



REPORT OF AN ABORIGINAL HERITAGE DUE DILIGENCE ASSESSMENT FOR THE PROPOSED HILLMAN NATURE RESERVE WALK TRAIL, WA

DECEMBER 2023

For Shire of West Arthur



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Julikan Rock in Hillman Nature Reserve (source: LocationsHub)

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

DISCLAIMER

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

SPATIAL INFORMATION

All spatial information contained in this report uses the Geocentric Datum of Australia (GDA20), Zone 50, unless otherwise specified.

AUTHORSHIP

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The State Government through the Department of Local Government, Sport and Cultural Industries is a major supporter of the Hillman Walk Trail Project in Western Australia. Sport and recreation creates vibrant, inclusive and connected WA communities.

KEY TERMS AND ABBREVIATIONS

ACH	Aboriginal Cultural Heritage
ACHA	<i>Aboriginal Cultural Heritage Act 2021</i> (to be repealed)
ACHMP	<i>Aboriginal Cultural Heritage Management Plan</i>
ACHIS	Aboriginal Cultural Heritage Information System
ACHknowledge Portal	Files and heritage survey reports can be accessed electronically upon request through the ACHknowledge portal.
Activity Area	Proposed work area / development envelope / project area
AHA	<i>Aboriginal Heritage Act 1972</i> (will be amended and will replace the ACHA)
AHIS	Former Aboriginal Heritage Inquiry System that functioned prior to 1 July 2023, now replaced by ACHIS.
DDA	Due Diligence Assessment
DPLH	Department of Planning, Lands and Heritage (administers both the Aboriginal and Historical Heritage Acts)
FPIC	Free, Prior and Informed Consent ¹
HA	<i>Heritage Act 2018</i>
Harm	In relation to Activity impacting ACH, including destroying or damaging ACH – except where that harm relates to an Aboriginal person acting in accordance with the person’s traditional rights, interests and responsibilities.
Study Area	Entire area subject to the due diligence assessment, including the proposed Activity Area.

¹ As per the UN Declaration on the rights of Indigenous Peoples:
https://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf

EXECUTIVE SUMMARY

Archae-aus was engaged by Shire of West Arthur to undertake an Aboriginal Cultural Heritage (ACH) Due Diligence Assessment for a proposed small walk trail network within the Hillman Nature Reserve, near Darkan townsite, Western Australia. The Due Diligence Area covers approximately 254.9 ha, incorporating bushland as part of the Class A Hillman Nature Reserve (247.6 ha), and three potential access routes into the reserve, to the north and east (Option 1: 1.9 ha; Option 2: 3.2 ha and Option 3: 2.2 ha) (Map 1).

Archae-aus have assessed the potential for any Aboriginal Cultural Heritage (ACH) within the Activity Area and have examined whether there are any potential constraints in relation to ACH under the *Aboriginal Cultural Heritage Act 2021* (ACHA) and the *Aboriginal Heritage Act 1972* (AHA). The *Aboriginal Cultural Heritage Act 2021* (ACHA) is set to be repealed and will be replaced by the former *Aboriginal Heritage Act 1972* (AHA) and its associated amendments; however, these changes have not yet taken effect and any activities conducted during the transition period will need to be compliant with the ACHA.

While the focus of this report is to identify known or potential Aboriginal Cultural Heritage (ACH), the potential for the proposed Activity to impact places of historical heritage importance and significance will also be considered, as per the obligations of the *Heritage Act 2018*. Additionally, some historical heritage places have important Aboriginal values that need to be considered under the ACHA.

It has been assessed that the proposed Activity will involve ground disturbance that is consistent with a **Tier 3 Activity**, as defined in the DPLH's ACH Management Code:

Tier 1 (item 24):

Clearing for tracks in a way that does not, over the course of 1 calendar year, involve any of the following — (a) removing more than 4 kg of material; (b) disturbing more than 10 m² of ground in total; (c) disturbing more than 1 m² of contiguous ground; (d) excavating to a depth of more than 0.5 m.

Tier 2 (item 37):

Clearing for tracks, other than as described in item 24, in a way that does not involve any of the following — (a) removing more than 20 kg of material; (b) disturbing more than 200 m² of ground in total; (c) disturbing more than 10 m² of contiguous ground; (d) excavating to a depth of more than 1 m.

Tier 3:

47. Clearing for tracks, other than as described in item 24 or 37. [i.e. disturbing more than 10 m² of contiguous² ground and possibly disturbing more than 200 m² of ground in total].

It is always encouraged that a relationship and dialogue with the local Aboriginal community be established early on in a Project to identify not just Aboriginal Cultural Heritage (ACH) but any key

² Sharing a common border, touching; next together in sequence.

social, economic, and/or environmental concerns and opportunities early on that might be relevant to the Project.

In addition, consulting with the Aboriginal Knowledge Holders at the start of the project can facilitate a process that follows the principles of Free, Prior and Informed Consent (FPIC) (see Legislative Context – UN Declaration on the Rights of Indigenous People).

SUMMARY OF THE RESULTS

Desktop research was undertaken to identify:

- The level of Activity (Tier 1-3) of the proposed project, according to the ACH guidelines
- Any previously recorded Aboriginal sites in the Activity Area and immediate surrounds.
- Any previously recorded historical heritage places.
- The proposed land use activities and associated levels of disturbance according to DPLH's Aboriginal Heritage Due Diligence Guidelines (2013).
- Any potential risk of harm to Aboriginal archaeological and/or ethnographic sites, at a preliminary desktop level.
- Any necessary approvals under the *Aboriginal Heritage Act 1972*.
- The appropriate Aboriginal organisations that should be consulted where necessary.

To inform this research, searches were carried out using the Department of Planning, Lands and Heritage's (DPLH) Aboriginal Cultural Heritage Inquiry System (ACHIS), and the Heritage Council's site database (InHerit). These inquiries were followed by a search of other sources of information, including the Archae-*aus* library and reports, and the catalogues of the State Records Office, State Library of WA, local libraries, Trove, and other online digital resources.

No known Aboriginal Cultural Heritage Places or Objects were identified through an Aboriginal Cultural Heritage Inquiry System (ACHIS) search. This includes any ACH on the ACH Directory, ACH Pending and ACH Historic layers. Further, the proposed Activity Area has not been previously surveyed according to the ACHIS.

The apparent absence of Aboriginal Cultural Heritage within the Activity Area can be attributed to the lack of heritage surveys, rather than the actual non-existence of sites. The Activity Area is considered an unaltered to minimally altered environment³, which includes granite bedrock pavement and outcrops which have a higher chance of containing ACH.

In summary, it has been assessed that:

1. The proposed activity is classed as a Tier 3 Activity overall, according to DPLH's ACH Guidelines (Figure 1).
2. There is a potential risk of harm to ACH across the Activity Area⁴.
3. Desktop research of the Activity Area revealed no known Aboriginal Cultural Heritage Places that intersect the Activity Area; however, this does not necessarily mean that the Activity Area is clear of ACH, potentially due to the lack of heritage survey coverage in the past.

³ https://www.wa.gov.au/system/files/2021-07/GD_Aboriginal_heritage_due_diligence.pdf

⁴ The term 'Activity Area' is in line with the ACH Guidelines and refers to the proposed project or study area that is being assessed.

4. A search of the Heritage Council's InHerit register revealed one historic heritage place (*Hillman Dam / P8808*) intersecting the Activity Area.
5. An archaeological and ethnographic heritage survey / ACH Investigation is required to formally identify any ACH within the Activity Area and to identify the key next steps in the ACH process.

Tier 3 Activity

The proposed Hillman Nature Reserve Walk Trail project has been assessed as a Tier 3 Activity under the *Aboriginal Cultural Heritage Act 2021* (or Significant Disturbance under the *Aboriginal Heritage Act 1972*). Under the *Aboriginal Cultural Heritage Act 2021* (ACHA) guidelines, the following process outlined in Figure 1 is required for this type of Activity. Due to the assessed potential for ACH within the Activity Area, it is advised that Shire of West Arthur proceed with Step 2.

Step 1. Desktop Due Diligence Assessment (this report)

Activity Tier confirmed as Tier 3.

Search the Directory for known ACH, Knowledge Holder names, LACHS(s) or other relevant Aboriginal Party.

Consult with DPLH about Directory results and further advice, if required.

Research archaeological, ethnographic, environmental and historical land use contexts.

Review any existing ACH reports.

Preliminary risk assessment.

Proponent to engage with LACHS or relevant Aboriginal Corporation.

If there is risk of harm to ACH, then proceed with Step 2. If not, then proceed with Activity.

Step 2. Assess risk of harm (formal risk assessment)

Continue to consult LACHS(s) about project.

Archaeological and ethnographic survey / site inspection.

Identify potential of risk of harm to ACH (based on desktop and consult/field assessments).

If there is risk of harm to ACH, then proceed to Step 3 - ACHMP. If not, proceed with Activity.

Step 3. Proceed with ACHMP if there is risk of harm to ACH

The ACHMP process generally requires at least three consultation meetings to work towards an endorsed ACHMP.

Meeting 1 - Proponent to outline proposed project background, objectives and outcomes to Aboriginal parties.

Meeting 2 - Persons consulted have opportunity to state and explain their position about the proposed activity, including about any ACH identified and how to avoid or minimise impact.

Meeting 3 - Proponent to discuss how the views provided in the second meeting will be addressed.

