;

- what is the antiquity of the Aboriginal occupation of the Swan Coastal Plain?
- what social and technological changes, if any, may have occurred in the region in the mid-Holocene?
- specific patterns of occupation on the Swan Coastal Plain?
- the dating of industrial sequences in the region.

SURVEY METHODS

The archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area was undertaken in January 2012 by archaeologists [REDACTED] and [REDACTED]. The methods utilised prior to and during the archaeological survey are outlined below.

Prior to undertaking the field component of the archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area, a search of the Aboriginal Sites Database at the Department of Indigenous Affairs (WA) was made to determine if any Aboriginal archaeological sites, or sites with an archaeological component, or any other heritage places, are located within or adjacent to the 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 site files pertaining to other heritage places. A review of reports detailing the results of previous archaeological surveys and investigations carried out in the vicinity of the survey area was also undertaken as was a review 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.

That part of the survey area between Cokelup Road and Jilley Road and which is traversed by a narrow ephemeral drainage line, was targeted and scrutinised for the presence of Aboriginal archaeological material by walking along the sides and margins of this drainage line and examining the exposed banks and adjacent cleared ground. In general, ground visibility in this part of the survey area was excellent and averaged approximately 80%.

The remainder of the survey area was surveyed for the presence of Aboriginal archaeological sites by walking a series of transects along the entire length of the survey area. These transects followed the general alignment of the survey area and were spaced at approximately 20m to 30m intervals.

In general, ground visibility throughout the survey area was variable and ranged from as low as <10% in some parts as a result of grass cover and leaf litter, to as high as approximately 40% throughout the remainder. Areas of excellent visibility (>80%) were limited to cleared fire breaks, fence lines, tracks and other opportunistic exposures. It is noted here that where ground visibility was very low, adjacent cleared fence lines and fire breaks afforded excellent ground visibility at approximately >80%.

RESULTS

As a result of research undertaken at the Heritage and Culture Division, Department of Indigenous Affairs (WA) and a search of their Aboriginal Sites Database prior to the archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area, it was established that no registered Aboriginal archaeological sites or sites with an archaeological component are located within the survey area. However, it was established that one ‘other heritage place’ (Bunbury Bypass Archaeological Site 1 DIA 18884) has been recorded at a position that places it partially within the survey area (Figure 7).

The Bunbury Bypass Archaeological Site 1 (DIA 18884) was initially identified during an archaeological survey of the proposed Bunbury Bypass Road over fifteen years ago (Hammond and O’Reilly 1995). According to Hammond and O’Reilly (1995), the Bunbury Bypass Archaeological Site 1 (DIA 18884) is located approximately 30m to the southwest of the intersection of Hasties Road and Allenville Road. They described it as a very low density artefact scatter situated within a large dam structure which measures approximately 50m x 100m. They identified two discrete artefact clusters on the dam wall, one in the southwest corner and one in the southeast corner which combined contained a total of fourteen artefacts. Hammond and O’Reilly (1995:31) subsequently recorded these artefacts and identified four complete flakes (28.6%), nine flake fragments (64.3%) and one core fragment (7.1%), all of which had been manufactured on quartz.

During the course of fieldwork associated with the archaeological survey described in this report, the Bunbury Bypass Archaeological Site 1 (DIA 18884) was visited and re-recorded. Its precise location and extent was determined and its position recorded as accurately as possible using a Garmin GPSMAP 62 series hand held GPS. The associated spatial data was recorded in Map Grid of Australia (MGA) co-ordinates using the Geocentric Datum of Australia (GDA) 1994 and co-ordinates given below (Table 3) represent the approximate centre of the site. The extent of the site was also determined and clearly marked with pink flagging tape and a series of co-ordinates recorded which define its boundary. Details of the Bunbury Bypass Archaeological Site 1 (DIA 18884) are given in Table 4 and it is described and discussed below.

No other Aboriginal archaeological sites or material were identified as a result of the archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area.

Table 3: Details of the Aboriginal archaeological heritage place identified within the survey area.

SITE ID.	Name	Location (Zone 50)		Site Type	Site Extent	Estimated Number of Artefacts	Significance
		East	North				
18884	Bunbury Bypass Archaeological Site 1	375149	6302418	Artefact Scatter	100m x 200m	20	Very Low



Figure 7: Archaeological survey results, blue polygon showing actual extent of DIA 18884 Bunbury Bypass Archaeological Site 1, red polygon showing Survey Corridor and green polygon showing DIA buffered site extent.

SITE DESCRIPTION

DIA 18884 Bunbury Bypass Archaeological Site 1

MGA co-ordinates 375149mE and 6302418mN

The Bunbury Bypass Archaeological Site 1 site is a diffuse artefact scatter that is located on the south side of Hasties Road immediately west of the corner with Allenville Road. It was identified within what appears to have been a dam structure where an area of yellow sand has been excavated and either removed or used to construct the southern dam wall. Fences parallel the northern and eastern boundaries of the site (Figure 10). It appears that the area within the site has been universally disturbed in the past. Vegetation within this site was extremely open and low and dominated by low (<0.3m) grasses with some bushes to <1m at the western end of the site and several trees and bushes to 2m-3m at its eastern end. As a consequence, ground visibility in and around the Bunbury Bypass Archaeological Site 1 artefact scatter was excellent and averaged approximately 80% (Plate 1). The surface geology in and around this site can be characterised as yellow sand. The Bunbury Bypass Archaeological Site 1 artefact scatter has maximum dimensions of approximately 100m NS x 200m EW and its boundary is defined by the co-ordinates given in Table 4.

Table 4: MGA co-ordinates defining the boundary of the Bunbury Bypass Archaeological Site 1 artefact scatter.

EASTING (mE)	NORTHING (mN)	EASTING (mE)	NORTHING (mN)
375084	6302440	375170	6302392
375283	6302409	375201	6302467
375081	6302405	375204	6302397
375284	6302439	375168	6302467
375107	6302376	375239	6302388
375266	6302460	375135	6302467
375140	6302370	375280	6302378
375236	6302467	375105	6302466

It is estimated that the Bunbury Bypass Archaeological Site 1 artefact scatter contains less than twenty artefacts that have been manufactured exclusively on quartz. A single piece of quartz debris was identified at the western end of the site while one quartz backed blade (Plate 2), one quartz complete flake (Plate 3) and approximately fifteen pieces of quartz debris were identified at the eastern end of the site. Observations made at this site indicate that its artefact assemblage consists predominantly of small flaked pieces and flake fragments. On the basis of the above estimates, average artefact density has been calculated at approximately 0.001 artefacts/m² across the entire site. However, it is noted that artefacts are concentrated at the eastern end of the site. The distribution of the artefacts observed during the recording the Bunbury Bypass Archaeological Site 1 artefact scatter is probably a result of disturbance associated with the construction of the dam and not an internal feature of the site. An examination of exposed vertical sections at the eastern and western ends of the site did not reveal any cultural material *in situ* nor did it reveal any visible stratigraphy.

The Bunbury Bypass Archaeological Site 1 artefact scatter is interpreted as a camp site that was probably occupied on one or two occasions. While a single quartz backed blade was identified, no grinding material or other retouched/utilised artefacts were observed at this site and although artefacts may be present below the surface, there is little or no potential for it to contain stratified cultural deposits. The artefact assemblage at the Bunbury Bypass Archaeological Site 1 artefact scatter is very small, unremarkable and generally typical of other artefact scatters located in the wider region. As a result of its size, limited artefact assemblage and disturbed context, the Bunbury Bypass Archaeological Site 1 artefact scatter has little potential to address any of the research questions outlined above. Consequently, the Bunbury Bypass Archaeological Site 1 artefact scatter is assessed here as having very low archaeological significance.



Figure 8: Plate 1. Looking east from west end of the Bunbury Bypass Archaeological Site 1 artefact scatter.