Figure 1. Due Diligence Assessment Flow Chart for Projects involving Tier 3 Activities

ADVICE

The desktop due diligence assessment is complete. Based on this assessment, Archae-**aus** **advise** that Shire of West Arthur are aware that:

1. This desktop Due Diligence Assessment examines the risk of harm to any known or potential ACH within the proposed Hillman Nature Reserve Work Trail Project Area, which includes future development works.
2. At the time of writing, the *Aboriginal Cultural Heritage Act 2021* (ACHA) is set to be repealed and will be replaced by the former *Aboriginal Heritage Act 1972* (AHA) and its associated amendments; however, these changes have not yet taken effect and any activities conducted during the transition period will need to be compliant with the ACHA.
3. A search of the Aboriginal Cultural Heritage Inquiry System (ACHIS) reveals that there is no known Aboriginal Cultural Heritage (ACH) Places intersecting the Activity Area; the closest ACH Places are over 10 km from the Activity Area (*Kangaroo Print Pool (Jennamarta)* / DPLH ID 30064), (*Arthur River* / DPLH ID 37754) and (*Black Wattle* / DPLH ID 4501).
4. It is currently uncertain as to whether the absence of any ACH within the Activity Area is a reflection of the lack of heritage surveys rather than the actual absence of Aboriginal Cultural Material (ACH) altogether.
5. A search of the Heritage Council's InHerit register revealed one historic heritage place intersecting the study area (*Hillman Dam* / P8808).
6. That nearby places of historic value may be impacted by the proposed Activity.
7. The desktop research indicates that there is **moderate to very high potential** for encountering Aboriginal Cultural Heritage in the Activity Area.
8. Based on the preliminary risk assessment for the Activity Area, an archaeological and ethnographic heritage survey is required to confirm if there is any Aboriginal Cultural Heritage that is at risk of harm by the proposed Hillman Nature Reserve Walk Trail project, and to confirm whether there is further ACH within areas of moderate to very high archaeological or ethnographic potential, or if the works pose any indirect risks to the nearby ACH Places.
9. The heritage surveys will confirm the required next steps, including any necessary approvals, based on a formal assessment of the risk of harm to any ACH within the Hillman Nature Reserve Activity Area.
10. That the Shire of West Arthur, as the main proponent, will need to submit an Activity Notice to GKBAC, in order to confirm and facilitate the recommended ACH Investigations / heritage surveys, and so that the appropriate Wilman representatives can be nominated for the heritage surveys.

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SECTION ONE – INTRODUCTION

PROJECT BACKGROUND

Archae-aus Pty Ltd has been engaged by the Shire of West Arthur to undertake an Aboriginal desktop assessment for the proposed Hillman Nature Reserve Walk Trail, near Darkan townsite, Shire of West Arthur on the Eastern side of the Darling Scarp of Western Australia.

The objective of the proposed project is to develop a walk trail from the Dardadine section of the Collie-Darkan Rail trail to Hillman Nature Reserve / Julikan Rock and through the historic stone channels in the reserve. Hillman Nature Reserve is an A Class Nature Reserve designated for water and conservation of flora and fauna (R16904). Currently, walk trails are not permitted in the area. There are a number of gazetted road reserves which lead to the Hillman Reserve.

Archae-aus understands that these initial investigations are necessary to determine the Aboriginal heritage constraints and requirements for development of a walk trail within the Hillman Reserve.

ACTIVITY AREA

The Project Area, Hillman Nature Reserve / Julikan Rock, is within the Shire of West Arthur, 5.5 km northeast of the Darkan townsite, 2 km west of Hillman, just over 6 km south of Dardadine, and 23 km west of Arthur River. Darkan is located 211 km from Perth, 119 km from Bunbury and 236 km from Albany.

The entire Project Area, being the whole of Hillman Nature Reserve and the three options for road access into the Reserve consists of approximately 247.6 ha of land (excluding road access route options) (Table 3 and Map 1).

Table 3. Land parcel details for the proposed Hillman Nature Reserve Project Area.

Area	Location / Details	Approx. Area of Interest (ha)
Hillman Nature Reserve Walk Trail Project Area	Hillman Nature Reserve, Darkan. Proposal for two trail options to run throughout the Reserve.	247.6 ha
Option 1 Access Route	The gazetted road runs between properties and therefore provides the least disturbance to landowners. The section of the road reserve from the Hillman Dardadine Road to South Road is already fenced and a track exists in the area. The section from South Road to Hillman reserve is not fenced and is currently being farmed. This road also crosses over the Hillman River and would require installation of culverts or a bridge in order to cross the river. Parking could potentially be provided on Hillman Road or at the Reserve itself.	1.9 ha
Option 2 Access Route	A gazetted road that runs from the Darkan- Williams Road to Hillman Reserve. It does not join up with the Darkan to Dardadine section of the rail trail and therefore is not a preferred option.	3.2 ha
Option 3 Access Route	Currently how people access the Reserve. However, this requires access through a landowner's property along a	2.2 ha

Area	Location / Details	Approx. Area of Interest (ha)
	laneway. A gazetted road exists in the area (to the south from Hillman siding) which could be used but this would bisect the farmer's paddock. There has been consideration of a land swap arrangement to allow access along the laneway. However, the laneway passes close to the farmer's house and sheds and sheep work is carried out at the shed. It is therefore not considered to be the most appropriate option for accessing the reserve.	

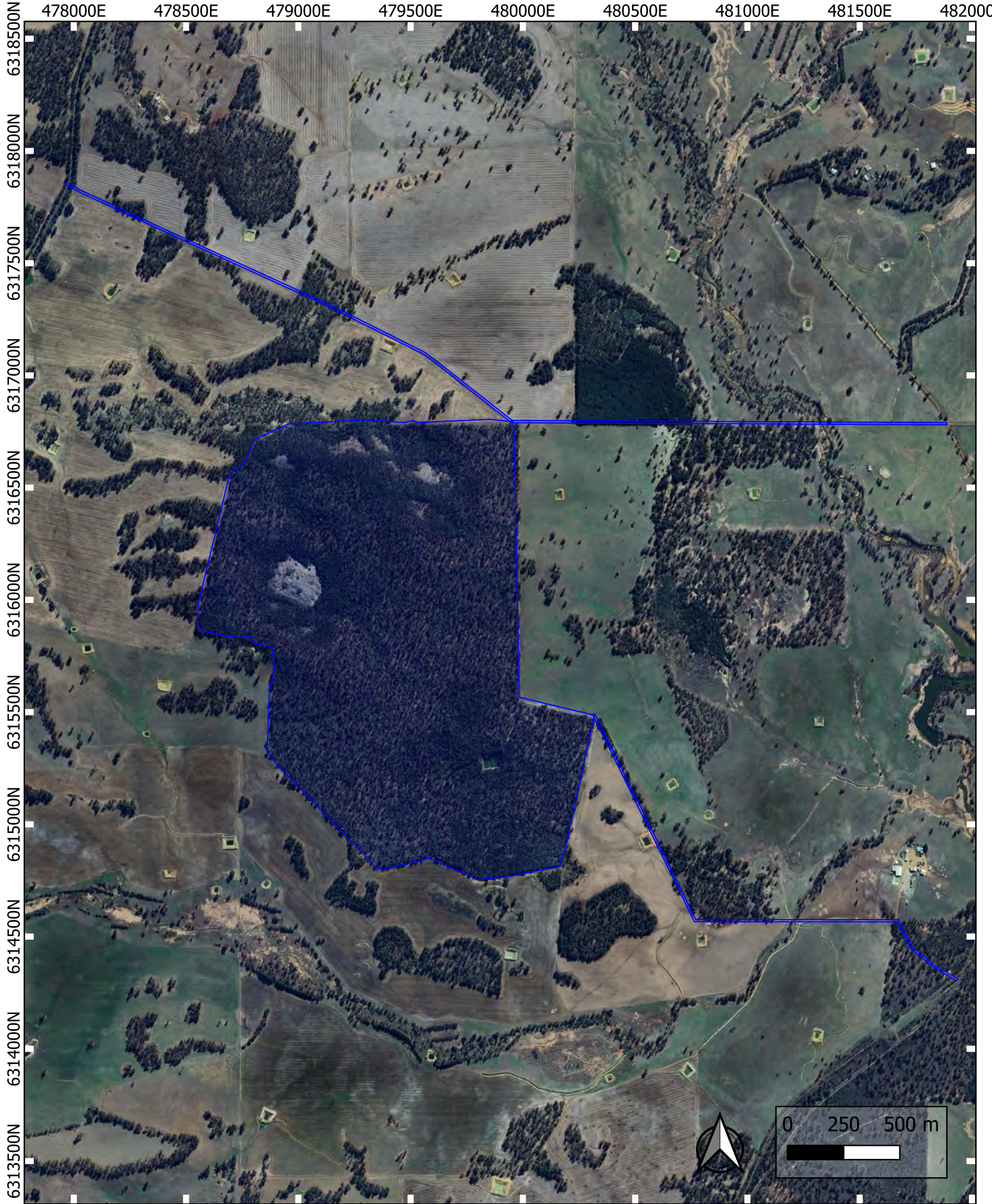
SCOPE OF SERVICES

The Shire of West Arthur has engaged Archae-aus to carry out the following Scope of Services in relation to the due diligence assessment, including:

- Desktop research into the registered Aboriginal archaeological and ethnographic sites, Other Heritage Places and previous archaeological assessments/surveys surrounding the Project Area. This includes requesting site files from the Department of Planning, Lands and Heritage (DPLH).
- Preparation of GIS maps that outline the study area, existing cultural heritage areas, and areas of potential archaeological risk.
- Provision of a desktop assessment Aboriginal heritage desktop results report which will examine the risk of direct and indirect impacts to historical and Aboriginal heritage and include a heritage constraints assessment.

To fulfil the above Scope, Archae-aus carried out the following:

- ▶ Desktop research and consideration of the results from the relevant registers and databases.
- ▶ Consideration of the coverage and reliability of previous surveys and associated reports.
- ▶ Identification and outline of engagement requirements and timeframes.
- ▶ Assessment of any potential impacts the proposed Activity will have on any Aboriginal Cultural Heritage that may be protected under the *Aboriginal Heritage Act 1972*.
- ▶ Identification of measures to avoid, mitigate, or manage impacts to Aboriginal Cultural Heritage in accordance with the *Aboriginal Heritage Act 1972* and best practice standards (see Legislation and Guiding Principles section).



Legend

Due Diligence Assessment Area



Map 1. Overview of Due Diligence Assessment Area

Drafted by Lauren Jolliffe, 13th September 2023. GDA20, Zone 50. Satellite imagery courtesy of Google and Wiki Maps.

LIMITATIONS

This due diligence assessment is desktop only, providing preliminary advice on any existing and potential archaeological and ethnographic values within the Activity Area. It is not to be solely relied on for the identification of all possible ACH that may be in the area. A field assessment is required due to the lack of previous heritage surveys and assessed high potential for heritage.

DUE DILIGENCE ASSESSMENT METHODS

The following methods were used to undertake the due diligence assessment:

- ▶ Desktop research into any registered Aboriginal archaeological and ethnographic sites, Other Heritage Places, and previous archaeological assessments/surveys within and surrounding the Activity Area. This includes requesting site files from the Department of Planning, Lands and Heritage (DPLH).
- ▶ Desktop research into any registered historical heritage places in or around the Activity Area that may hold significance to Aboriginal People and Cultural Heritage.
- ▶ Desktop research into previous and historical land use of the Activity Area, including areas of disturbance to determine areas of cultural heritage risk to be targeted during heritage surveys.
- ▶ Internal data search of Archae-*aus* library and reports.
- ▶ Preparation of GIS maps that outline the Activity Area, existing cultural heritage areas, and areas of potential archaeological risk.