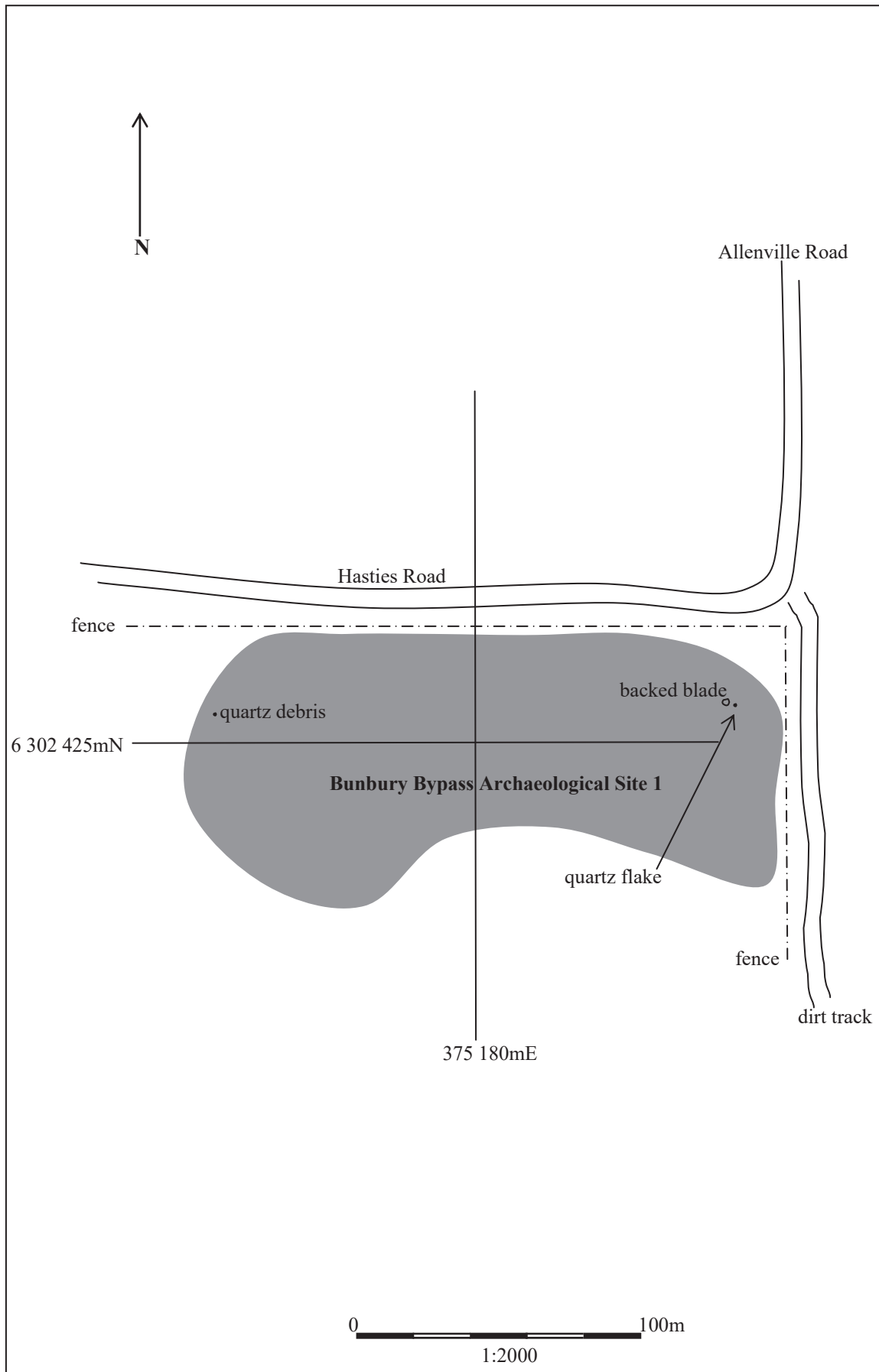


Figure 9: Sketch map showing location of the Bunbury Bypass Archaeological Site 1 artefact scatter.