LEGISLATION AND GUIDING PRINCIPLES

The following section briefly summarises the relevant legislation and guiding principles that may relate to the Activity Area.

The Burra Charter

The Burra Charter (Australia ICOMOS Charter for Places of Cultural Significance) is the foundational document for conserving Australia's cultural heritage. The Charter encapsulates two important aspects in conserving heritage places. First, it establishes the best practice principles and processes for understanding and assessing a place's significance, as well as developing and implementing a conservation plan. Second, the Charter defines and explains the five primary cultural values that may be ascribed to any place: aesthetic, historic, social or spiritual and scientific. These values are essential as they delineate the types and quality of information needed to accurately determine a heritage place's significance. Under the new *Aboriginal Cultural Heritage Act 2021*, ACH will be assessed using the Burra Charter values to determine if it is of exceptional importance to the State.

Aboriginal Heritage Legislation

WA Aboriginal Heritage Legislation

Aboriginal cultural heritage in WA has been protected by the *Aboriginal Heritage Act 1972* (the AHA), administered most recently by the Department of Lands, Planning and Heritage (DPLH). While a progressive piece of legislation in the 1970s, the AHA has come under increasing criticism in recent years and is widely recognised as not meeting 21st century best practice standards of heritage legislation. The destruction of Juukan Gorge by Rio Tinto in 2020 brought problems with the AHA into sharp focus, particularly the section 18 process for approving the destruction of Aboriginal Sites. This process was strongly criticised in *A Way Forward*, the final report of the Parliamentary Inquiry into the destruction of Juukan Gorge (Parliament of the Commonwealth of Australia, 2021). The committee

concluded that the original good intentions of the legislation ultimately failed and the law became in practice 'a mechanism through which the disturbance, damage and destruction of both physical and intangible Aboriginal cultural heritage has repeatedly taken place' (para 4.125). The committee attributed this to:

- Amendments that undermined the original purpose
- How legislation was interpreted and administered by successive Ministers.
- The prominence of section 18 as the basis for the system of damage by permit.
- The role of the Minister as arbiter for decisions about approval, to the exclusion of the voice and interests of traditional owners.

In summary, the 'AHA has failed to strike a balance between the needs and aspirations of the various parties and has excessively favoured the interests of proponents' (para 4.126).

Other problems with the AHA include the role of Aboriginal people in the protection of their heritage, including the absence of legislated representation on the ACHC, definitions of Aboriginal cultural heritage and the lack of integration with Native Title legislation.

The committee encouraged the WA government to continue its consultation with regard to its draft Aboriginal Cultural Heritage Bill, recommending that it addressed the concerns already expressed in submissions by Aboriginal people and that it accommodates 'the principles of free, prior and informed consent', conducting consultation 'in a way that accords with Aboriginal traditions of dialogue' (para 4.135).

The WA government passed the *Aboriginal Cultural Heritage Act 2021* (ACH Act) in December 2021. The objectives of this legislation were:

- To recognise the importance of Aboriginal cultural heritage and Aboriginal custodianship.
- To recognise, protect and preserve Aboriginal cultural heritage.
- To manage activities that may harm Aboriginal cultural heritage.
- To promote an appreciation of Aboriginal cultural heritage.

Key features included:

- Updated Aboriginal cultural heritage definition, replacing a 'focus on sites and artefacts' with a recognition of Aboriginal 'living culture' and 'cultural landscapes'.
- Recognised Aboriginal custodianship and control of cultural heritage, including encouraging the return of secret and sacred objects.
- A new directory of Aboriginal cultural heritage, led by the Aboriginal Cultural Heritage Council (ACH Council).
- Establishment of the ACH Council, and the Local Aboriginal Cultural Heritage Services (LACHS) to manage Aboriginal cultural heritage.
- Protecting areas of outstanding significance by declaration of Protected Areas.
- Managing activities that may harm Aboriginal cultural heritage through Aboriginal Cultural Heritage Management Plans agreed by Aboriginal parties and proponents.
- Stronger compliance and enforcement, with heavier penalties, and the Minister able to issue stop activity and remediation orders.

DPLH published the Aboriginal Cultural Heritage (ACH) guidelines, which outlined the new ACHA process, in April 2023 and the survey and investigation guidelines in June 2023. The ACHA was proclaimed on 1 July 2023 and the *Aboriginal Heritage Act 1972* (the AHA) repealed.

The WA government has since announced that it will repeal the ACHA and instead introduce amendments to the AHA. The proposed amendments attempt to address the criticisms of the Section 18 process by:

- Formal recognition of Native Title holders and rights of appeal in respect of s18 decisions by the Minister.
- Replacement of the ACMC with an Aboriginal Heritage Committee, based on the composition of the Aboriginal Heritage Council established under the ACHA, with male and female Aboriginal co-chairs, and preferably a majority of members of Aboriginal descent.
- Requirement to bring any new information with respect to a s18 approval.

Under the AHA (s17) it remains an offence to alter an Aboriginal site in any way, including collecting artefacts; conceal a site or artefact; or excavate, destroy or damage in any way an Aboriginal site or artefact; without the authorisation of the Registrar of Aboriginal Sites under Section 16 or the Minister of Aboriginal Affairs under Section 18 of the AHA.

An Aboriginal site is defined in Section 5 of the AHA as:

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

Section 39 (2) states that:

In evaluating the importance of places and objects the Committee [i.e. the ACMC] shall have regard to —

- a) any existing use or significance attributed under relevant Aboriginal custom;
- b) any former or reputed use or significance which may be attributed upon the basis of tradition, historical association, or Aboriginal sentiment;
- c) any potential anthropological, archaeological, or ethnographical interest; and
- d) aesthetic values.

Section 39 (3) stated that:

Associated sacred beliefs, and ritual or ceremonial usage, in so far as such matters can be ascertained, shall be regarded as the primary considerations to be taken into account in the evaluation of any place or object for the purposes of this Act.

Information about heritage places and their legal status has been available through the DPLH Aboriginal Heritage Inquiry System (AHIS). There are two broad categories by which the AHIS characterised heritage places:

- Registered Aboriginal Sites, which the ACMC has determined meet the criteria for inclusion on the Site Register under s5 and s39.
- Other Heritage Places, these are places which the ACMC has not yet assessed (Lodged) or has determined not to be sites within the meaning of s5 (Stored data/ not a site).

The ACHA established a new system of access to information about Aboriginal cultural heritage. All Registered and Lodged Sites were included in the ACH Directory, with information about Stored data /not a site accessible through a historic map layer.

Approval Processes

Currently, WA is operating under the soon to be repealed *Aboriginal Cultural Heritage Act 2021* (ACH Act 2021), which has only been in effect since the beginning of July 2023. In August 2023, the WA State Government announced that they will repeal the ACH Act 2021 and that an amended version of the *Aboriginal Heritage Act 1972* (AHA 1972) will be revived. Currently, the repeal process has not been completed and no date has been set for the implementation of the new system; however, it is anticipated that this will occur before the end of 2023 and likely the beginning of November. Accordingly, the project will likely need to comply with the *Aboriginal Heritage Act 1972* (AHA 1972) in the very near future, although DPLH advise that the ACH Act 2021 be complied with until then.

The approval process is slightly different between the ACH Act 2021 and AHA 1972, although it is likely that the next steps in the due diligence process, regardless of which Act, will need to include an ACH Investigation / Heritage Survey to formally identify any Aboriginal Cultural Heritage (ACH) that may be impacted by the proposed works. Following a survey, approvals may be required which are dependent on which Act is in effect. The different approval pathways are provided below for each Act.

Aboriginal Cultural Heritage Act 2021

- An ACHMP management plan is required for Tier 3 Activities (and in some cases Tier 2 Activities) that pose a risk of harm to ACH.
- An ACH Permit is required for Tier 2 Activities that pose a risk of harm to ACH.
- No approval is required for Tier 1 activities if the proponent takes reasonable steps to avoid or minimise risk of harm to any ACH.

If ACH is identified during the ACH Investigation / heritage survey and is at risk of harm and cannot be avoided, the following steps may be required:

1. An ACH management plan be developed for Tier 3 and in some cases, Tier 2 activities.
2. Continued engagement with the relevant Aboriginal parties.

If ACH is not identified during the ACH Investigation / heritage survey or any identified ACH can be avoided and is not at risk of harm, the following steps may be required:

1. The Activity can proceed with caution and reasonable steps are taken to minimise any remaining risk of harm to potential subsurface ACH⁵ (such as monitoring and/or following a Find Discovery procedure for unexpected finds, for example).
2. Continued engagement with the relevant Aboriginal parties is advisable for monitoring works (if required) and dealing with any unexpected finds (if relevant).

Aboriginal Heritage Act 1972

- Section 18 ministerial consent is required to use the Land for a specific purpose where it will impact archaeological and/or ethnographic sites that are either on the Aboriginal Heritage Register or need to be considered for entry onto the register by the Aboriginal Cultural Material Committee (ACMC) (see section 5 of the AHA).
- A Regulation 7 and 10 permit can be sought for certain low risk activities, such as maintenance of existing infrastructure, which is approved by the Registrar for Aboriginal Sites; however, this permit does not offer the same level of legal protection in the event an Aboriginal site is adversely impacted through these activities.
- No approval is required if Aboriginal sites are avoided and will not be impacted by the purpose.

If potential Aboriginal heritage sites are identified during the heritage survey and cannot be avoided, the following steps may be required:

1. Any identified archaeological and/or ethnographic sites be recorded to a Site Identification level, sufficient for a significance assessment to be undertaken according to the section 5 AHA criteria.
2. That for each site found within the Activity Area, a Heritage Information Submission Form⁶ be submitted to DPLH.
3. That the appropriate approvals be sought:
 - a. A section 16 application, where further archaeological investigation might be required (such as test pit excavations within an archaeological site that may be identified during the survey).
 - b. A section 18 application to seek consent to use the Land and which will involve impacts to any site(s) identified during the survey.
 - c. Regulation 7 & 10 permit for maintenance or upgrade works within existing disturbance footprints but within the boundary of a registered site.

If no archaeological or ethnographic sites are identified during a survey, then the Activity can proceed with caution and with consideration of any relevant recommendations provided by the relevant Aboriginal representatives and heritage consultants, to mitigate any residual heritage risks (mostly in the form of subsurface archaeology), such as through monitoring and following a Find Discovery Procedure.

⁵ The risk can remain if a surface inspection is unable to verify whether there are subsurface cultural materials and/or ground surface visibility was poor, including due to dense vegetation, leaf litter, waterlogging, rubbish etcetera.

⁶ Or equivalent mechanism provided by DPLH to submit information about a new site or update information for an existing site. It is currently uncertain whether there will be any administrative changes under the amended AHA.

Other Heritage Legislation

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

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

In terms of broader recognition of Aboriginal rights, the Commonwealth *Native Title Act 1993* (the NTA) recognises the traditional rights and interests to land and waters of Aboriginal and Torres Strait Islander people. Under the NTA, native title claimants can make an application to the Federal Court to have their native title recognised by Australian law. The NTA was extensively amended in 1998, with further amendments occurring in 2007, and again in 2009. Under the future act provisions of the *Native Title Act 1993*, native title holders and registered native title claimants are entitled to certain procedural rights, including a right to be notified of the proposed future act, or a right to object to the act, the opportunity to comment, the right to be consulted, the right to negotiate or the same rights as an ordinary title holder (freeholder).

Corporate Social Responsibility

Aboriginal Community Engagement

In the *A Way Forward* report (Parliament of the Commonwealth of Australia, 2021: 256) the Centre for Social Responsibility in Mining submitted that mining companies do not have the capacity to avoid incidents such as the destruction of Juukan Gorge. The Centre suggested mining companies are not performing in their social responsibility to prevent activities that would be detrimental to the community.

The field of mining and social performance is in decline. This has weakened the ability of community relations and social performance professionals to challenge production priorities in circumstances where risks to community exceed reasonable thresholds. Our research highlights shortcomings across organisational structures, internal lines of reporting, management systems, incentives, and talent management.

Furthermore, Hon Warren Entsch MP (Chair) stated in the Foreword of the 2020 *Never Again Interim Report*, following the Juukan disaster, that corporate Australia 'can no longer ignore the link between its social licence to operate and responsible engagement with Indigenous Australia' Owners' (Joint Standing Committee on Northern Australia, 2020). One of the key lessons learnt by Rio Tinto has been the recognition that they put their social licence to operate in jeopardy by focussing on commercial gain ahead of 'meaningful engagement with Traditional Owners' (Joint Standing Committee on Northern Australia, 2020: 7). According to Recommendation 6.91 of the later *A Way Forward Report*:

... These actions remind corporations that their social licence to operate and corporate ethical positions will affect how they are able to do business in the future – it will affect their investment prospects and return on investment. The same principles apply to other industries, particularly in the context of a transition to renewables, opening the way for them to learn from the mistakes of the mining boom and pay respect to the living heritage of Aboriginal and Torres Islander peoples.

The idea of ‘meaningful engagement’ is encapsulated by the United Nations Declaration on the Rights of Indigenous Peoples, which was signed by Australia in 2007 (United Nations, 2008). Effective engagement with Aboriginal peoples can be underpinned by six inter-related principles:

- Acknowledging and understanding of the individual aspirations and unique circumstances of different people and groups.
- Building trust.
- Maintaining a respectful manner, that acknowledges the need for reciprocity.
- Effective communication.
- Ensuring informed consent.
- Sustaining the relationship.

Direct and sustained engagement process is the best approach when working with Aboriginal communities.

UN Declaration on the Rights of Indigenous People (UNDRIP)

The UN Declaration on the Rights of Indigenous People (UNDRIP) sets out the rights of Indigenous people around the world to set and pursue their own priorities for development, and to maintain and control their cultural heritage (United Nations, 2008) The key provisions relevant to mineral development in the Australian Context include Indigenous people having the right to:

- Practice and revitalise their cultural traditions and customs, and states shall provide redress for cultural property taken without free, prior and informed consent (Article 11).
- Practice their spiritual and religious traditions, customs and ceremonies, maintain sites, control ceremonial objects and repatriate human remains, and states shall seek to enable the access and/or repatriation of ceremonial objects and human remains (Article 12).
- Maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions and intellectual property over such heritage, knowledge and culture, and states shall, in conjunction with Indigenous peoples, take effective measures to recognize and protect the exercise of these rights (Article 31).
- Determine and develop priorities and strategies for the development or use of their lands or territories and other resources, and states shall consult and cooperate with Indigenous peoples in order to obtain their free and informed consent before the approval of any project affecting their lands, territories and resources, provide effective mechanisms for redress for any adverse impact from such activities (Article 32).

A core principle of UNDRIP is the right of Indigenous people to make decisions about development proposals that have the potential to impact their land and culture from an informed position that is

free from coercion, intimidation, or manipulation (Joint Standing Committee on Northern Australia, 2021). In order to uphold these principles, Free and Prior Informed Consent (FPIC) has been recognised as the best practice approach for engaging with Indigenous people when seeking consent for projects or activities that affect Indigenous people's culture or country (Kemp and Owen, 2014).

While the UNDRIP has not been formally adopted into Australian law, there has been an increasing recognition within industry of the importance of FPIC in building meaningful relationships with Traditional Owners and maintaining a social licence to operate. In addition, Mr Buti, the WA Aboriginal Affairs Minister, has indicated that 'new Act embedded consultation, due diligence, agreement making and **informed consent** within legislation' (as reported by Torre, 2022).

Free Prior and Informed Consent (FPIC)

In relation to cultural heritage and development, the UNDRIP means that Indigenous communities have a right to know, and make decisions about, projects that affect them and their heritage. The principles of Free, Prior and Informed Consent (FPIC) for Indigenous persons or communities in relation to development projects are a best practice standard to be applied. They protect and promote Indigenous Rights within the development process. The processes of FPIC should be ongoing throughout the life of the project. To break this down:

- **Free** - the process to be free of manipulation or coercion (including financial).
- **Prior** - the process occurring in advance of any activity associated with the decision being made and allowing time for traditional decision-making processes.
- **Informed** - objective, accurate, current and easily understandable information.
- **Consent** - right to approve or reject a project (Hill, Lillywhite and Salmon, 2010).

Heritage Act 2018

The purpose of the *Heritage Act 2018* (HA) is to recognise and promote WA cultural heritage by defining principles for conservation, use, development, or adaptation for heritage places. In repealing the HWAA, the HA is the main legislative framework for historical heritage, sometimes referred to as European heritage, in the State.

The HA sets out processes for the management of the State Register of Heritage Places, including the establishment of a Heritage Council. The purposes of this Council include assessing places of significance, advising the Minister for Heritage, guiding public authorities on best practice, promoting public awareness and administration of the register of places. The Heritage Council of Western Australia is Western Australia's advisory body on heritage matters and focuses on places, buildings and archaeological sites, with a mission to provide for and encourage the conservation of places significant to the cultural heritage of WA under the jurisdiction of the HA.

The HA requires the keeping of a Register of Heritage Places for places that are protected by the provisions of the Act. Heritage places generally gain registration under the HA by being shown to be of cultural heritage significance or possessing special interest relating to or associated with cultural heritage at a state level. Section 38 outlines relevant factors in determining the significance of heritage places. This section uses definitions and values like those of the Burra Charter (see above): the Council are to consider values such as aesthetic, historical, scientific, social or spiritual, and characteristics such as fabric, setting, associations, use and meaning. Places registered under the HA may also have Aboriginal heritage values listed within the significance statement.

Part 5 outlines the responsibilities of public authorities to consider heritage matters within development planning. Under Section 73 of the HA, public authorities must refer a development proposal to the Council when the proposed works have potential to impact a registered place. The advice provided by the Council in response to a referred proposal may consider the restoration, maintenance and interpretation of the heritage place in question.

Part 11 outlines the definitions and penalties for offences and contraventions of the Act. Applications to develop, disturb or alter any place entered on the Register can be made under Part 5 Division 2 of the HA. The HA is currently administered by the Department of Planning, Lands and Heritage in Perth.

Planning and Development Act 2005

The purposes of the Planning and Development Act 2005 (the PDA) are to consolidate the provisions of the Acts repealed by the Planning and Development (Consequential and Transitional Provisions) Act 2005 (i.e. the Metropolitan Region Town Planning Scheme Act 1959, the Town Planning and Development Act 1928 and the Western Australian Planning Commission Act 1985). The PDA is intended to provide for an efficient and effective land use planning system in the State, as well as promoting the sustainable use and development of land in the State.

Under Section 73 of the *Heritage Act 2018*, any development proposal that is likely to affect a Registered place must be referred to the Heritage Council for its advice. Under Section 75 of the HA, it is important to comply with Heritage Council advice in order to not adversely affect a registered place.

Under the PD Act, the definition of development ‘includes the concept of physical development and the use of the land’.⁷

“Development means the development or use of any land, including – (a) any demolition, erection, construction, alteration of or addition to any building or structure on the land; (b) the carrying out on the land of any excavation or other works; in the case of a place to which a Conservation Order made under section 59 of the Heritage of Western Australia Act 1990 applies, any act or thing that – (i) is likely to change the character of that place or the external appearance of any building; or (ii) would constitute an irreversible alteration of the fabric or any building.”

Local Planning Schemes

As the Activity Area occurs within the Shire of West Arthur, local planning schemes will apply to proposed developments.

⁷ [https://www.dplh.wa.gov.au/getmedia/475ca92d-87a9-45b9-9313-efe3684f6f70/Making-Good-Planning-Decisions-\(website-published\)-2](https://www.dplh.wa.gov.au/getmedia/475ca92d-87a9-45b9-9313-efe3684f6f70/Making-Good-Planning-Decisions-(website-published)-2)

Shire of West Arthur Local Planning Scheme No. 2

The Shire of West Arthur has included guidance around heritage in the Town Planning Scheme No.2, for the conservation of places and areas of heritage interest⁸:

Heritage Places

- The local government is to establish and maintain a Heritage List to identify places within the Scheme Area which are of cultural heritage significance and worthy of conservation under the provisions of the Scheme, together with a description of each place and the reasons for its entry.
- In considering a proposal to include a place on the Heritage List, the local government will notify owners and occupiers of the place in writing and invite submissions on the proposal within 21 days of the notice being served, carry out consultations as it thinks fit and will consider any submissions received in response to its declaration.
- The local government may at any time remove or modify the entry of a place on the Heritage List by notifying all owners and occupiers of its intentions in writing and invite submissions within 21 days of the notice being served, carry out further consultation as it sees fit and consider submissions received in response.
- No alteration or modification to any building, object or place shall be commenced or carried out, by any person, without having obtained planning approval.