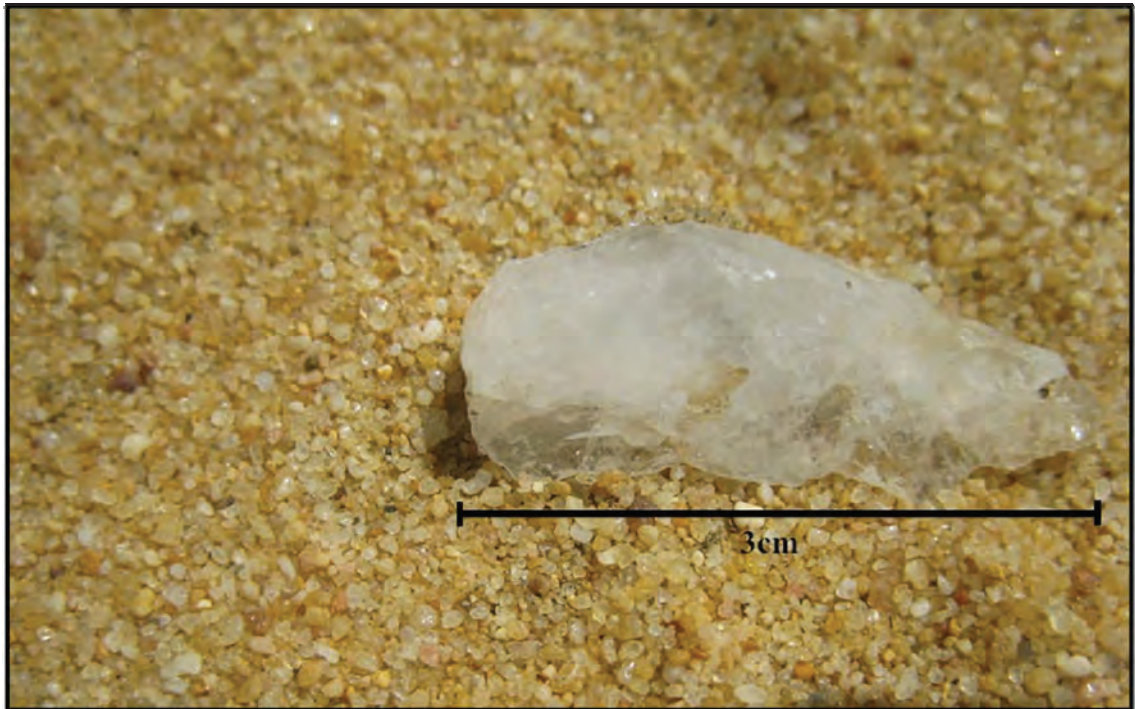


Figure 10: Plate 2. Quartz backed blade *in situ* in the Bunbury Bypass Archaeological Site 1 artefact scatter.



Figure 11: Plate 3. Quartz flake *in situ* in the Bunbury Bypass Archaeological Site 1 artefact scatter.

CONCLUSIONS

DISCUSSION

An archaeological survey for Aboriginal archaeological sites within the Bunbury Outer Ring Road (Southern Section) Project Area, centred approximately 9km SSE of the Bunbury City centre, was undertaken on behalf of GHD Pty Ltd by archaeologists [REDACTED] and [REDACTED] in January 2012. The Bunbury Outer Ring Road (Southern Section) Project Area comprises a single discrete survey area that is irregularly shaped and which extends for approximately 9km from South Western Highway near the intersection of Centenary Road to Bussell Highway between Woods Road and Calinup Road. It varies in width from 50m to 150m and traverses an area that comprises cleared paddocks and road reserve corridors with some patches of remnant bush. In general, the majority of the survey area has been universally disturbed. GHD Pty Ltd on behalf of Main Roads Western Australia proposes to construct a dual carriageway and associated overpasses and service roads within the Bunbury Outer Ring Road (Southern Section) Project Area.

As a result of research undertaken at the Heritage and Culture Division, Department of Indigenous Affairs (WA) and a search of their Aboriginal Sites Database prior to the archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area, it was established that no registered Aboriginal archaeological sites or sites with an archaeological component are located within the survey area. However, it was established, on the basis of information given on the Department of Indigenous Affairs' Aboriginal Sites Database that one 'other heritage place' (Bunbury Bypass Archaeological Site 1) has been registered at a position that places it in a position that abuts and is encompassed by the survey area. As can be seen in Figures 5 and 6, the Bunbury Outer Ring Road (Southern Section) Project Area appears to encompass the Bunbury Bypass Archaeological Site 1 other heritage place.

It is noted here that information pertaining to the Bunbury Bypass Archaeological Site 1 (DIA 18884) 'other heritage place' has been reported to the Registrar of Aboriginal Sites and assessed by the Site Assessment Group. This is not the final assessment. The final assessment is yet to be determined by the Aboriginal Cultural Material Committee. Consequently, the Bunbury Bypass Archaeological Site 1 (DIA 18884) appears on the Department of Indigenous Affairs' Aboriginal Sites Database as 'Other Heritage Place'. Despite this, the provisions of the *Aboriginal Heritage Act 1972* still apply to this other heritage place until it is assessed as a place to which the *Aboriginal Heritage Act 1972* does not apply.

As previously stated, the Bunbury Bypass Archaeological Site 1 (DIA 18884) was initially identified during an archaeological survey of the proposed Bunbury Bypass Road over fifteen years ago (Hammond and O'Reilly 1995). During the course of the fieldwork associated with the archaeological survey described in this report, the Bunbury Bypass Archaeological Site 1 (DIA 18884) was visited and re-recorded (see Site Description in Results). As a result of this re-recording the Bunbury Bypass Archaeological Site 1 (DIA 18884) location, extent, artefact distribution and artefact assemblage were found to be consistent with the descriptions given by Hammond and O'Reilly (1995). Furthermore, it is noted here that Hammond and O'Reilly (1995) recorded all visible artefacts and identified four complete flakes (28.6%), nine flake fragments (64.3%) and one core fragment (7.1%), all of which had been manufactured on quartz.

In general, the artefact assemblage observed at the Bunbury Bypass Archaeological Site 1 (DIA 18884) artefact scatter appeared mundane and was dominated by flaked pieces and flake fragments that have been manufactured exclusively on quartz. Although a single backed blade was noted, no grinding material or other retouched and/or utilised artefacts were observed at this site and although artefacts may be present below the surface, there is little or no potential for it to contain stratified cultural deposits.

Given the features outlined above, the very small Bunbury Bypass Archaeological Site 1 (DIA 18884) artefact scatter is interpreted as a campsite that was probably visited on only one or two occasions. The artefact assemblage at this site is very small, generally unremarkable and has little potential to address the research questions outlined in 'Significance of Archaeological Sites.' Consequently, this site is assessed here as having very low archaeological or scientific significance.

It is noted here that the Aboriginal archaeological site identified within the survey area has been assessed on the basis of its archaeological or scientific significance only. It is pointed out that this site may also have cultural and/or social significance to Aboriginal people and that the opinion of the appropriate Aboriginal people should be sought before any planning decisions are made which may impact upon this site.

The entire length of the Bunbury Outer Ring Road (Southern Section) Project Area was surveyed and examined for the presence of Aboriginal archaeological sites and/or material using regularly spaced linear transects. The low surface visibility encountered in some parts the survey area can cause sites and archaeological material to be overlooked. A moderate to dense cover of grass and leaf litter in some parts of the survey area made it very difficult to see or find any Aboriginal archaeological material that may have been on the obscured ground surface. However, it should be noted that searches of fence lines, fire breaks and cleared tracks and their margins as well as other opportunistic exposures with high surface visibility adjacent to these parts of the survey also yielded no Aboriginal archaeological sites or material. Therefore, it is considered that the scarcity of Aboriginal archaeological sites and/or material within the low visibility parts of the survey area is real and not simply a product of poor visibility.

Given the degree of surface visibility in general throughout the survey area 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. GHD Pty Ltd and Main Roads Western Australia should be aware of this when undertaking ground disturbing work or any other activities.

RECOMMENDATIONS

On the basis of the results of the archaeological survey of the Bunbury Outer Ring Road (Southern Section) Project Area, and the above discussion it is recommended that;

- 1) GHD Pty Ltd and/or Main Roads Western Australia be allowed to proceed with their proposal to construct a dual carriageway and associated overpasses and service roads within the Bunbury Outer Ring Road (Southern Section) Project Area, on the condition that they avoid any impact upon or disturbance to heritage place Bunbury Bypass Archaeological Site 1 (DIA 18884).
- 2) If it is necessary to disturb any part(s) of the heritage place Bunbury Bypass Archaeological Site 1 (DIA 18884), GHD Pty Ltd and/or Main Roads Western Australia, as required under section 18 of the Western Australian *Aboriginal Heritage Act 1972*, need to apply to the Minister for Indigenous Affairs for consent to proceed with activities that will disturb Aboriginal heritage sites.
- 3) If such an application is made, consent should be granted to proceed with activities that will disturb heritage place Bunbury Bypass Archaeological Site 1 (DIA 18884) unconditionally as this place and its artefact assemblage has been previously recorded in detail.
- 4) In the event of any artefactual material or skeletal material being discovered in the course of mineral exploration activities or any other activities, work should stop while the Department of Indigenous Affairs carry out an investigation of the site. In the case of skeletal material being uncovered, work must cease immediately and the Western Australian Police must be notified.
- 5) GHD Pty Ltd and/or Main Roads Western Australia 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.