Heritage Areas

- If, in the opinion of the local government, special planning control is needed to conserve and enhance the cultural heritage significance and character of an area, the local government may, by resolution, declare that area to be a Heritage Area.
- If a local government proposes to designate an area as a heritage area, the local government is to notify in writing each owner of land affected by the proposed designation and provide the owner with a copy of the proposed Local Planning Policy for the heritage area; advertise the proposal once a week for 2 consecutive weeks in a newspaper circulating in the Scheme area; erect signage giving notice of the proposed designation in a prominent location in the area affected by the designation; and carry out consultation as considered appropriate.
- The local government is to review the proposed designation considering any submissions made and resolve to adopt the designation with or without modification or not proceed.
- The local government may modify or revoke a designation of a heritage area at any time.

⁸ Shire of West Arthur Town Planning Scheme No.2 2012, prepared by the Department of Planning, Lands and Heritage: https://www.wa.gov.au/system/files/2021-10/LPSC-West_Arthur-2-Scheme-Text.pdf

SECTION TWO – CULTURAL HERITAGE BACKGROUND

PREVIOUS RESEARCH

Previous Aboriginal Heritage Assessments

The Aboriginal Heritage Inquiry System (AHIS) is maintained by the Department of Planning, Lands and Heritage (DPLH). It includes both sites that have been assessed and registered as Aboriginal Sites under section 5 of the *Aboriginal Heritage Act 1972* (AHA) and Other Heritage Places (OHP) that have been assessed as not meeting the section 5 criteria for an Aboriginal Site under the AHA or that have not yet been assessed by the ACMC. The AHIS also contains information about where heritage surveys have been conducted and the associated reports. A request can be made to review any unrestricted site files and reports. Archae-aus Pty Ltd also conducted a search of the AHIS to encompass both the Project Area and wider area to gather information about the types of Aboriginal sites that have been previously recorded in this region.

No previous heritage surveys or assessments have been undertaken of the Project Area. However, four (4) heritage assessment has been completed within a 5km radius of the Project Area (

Map 2). The reliability of these reports has been assessed as per DPLH ACH Survey Report Guidelines⁹ (Table 4).

Table 4. Previous heritage assessments nearby to the Activity Area

DPLH Report ID	Report Title	Report Authors	Survey Type	Reliability
102073	Western Australia Regional Forest Agreement Aboriginal Consultation Project. Vol.2. Nov.1997.	Centre for Social Research	Ethnographic	No- due to the report age (1997) and the lack of survey coverage for the Project Area
102074	Western Australia Regional Forest Agreement Aboriginal Consultation Project. Vol.1. Nov.1997.	Centre for Social Research	Ethnographic	No- due to the report age (1997) and the lack of survey coverage for the Project Area
201244	Report of an Ethnographic Aboriginal Heritage Survey of Bridges 0437A, 0440, 0441 and 0442 Located on the Collie-Lake King Road in the Shire Of Arthur River, Western Australia	Grant Preller	Ethnographic	No – due to lack of report date and lack of survey coverage for the Project Area
201245	Report of an Archaeological Aboriginal Heritage Survey of Bridges 0437A, 0440, 0441 and 0442 Located on the Collie-Lake King Road in the Shire Of Arthur River, Western Australia	Tom O'Reilly	Archaeological	No – due to lack of report date and lack of survey coverage for the Project Area

Report Summaries

The DPLH recently published Survey Report Guidelines which outlined the criteria to be used in assessing the reliability and relevance of survey reports dated prior to 1 July 2024 for Due Diligence assessments under the ACHA. These have since been removed from the DPLH website; however, they nevertheless offer a usual framework for assessing the reliability of survey reports.

The first criterion, as listed below, is critical and concerns whether the report had the involvement or endorsement of the Aboriginal party. The other criteria concern the nature and clarity of reporting of ACH and the relevance of the report to the specific area and activity under consideration.

1. The ACH Report has the involvement, agreement or endorsement of the Aboriginal party.
2. The ACH Report must relate to tangible (archaeological) and/or intangible (anthropological) elements of Aboriginal cultural heritage [sic].
3. The ACH Report must include a clear statement as to the presence of ACH.
4. Area covered by the ACH Report(s) must completely cover the proposed activity area.
5. Parts of the ACH Report may not be used if limitations exist.
6. The scope of activities for which the ACH Report was completed must correspond to the proposed activity.

⁹ https://www.wa.gov.au/system/files/2023-07/ach_survey_report_guidelines.pdf

7. Recommendation for further surveys¹⁰.

Please note that at the time of report writing, the DPLH survey reports had not been received, therefore there are no available details for the reports of previous heritage assessments.

Known Aboriginal Heritage Places

There are no registered Aboriginal Sites or Other Heritage Places that intersect the Project Area. However, a number of known gnamma holes are located on the granite outcrop, Julikan Rock, within the Hillman Nature Reserve. No known sites have been recorded within a 5 km radius of the Project Area. Though three sites have been recorded over 10 km from the Project Area (Map 3).

(*Kangaroo Print Pool (Jennamarta)* / DPLH ID 30064), (*Arthur River* / DPLH ID 37754) and (*Black Wattle* / DPLH ID 4501).

Table 5. Known Aboriginal Heritage Places near to the Project Area

DPLH Site ID	Site Name	Place Type	Status	Legacy Status	Legacy ID
30064	Kangaroo Print Pool (Jennamarta)	Artefacts / Scatter; Creation / Dreaming Narrative; Water Source	ACH Directory	Registered Site	N/A
37754	Arthur River	Creation / Dreaming Narrative; Water Source	ACH Directory	Registered Site	N/A
4501	Black Wattle	Artefacts / Scatter	ACH Directory	Lodged	S02628

Site Summaries

The Places outlined in the table above (Table 5), while not intersecting the boundaries of the Activity Area, lie within the cultural landscape of the Hillman Nature Reserve area and are considered culturally significant by the Wilman Noongar people of this region.

Two of these places are considered Creation / Dreaming Narratives (Mythological Places) characterised by landform features such as wetlands or watercourses. Artefact scatters, camping and hunting places are also often associated with these places. Given the existence of Aboriginal Cultural Heritage Places in wider landscape around the Project Area, it is likely that unidentified and unrecorded ACH exists within or adjacent the Project Area.

The following section will summarise the most relevant sites for the Activity Area, which are listed above.

ACH Place 30064 / Kangaroo Print Pool (Jennamarta)

This Place is listed on the Directory as a Creation / Dreaming Narrative (Mythological Site) and Water Source with Artefactual material. The place is not restricted; a list of Knowledge Holder names is available from DPLH.

¹⁰ Where there is a recommendation for a further survey(s) to identify whether or not ACH is located in the area of the proposed activity, an ACH Report can only be relied upon for the purposes of a DDA in conjunction with any subsequent ACH Report(s) that specifically addresses the recommendation.

ACH Place 37754 / Arthur River

This Place is listed on the Directory as a Creation / Dreaming Narrative and Water Source. The place is not restricted; a list of Knowledge Holder names is available from DPLH.

ACH Place 4501 / Black Wattle

This Place is listed as an Artefact Scatter. The place is not restricted; a list of Knowledge Holder names is available from DPLH.

Listed Historical Heritage Places

Commonwealth Heritage Places

There are no listings for places of Commonwealth level historical significance within the Project Area.

State Heritage Places

No listings were found for places of State level historical significance within the Project Area.

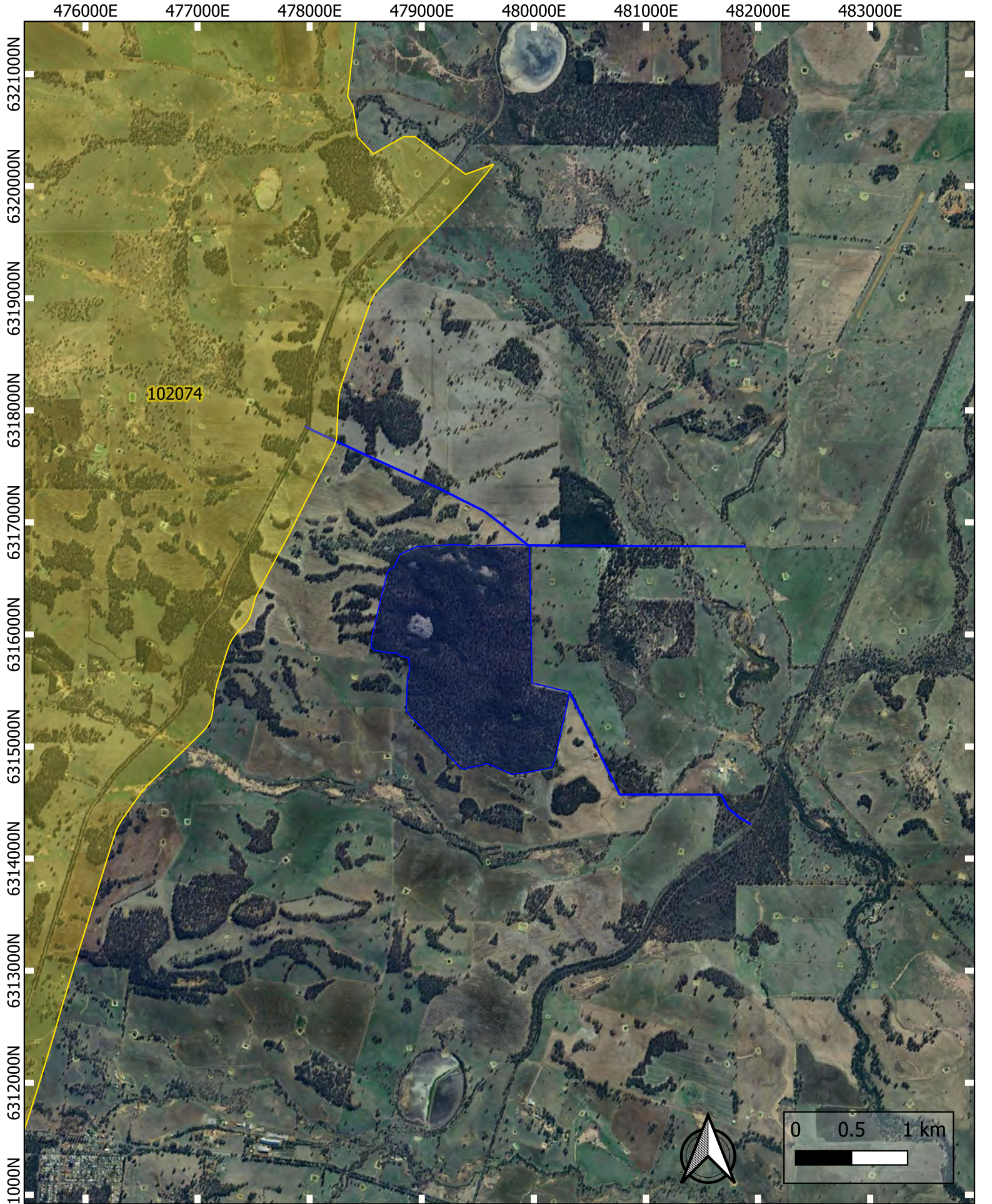
Local Heritage Places

There is one local heritage place within the Project Area, as listed in

Table 6 below (Map 4).

Table 6. Known Historical Heritage Places within the Project Area

Place	Place Name	Description	Status	Construction Date
08808	Hillman Dam	The dam, approximately 100 m x 60 m, was constructed during the Great Depression with sustenance labour in the 1930's. Water is collected from Julikan Rock and runs through a concrete channel, approximately 1.5 km. Tent poles remain near the dam from the construction days (Heritage Council of Western Australia, 1997).	Adopted Municipal Inventory – Category 2	1935



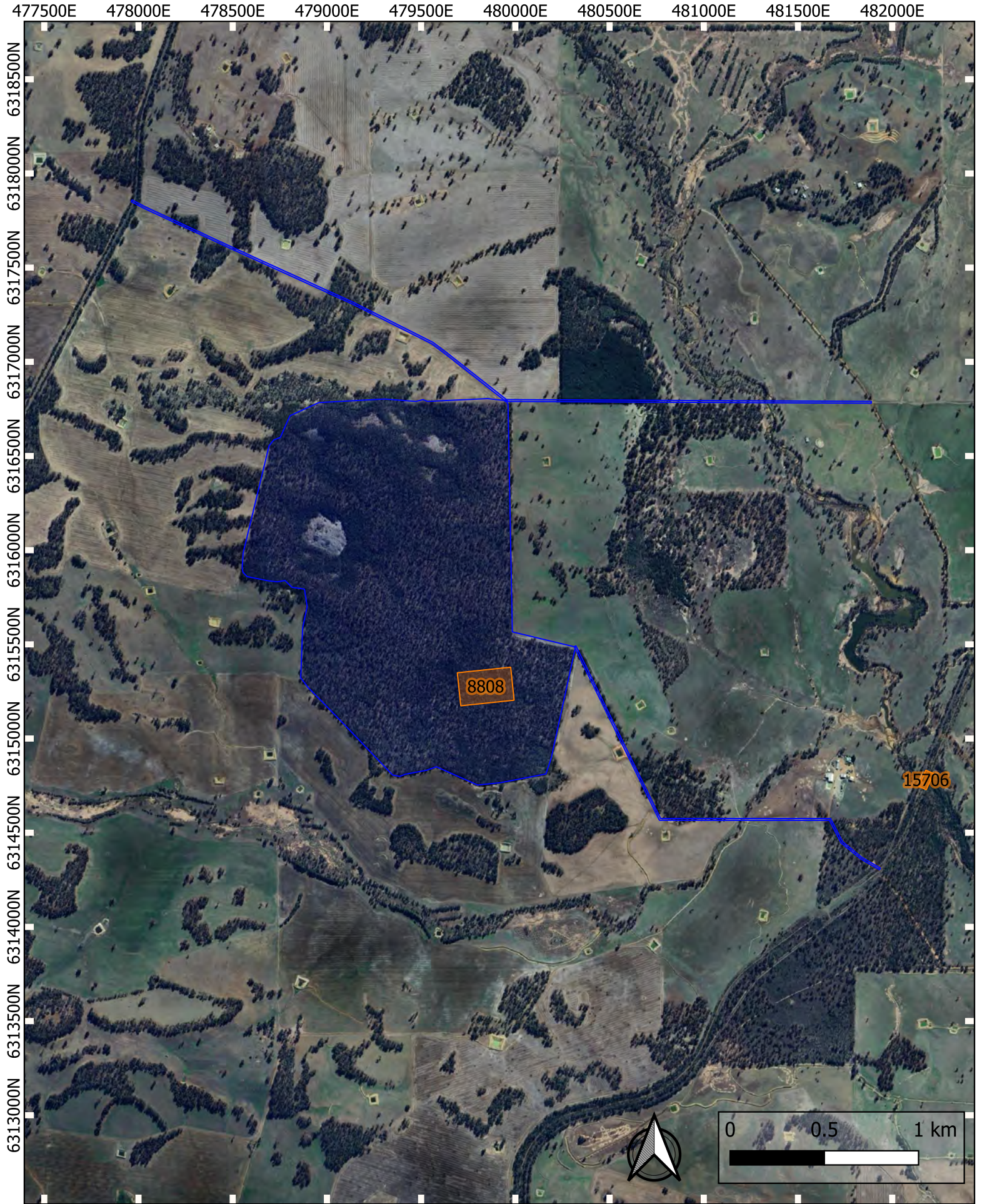
Legend

- Due Diligence Assessment Area
- DPLH Previous Aboriginal Heritage Assessments





Map 2. Previous Aboriginal Heritage Assessments intersecting the Activity Area.

Drafted by Lauren Jolliffe, 13th September 2023. GDA20, Zone 50. Satellite imagery courtesy of Google and Wiki Maps.



Legend

-  Due Diligence Assessment Area
-  Historical Heritage Places



Map 4. Listed Historical Heritage Places around the Activity Area.

Drafted by Lauren Jolliffe, 13th September 2023. GDA20, Zone 50. Satellite imagery courtesy of Google and Wiki Maps.

ENVIRONMENTAL BACKGROUND

Areas that share similar climate, landform, native vegetation, geology and animal species, are classified into geographically distinct bioregions by the Interim Biogeographical Regionalisation of Australia (IBRA).¹¹ These bioregions are further classified into subregions. The Project Area is within the Jarrah Forest (JAF) bioregion and Northern Jarrah Forest (JAF01) subregion.

Table 7 summarises the environmental characteristics of the Project Area according to the information associated with JAF01 subregion and specific studies in the Shire of Williams area (Building Codes Board and Bureau of Meteorology, no date; Williams and Mitchell, 2001; Brockman, 2006).

Table 7. Summary of key environmental characteristics

Environmental Characteristic	Description
Remnant Vegetation	<p>Hillman Nature Reserve is a Class A Reserve designated for its biodiversity including native flora. According to (Williams and Mitchell, 2001), native vegetation within the JAF01 subregion comprises</p> <p>Jarrah – Marri forest in the west with Bullich and Blackbutt in the valleys grading to Wandoo and Marri woodlands in the east with Powder bark on the breakaways. There are extensive but localised sand sheets with Banksia low woodlands. Heath is found on granite rocks and as a common understorey of forests and woodlands in the north and east.</p> <p>The main vegetation system in the Project Area is the ‘Williams’ system and is specifically described as (Brockman, 2006):</p> <p><i>Corymbia calophylla</i> – <i>Eucalyptus wandoo</i> woodland covers the greater part of the landscape giving way to <i>E. loxophleba</i> on the valley floors. On laterite remnants there is <i>E. marginata</i> – <i>C. calophylla</i> – <i>E. wandoo</i> woodland with <i>E. accedens</i> and <i>E. astringens</i> becoming dominant along breakways.</p> <p>As described in the Land Use section below, the remnant vegetation is located within the Project Area, in pockets of the Hillman Nature Reserve and along road reserves and on private Lots leading into the reserve.</p>
Climate	<p>The climate is described as ‘Warm Mediterranean’ which has a hot dry summer and cool winter. Rainfall averages 700 mm east of the scarp within the JAF01 subregion; however, Darkan, which is approximately 5.5 km to the southwest of the Project Area, has an average of 540 mm of rainfall a year.</p>
Geology and Landforms	<p>Julikan Rock / Mount Harris is located within Hillman Nature Reserve, is a large granite rock formation covering approximately 5 ha.</p> <p>According to (Brockman, 2006), the Hillman Zone which covers the entire Project Area, is within the ‘Archaean granitoids of the Yilgarn Craton’. Bedrock is relatively shallow in this area, with topography changes across the landscape showing a relief of 230-330 m above sea level. Dolerite and quartz dykes, common materials used for stone tool manufacture, are found throughout this zone. These tend to be found in a north-westerly alignment.</p> <p>There are multiple landforms in the Project Area and include (Brockman, 2006):</p> <ul style="list-style-type: none"> ▶ Ridges, crests and slopes. ▶ Outcrops of ironstone, granite and dolerite on ridges and slopes. ▶ Slopes and ridges, often associated with dolerite dykes.

¹¹ <https://www.dceew.gov.au/environment/land/nrs/science/ibra>

Environmental Characteristic	Description
	<ul style="list-style-type: none"> ▶ Foot slopes, lower slopes, and larger drainage lines. ▶ Valley floors, drainage lines and seepage areas on slopes.
Soil	<p>The Project Area is within the Eastern Darling Range Zone which is generally characterised by:</p> <p style="padding-left: 40px;">Dissected lateritic terrain with rock outcrops and narrow drainage lines in the west... Duplex sandy gravels, deep sandy gravels, shallow gravels and grey deep sandy duplex soils (Brockman, 2006).</p> <p>Further, '[d]eep and shallow duplex soils are common on the foot slopes, drainage lines and valley flats' (Brockman, 2006). This suggests that there may be sections of intact subsurface deposit towards the east away from the shallow soils and rocky outcrops on the hills.</p>
Hydrology	<p>The Hillman Reserve is a Class A Reserve designated for water, and flora and fauna. The natural rock feature, Julikan Rock contains a number of rock holes, and water is collected from the rock through channels into Hillman Dam. The Dam has been an important water source to power steam trains that ran through the area. Gnamma holes on Julikan Rock are likely an important water source for Aboriginal people.</p> <p>The Hillman River / Wild Horse Creek is the main drainage line within the Project Area, containing palaeochannel sediments of sand and clay up to 23 m thick. Recent sediments overlay the palaeochannel sediments and are approximately 5 m deep.</p>
Land Use	<p>The Shire of West Arthur, first explored by Captain Bannister in 1831, is one of the earliest settled areas outside of Perth (from 1836) (Williams Historical Society, 1988). Pastoral leases were granted from 1854 and large-scale land clearing ensued across the region.¹²</p> <p>Over the last 180 years, more than 75% of the original vegetation cover has been removed, primarily the result of agricultural clearing activities (Payne and McLaughlin, 2014). Much of the remaining 35% of the original vegetation occurs within designated reserves or road reserve corridors. This is largely reflected within the Project Area, comprising all of Hillman Nature Reserve Class A reserve (Reserve 16904), and road reserve corridors.</p> <p>Dominant land use within the Northern Jarrah Forest IBRA subregion includes:</p> <p style="padding-left: 40px;">...forestry (native forest), conservation, grazing (improved pastures), cultivation (dry land agriculture), forestry (plantations), and mining. There are lesser areas of rural residential, easements for roads, power lines etc, and urban land use (Williams and Mitchell, 2001).</p> <p>The Project Area comprises cleared land, revegetation and remnant vegetation. Key features in the landscape include <i>Hillman Dam</i> (P08808), approximately 1.5 km of stone channels, stone quarry near Julikan Rock and rock catchment built around the base of the rock, constructed in the early 1930s with sustenance labour, and archaeological remains of the construction camp and stables.</p>

¹² <https://www.westarthur.wa.gov.au/about/history.aspx>

Error! Reference source not found. to Error! Reference source not found. are examples of some of the different landscape and vegetation types in the Project Area. They do not represent all environmental variations within the entire Project Area nor replace a proper heritage survey of the area. Photos courtesy of Frank Chia for the Shire of West Arthur and LocationsHub¹³.