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APPENDIX 1: SITES REGISTER SEARCH



Search Criteria

1 sites in a search polygon. The polygon is formed by these points (in order):

MGA Zone 50	
Northing	Eastng
6299057	371102
6300853	373679
6302457	374339
6303355	375203
6303376	375299
6304410	375886
6305077	377742
6304838	377835
6304812	377541
6300242	373672
6299004	371111
6299057	371102

Disclaimer

Aboriginal sites exist that are not recorded on the Register of Aboriginal Sites, and some registered sites may no longer exist. Consultation with Aboriginal communities is on-going to identify additional sites. The AHA protects all Aboriginal sites in Western Australia whether or not they are registered.


Copyright

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Legend

Restriction	Access	Coordinate Accuracy
N No restriction	C Closed	Accuracy is shown as a code in brackets following the site coordinates. [Reliable] The spatial information recorded in the site file is deemed to be reliable, due to methods of capture. [Unreliable] The spatial information recorded in the site file is deemed to be unreliable due to errors of spatial data capture and/or quality of spatial information reported.
M Male access only	O Open	
F Female access	V Vulnerable	

Status

L - Lodged	ACMC Decision Made
Information lodged, awaiting assessment	<div style="text-align: center;">  </div> R - Registered Site I - Insufficient information S - Stored Data

Spatial Accuracy

Index coordinates are indicative locations and may not necessarily represent the centre of sites, especially for sites with an access code "closed" or "vulnerable". Map coordinates (Lat/Long) and (Easting/Northing) are based on the GDA 94 datum. The Easting / Northing map grid can be across one or more zones. The zone is indicated for each Easting on the map, i.e. '500000;Z50' means Easting=500000, Zone=50.