Plate 1. View to the northwest of Julikan Rock (source: Frank Chia for Shire of West Arthur)

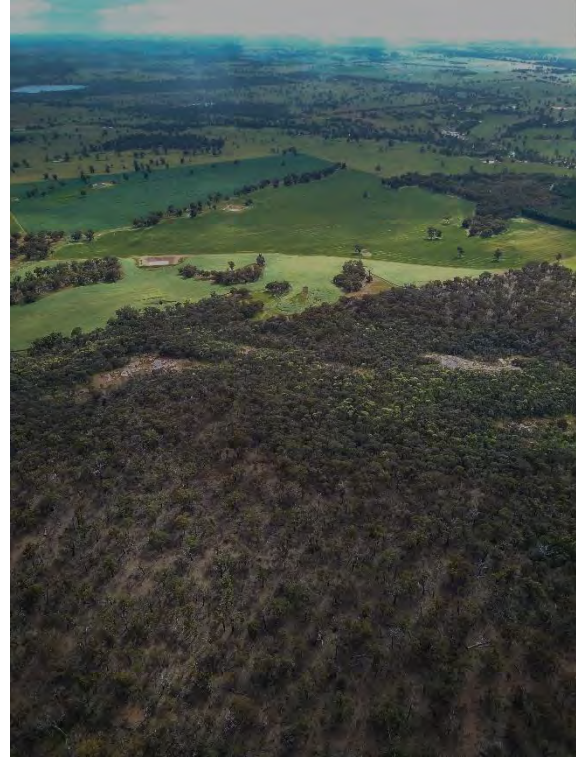


Plate 2. View to north showing smaller granite rocks, east of Julikan Rock (source: Frank Chia for Shire of West Arthur)



Plate 3. Rock hole located on top of Julikan Rock in Hillman Nature Reserve (source: LocationsHub)



Plate 4. Stone channels that feed water from Julikan Rock catchment into Hillman Dam (source: LocationsHub)

¹³ <https://rs.locationshub.com/Home/LocationDetail?rsLocationId=084-10161035>



Plate 5. View north of Hillman Dam with collapsed asbestos roof visible in the water (source: Frank Chia for Shire of West Arthur)



Plate 6. Hillman Dam with collapsed asbestos roofing around the edges (source: LocationsHub)

ETHNOGRAPHIC BACKGROUND

Regional Ethnographic Background

Noongar people form a distinct cultural bloc now and into the distant past, based on shared linguistic and cultural traditions, a cohesive social structure and kinship network, shared regional identity, and a common geographical connection to the lands and waters that make up the southwest corner of the Australian continent. There are a range of social structures which further delineate Noongar people and connect them to particular parts of the Southwest region. This is articulated succinctly in the Noongar evidence provided to the Federal Court hearings (Federal Court of Australia, 2006:38), during which the claimants noted that the southwest region:

was occupied and used by Aboriginal people who spoke dialects of a common language and who acknowledged and observed a common body of laws and customs. Those Aboriginal people recognized local and regional names within the broader society but shared a commonality of belief, language, custom and material culture, which distinguished them from neighbouring Aboriginal groups and societies. Responsibility for and control of, particular areas of land and waters, were exercised by sub-groups or families, but the laws and customs under which the sub-groups possessed those rights and interests were the laws and customs of the broader society.

The term ‘Noongar’ also sometimes spelled Nyungar, Nyoongar or other variations, is a common term used almost ubiquitously around the region for local Aboriginal people. However, its use as a term of identity is thought to be a linguistic adaptation that originated during the post-European contact period. It originally meant man in the languages of the Southwest (Bates, 1985:47), and Aboriginal people of the southwest region used to identify as ‘Bibbulmun’ rather than ‘Nyungar’ (Bates, 1985:46). While some Southwest people still identify with this term, Nyungar is now more widely accepted and Bibbulmun is more commonly used as the identifier of people with customary rights and responsibilities to particular areas of the Southern forests from Denmark in the south-east to Nannup in the north-west. Traditional Noongar society is divided into thirteen sub-groups, linked by language and cultural tradition that included practicing initiation rituals of upper body cicatrisation and piercing of the nasal septum, which follows what Berndt describes as the “Old Australian Tradition” (Berndt, 1980). These initiation rituals are not commonly practiced in the modern era.

Rainfall levels which define the Southwest Botanical Province form a distinctive geographic and environmental zone, they also define Noongar country. As defining features of Noongar country, the rivers, lakes, creeks, and all of their tributaries are fundamental to Noongar culture, and thus maintain a special significance. Spiritual life is fundamental to Noongar culture, and it is inextricably linked to the organisation of Noongar society and to the management of Boodjar (Country). The responsibility to look after Boodjar is deeply engrained in Noongar cosmology, which enshrines a set of governing principles for the management of land and water. Perhaps the most salient element of Noongar spiritual beliefs is the Waarkal:

In Nyungar Cosmology, the Waarkal is the Creator, the keeper of the fresh water sources. He gave us life and our trilogy of belief in the boodjar – the land – as our mother and nurturer of the Nyungar moort – family and relations – and our katitjin – knowledge so that we could weave that intricate tapestry known as the “web of life”.

Nyungar Katitjin is people's knowledge based on cosmological stories from the Dreamtime, known as Nyitting to Nyungar, on which cultural knowledge is founded.

Nyitting (or Dreamtime) yarns are cosmological stories about events within and beyond the living memories of the Nyungar people. [...] Nyitting literally means 'cold time', and refers to the time of creation." (Collard, Stocker and Rooney, no date; Rottnest Island Authority, no date)

Fundamental to Noongar identity and culture is connection to Country. This concept articulates a series of rights and responsibilities that every Noongar person maintains to certain places, landscapes and regions. Perhaps the two most important aspects of connection to Country are 1) the responsibility to care for Country and 2) the right to speak for Country. The responsibility to care for Country is something that Noongar people inherit from their ancestors and bequeath to their children. Upholding these responsibilities are fundamental to Noongar culture and identity, and at some level to people's reason for being. On this basis, being able to uphold these responsibilities is pivotal to Noongar people's sense of purpose and self-worth and therefore, well-being. Intertwined with the responsibilities that people maintain to Country are rights to make collective decisions affecting Country.

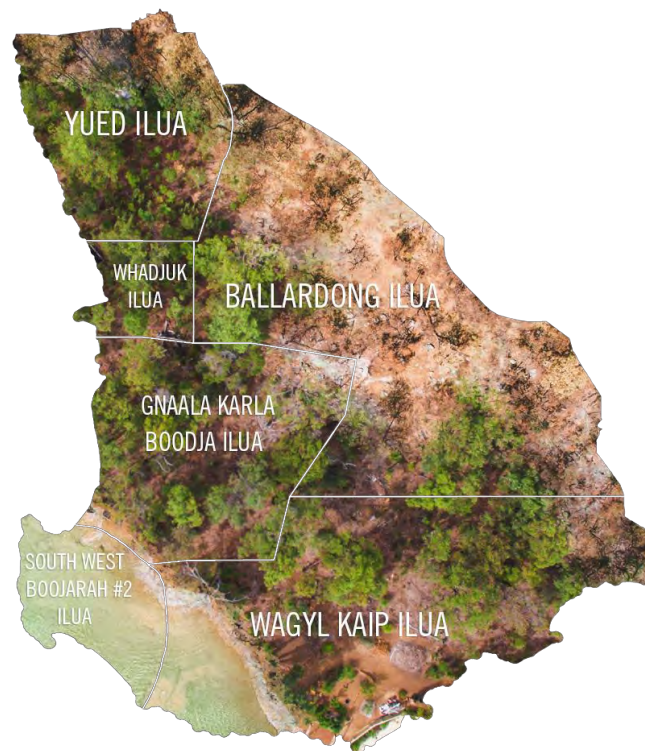


Figure 2. Six regions from the Southwest Native Title Agreement (Source: Samantha Mickan, 2009)

Contemporary Noongar society has its roots deeply etched in the traditional social structures of the pre-contact period and like all societies continues to evolve and change as a result of both internal and external influences. European invasion and subsequent settlement of the region is a major external influence and the impacts on Noongar society have been severe and far-reaching. None the

less, Noongar culture and society has evolved, adapted, and survived. Among all the layers of connection and identity that comprise the fabric of Noongar society, perhaps the most fundamental is that of family and kinship. Noongar people identify most fervently with their extended family, and they will very often define their primary identity on the basis of family.

The combination of these rights and responsibilities are the basis for contemporary Noongar custodianship. What this means in a practical sense, is that Noongar people expect to have a ‘seat at the table’ in decisions that affect their lands and waters. Put another way, Noongar people have a customary set of rights and responsibilities that require them to have real power in all decisions affecting their Country. As all Noongar people are now living within the modern economy of Australia, their time and input have costs associated with it. While both the Aboriginal Heritage Act 1972 and the Aboriginal Cultural Heritage Act 2021 stipulate the need to consult with Aboriginal people about a narrowly defined set of places and materials, Noongar people have a custodial interest and responsibility for a much broader set of places and values than those defined by legislation.