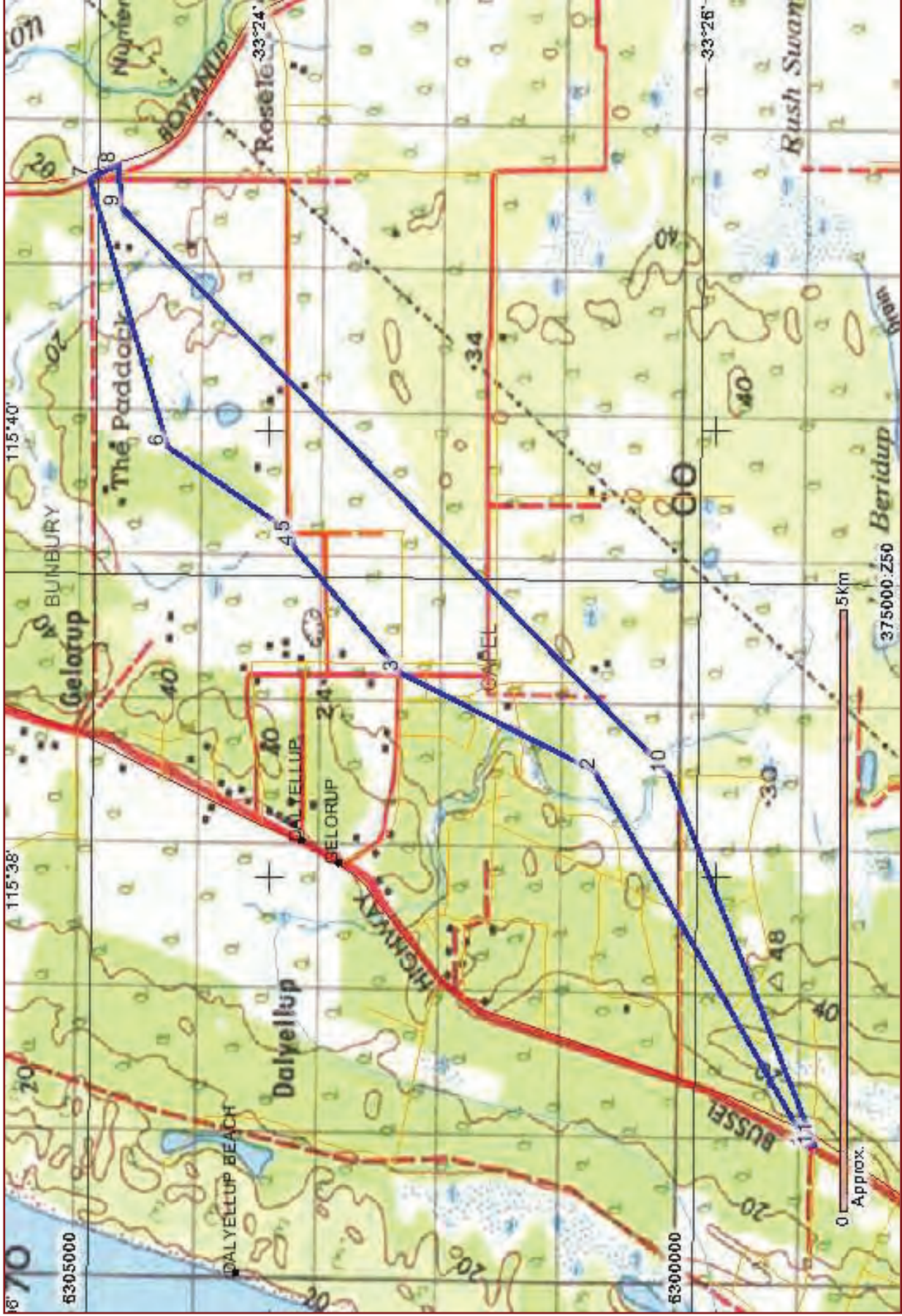
Sites Shown on Maps

Site boundaries may not appear on maps at low zoom levels



List of Registered Aboriginal Sites with Map

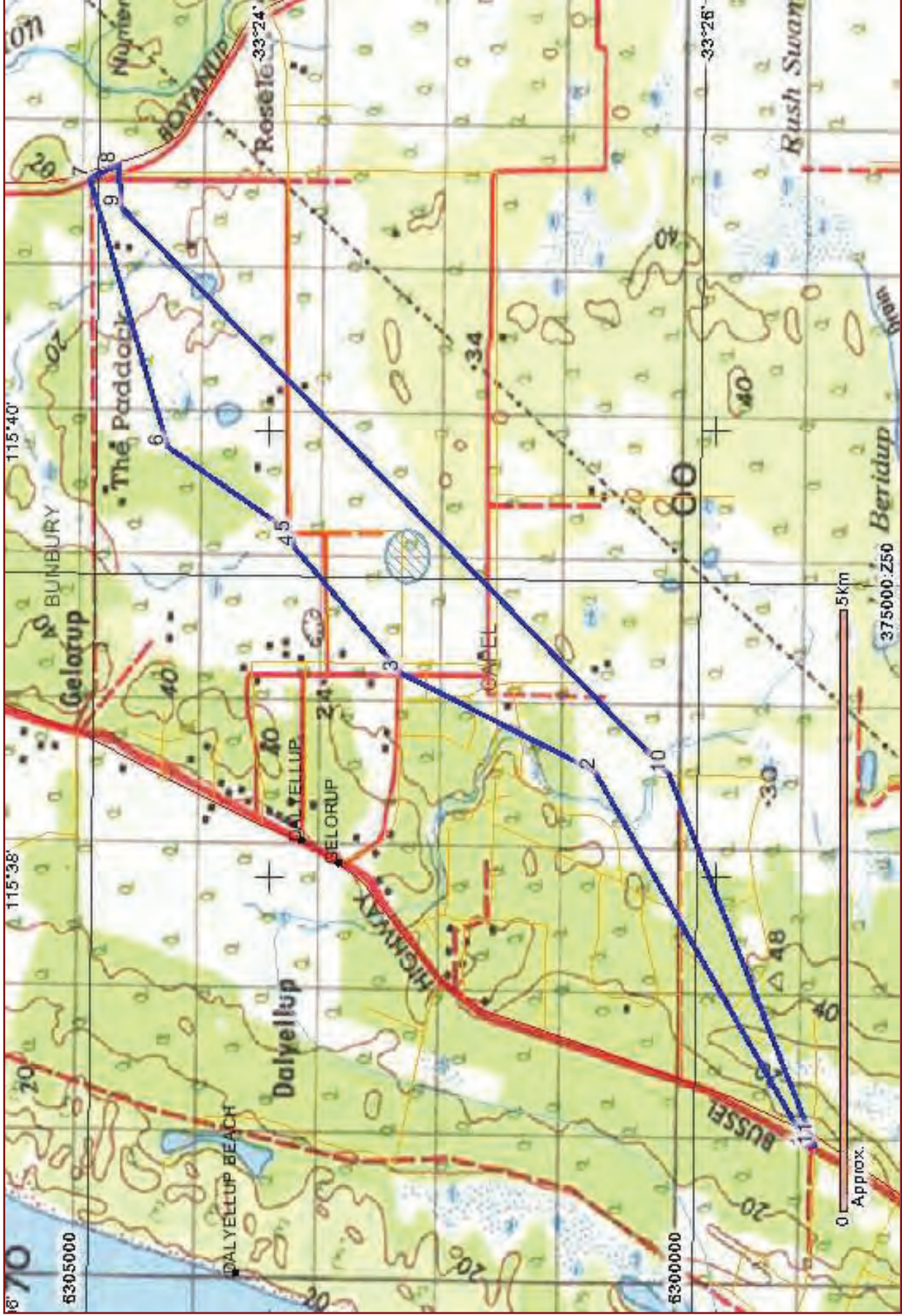
No results





List of 1 Other Heritage Places with Map

Site ID	Status	Access	Restriction	Site Name	Site Type	Additional Info	Informants	Coordinates	Site No.
18884	L	O	N	Bunbury Bypass Archaeological Site 1	Artefacts / Scatter			375149mE 6302418mN Zone 50 [Reliable]	



Legend

Selected Heritage Sites

Other Heritage Places

Town

Map Area

Search Area

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Geothermal Application, Geothermal Title, Mining Tenement, Petroleum Application, Petroleum Title boundary data copyright © the State of Western Australia (DMP) (2012.4).

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Map Showing Registered Aboriginal Sites and Other Heritage Places



APPENDIX 2: LETTER OF ADVICE

Brad Goode & Associates Pty Ltd

Consulting Anthropologist
Heritage Assessments

79 Naturaliste Terrace
DUNSBOROUGH WA 6281
(08) 9755 3716
bradnlee@westnet.com.au
ACN: 134 732 040
ABN: 41 134 732 040

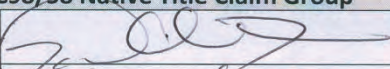


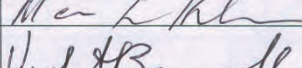
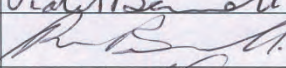
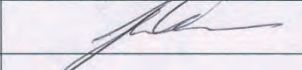

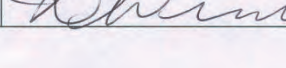

21st February 2012

We the undersigned have been consulted by Bradley Goode on behalf of Main Roads in regard to the Bunbury Outer Ring Road, Southern Section (Stage 2). We would like to make the following recommendations in relation to the Western Australian Aboriginal Heritage Act (1972)

* No sites of sig as defined by section 5 of the AHA identified

* Monitor Arch site Hastu Ad

* Request about naming of bridges

Gnaala Karla Booja WC98/58 Native Title Claim Group		
Joe Northover	21.2.2012	
Peter Michael	21.2.2012	
James Khan	21.2.2012	
Marie Khan	21.2.2012	
Violet Bennell	21.2.2012	
Ritchie Bennell	21.2.2012	
Les Wallam	21.2.2012	
Denis Hill	21.2.2012	
Dorothy Winmar	21.2.2012	

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



SiteID= 4879 BUNBURY 18

SiteID= 19795 Preston River

SiteID= 4881 BUNBURY 24

SiteID= 18884 Bumbury Bypass Archaeological Site 1

SiteID= 5688 STERLING BEACH DALYELLUP

SiteID= 24507 Bumbury 01-05-07/ISO-001 - ISO-005
 SiteID= 24507 Bumbury 01-05-07/ISO-001 - ISO-005
 SiteID= 18965 Woodcrest Rise Development Marked Tree

BUNBURY OUTER RING ROAD STAGE TWO JAN 2012

Legend
 - DIA Site Extents Jan 2012
 - BORR SURVEY CORRIDOR
 - roads

DATE
 30th Jan, 2012

SCALE - at A4
 1:15,000



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 GDA 1994 MGA Zone 50

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