Local Ethnographic context

The Hillman Nature Reserve lies within the Gnaala Karla Booja Native Title Claim Area (WI2015/005), which is a subset of the broader South West Native Title Settlement (WC1998/058). The GKB area incorporates three of the original Noongar sub-groups; the Pinjarup (Bindjareb), Wilman and Kaniyang. The Project Area lies within the traditional lands of the Wilman group, whose territory is extensive as described here:

At Wagin and Narrogin; on Collie, Hotham, and Williams rivers west to Collie; Wuraming north to Gnowing, Dattening, and Pingelly; east to Wickepin, Duninin, and Lake Grace; South to Nyabing (Nampup), Katanning, Woodanilling, and Duranilling. (Tindale, 1974:260)

The Wilman people whose Country encompasses the Shire of West Arthur boast a rich, ancient, and dynamic culture that has continued over 50,000 to the present day. The Wilman people utilised the landscape and thrived in the fertile forests and plains that make up the region today known as the Wheatbelt of southwestern Australia. During traditional times, Wilman Noongar groups relied on the abundant rivers that transect their lands as travel routes between the coast and the hinterland. An intricate system of seasonal migration saw movements of people between family groups in the area for marriage and trade, while larger gatherings congregated on the coast during the summer months to utilise plentiful resources and undertake social and ceremonial activities (Wooltorton, Horwitz and Collard, 2017a). During the colder months, groups dispersed into family clans, migrating to the jarrah-marri forests of the inland regions around West Arthur, where food sources were readily available.

Wilman Country, along with Kaniyang (Kaneang) whose lands comprise the Country immediately adjacent to the south, is defined by the geological structures of the landscape, particularly the underlayer of ancient granitoid formations that frequently breach the topsoils resulting in spectacular granite dome structures (Wooltorton, Horwitz and Collard, 2017a). Layered topsoils throughout the region create extremely biodiverse ecosystems that boast high levels of rare endemic species that have significance to the Noongar people of the area through generations of culture and practice. The term *Boodjar* itself, meaning both ‘Country’ and ‘Pregnant’ or ‘full of life’ is understood by Noongar custodians as part of their kin, as a provider and nourisher, and as a being that needs to be nourished and provided for (Wooltorton, Horwitz and Collard, 2017a). This language is embedded within the

cultural practices of the Noongar people of this area and reflects the way in which land should be managed and maintained in the future. The Wilman Noongar people of this Country continue to intertwine recent history with ancestral *katitjiny* (knowledge and understandings), to work alongside a land that is alive and must be listened to (Wooltorton, Horwitz and Collard, 2017).

“Before the Nyittiny (Cold time, Dreaming), the last ice-age, when an awesome, incredibly powerful storm of energy – Noongar understand it as the massive wargal or rainbow serpent – slowly carved out the terrain as it travelled from Boyagin Rock across the landscape, gouging out the rivers, streams, brooks, and waterholes as it travelled. As it has done since the dawn of time, water symbolically and practically re-enlivens the catchment ecosystem each autumn, winter, and spring.” (Wooltorton, Horwitz and Collard, 2017a)

For Wilman Noongar people, Country provides the framework from which culture is created and reproduced. Connection to culture, history and mythology is felt more keenly when on Country (Coffin, 2018). Pristine areas of natural bushland are supremely important to local Noongar groups, as they possess deep spiritual power. Often clearly observable phenomena, such as bird calls, movement and sounds of trees or shrubs, and animal movement within the undergrowth, are said to bring messages. Some say the *weerlow* or curlew appears when a close relative is about to die, while others explain the *Darlmoorluk*, the twenty-eight parrot, is known for being a happy bird that keeps the camp safe reassuring all that there would be no lurking dangers nearby for children (Wooltorton, Horwitz and Collard, 2017a).

“When the wind blows, we hear more than just the rustle of leaves or the sound of falling bark. We hear and feel the presence of our ancestors” Noel Nannup, *Sounds of Dryandra Woodland, Radio Drive Trail, DEC.*

Ancestors, in the form of spiritual beings, are said to have created the land and water courses across Wilman Country. Places attributed to Noongar people are covered with stories, often known as Songlines, that narrate the creation narratives that are embedded within natural elements of the landscape, such as prominent granite domes (Wooltorton, Horwitz and Collard, 2017a). Water, often including Gnamma holes (waterholes) found in granite structures, are considered evidence of Creation Ancestors who brought water to the landscape.

“The Wargal or Rainbow Serpent and the Waitj (Emu) were creator beings of the world of the Nyungar. This world dictated by the prevailing weather meant the family (moort) moved through the landscape. They followed in the footsteps of their ancestral fathers who had been taught and guided by the creators who had provided and stocked the Country with wildlife, species of plants, kalleep or places to camp [home] and water sources to sustain everything. The storylines, song-lines and Dreaming associated with the creation of all life form the basis of the Nyungar belief system (kundaam). This treading in the steps of our fathers reaffirms the beliefs,

values, the social structures and fabric of the creation of the earth, the water and the sky and all things that live in and on it.” Words by Dr Noel Nannup¹⁴

Karlap (Kallip) is a Noongar concept that relates the knowledge one has of a distinct environment within an area of land that a person has responsibility for. It is unlike the Western concept of ‘property’ and reflects more of a ‘kin’ relationship to human and non-human elements associated with the land. The concept was translated here by an English interpreter in 1850:

“Kallip: denoting a knowledge of localities; familiar acquaintance with a range of country, or with individuals. Also used to express property as in land; as Nganna Kallip, my land.” (Moore, 1850:54)

Stories attributed to landscape features across Wilman and Kaneang Country demonstrate the relationships and interconnection that operate at all levels of Noongar culture and are understood by all Noongar speakers. These narratives are local and specific and relate to specific kallip responsibilities for the people who occupy and care for that place. For example, the Narrogin Ngamma (water hole) is the keeper of the mallee-hen story from which the town gets its name. Narrogin, meaning mallee-hen foot tracks, is spiritually connected to the ancestral mallee-hen Dreaming story that connects the Narrogin Ngamma to the wider Country (Wooltorton, Horwitz and Collard, 2017a). The town of Darkan is said to also be an Aboriginal name meaning ‘black rock’ in reference to nearby granite outcrops, though the origins of its name have not been confirmed (Shire of West Arthur, no date).

The first Europeans to visit the area now known as the Shire of West Arthur were Captain Banister and his exploration party who passed through in the late 1830s. In the 1840s when sandalwood cutters and kangaroo hunters began working the southwest to the east of the *Kaarta moorda*, the Darling Ranges, the area around Williams and Narrogin was known as the Mallee Belt by European explorers. During the 1850s the Perth to Albany Road was constructed using convict labour, allowing settlers access to land across the southwest (Shire of West Arthur, no date). The first settlements in the shire were formed along this road, the more regional settlements cropped up along the Arthur and Beaufort Rivers following the establishment of pastoralists granted grazing leases from 1854 (Shire of West Arthur, no date). Nearby towns grew from this initial occupation, including Darkan which was gazetted in 1907 and became a thriving centre of services for local European sheep and cattle grazers in the early 20th Century.

This influx of European colonists to the area systematically excluded Wilman groups from their traditional lands and pushed them to camps on the outskirts of European towns and settlements. One such reserve was located on Coalfields Highway near the town of Darkan in the Shire of West Arthur. The Department of Native Affairs officially vested the camping area in 1964 and erected a few small cement houses and a Nissen hut for Aboriginal people in the area (Heritage Council of Western Australia, no date). The camping ground was offered by the council to the Department of Native Affairs for Aboriginal people who were camping in the town for seasonal work. In 1969 it was recorded that between 50 and 60 Aboriginal people were camped in the area (Heritage Council of Western Australia, no date).

¹⁴ [Kaartdijin Noongar \(noongarculture.org.au\)](http://Kaartdijin Noongar (noongarculture.org.au))

Wilman Noongar man Joe Northover grew up in the area, frequently travelling from Darkan and Duranillin to Collie as a child. He recounts his childhood growing up around the area.

“Well I’m from all around Collie here but we lived at a place called Duranillin, which is at the back of Darkan there. Darkan too. Stayed at Darkan. On the reserve. They had a big reserve at Darkan. Duranillin was where my father worked on the railways.

It was good fun too in the bush. We all lived in the bush. And eventually we ended up coming to Collie. That’s where we are now. A lot of old bush tucker. Emu, kangaroo and that. Karda and sheep. That’s what I say we used to stay there, on the farm Dad used to work at. At old Cowchers.” Joe Northover, recorded for Kaartdijin Noongar

Despite this, Aboriginal people living in the Shire of West Arthur region continued their cultural practices with strength and resilience against growing animosity. Noongar families that lived together on Reserves were often related by ties of kinship and marriage, ties with their shared living conditions developed a deep sense of common identity (Haebich, 1988a:239). Through the 1930s they continued to hold corroborees on the Narrogin Reserve, with Noongar people traveling from Gnowangerup, Williams, Wagin, Pingelly, Badjaling, Brookton, and Beverly.

“They painted themselves, bit o’ flour, chalk, somethin’ white. On the forehead, nose, bit o’black on the top here. They got something that was blacker than them someplace. They put flower things in their hair.” Emmet Abraham. Oral History, (Haebich, 1988a:241)

The philosophy within Wilman Noongar culture and practice is that there is a spiritual and human capacity and need to maintain and preserve Country. This is central to Noongar understanding – that caring for Country is part of caring for self and family. There remains no distinction, neither in the historical accounts of Noongar language and life in the colonial past nor in current cultural and linguistic practice today, between kinship with people and relationship with Country (Wooltorton, Horwitz and Collard, 2017b). Australian Aboriginal people are the oldest living culture on earth, and this is a testament to the sustainability inherent in their land-use systems. Archaeological evidence demonstrates that Aboriginal people have occupied the south-west region for at least 50,000 years, but for Noongar people, they have always been here.

ARCHAEOLOGICAL BACKGROUND

Aboriginal Archaeological Context

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

There has been very little archaeological investigation in the Project Area and immediate surrounds. There are several reasons for this. First, caves and rock shelters are rare in the region and thus there are few sites with possibilities for research excavation. Second, the primarily agricultural character of the region means that it lacks much of the development pressures of other parts of the state. Archaeological work associated with compliance has thus been mostly small-scale, and commonly associated with such activities as road construction. Third, the long history of agriculture in the region leads to a perception that little of archaeological interest is likely to survive.

Most archaeological investigations in the Southwest have focused on the Perth Metropolitan Area and the Swan Coastal Plain, where dated sequences have produced a well-established Pleistocene antiquity for human occupation in the Southwest. The oldest site in the Perth area is Upper Swan (DPLH ID 4299). This large, open artefact scatter site on a terrace of the Swan River has a date range from 39,733 cal BP to 44,348 cal BP. These dates are associated with numerous artefacts and charcoal patches, indicating a Pleistocene occupation of the area, where groups of people camped, prepared fires for cooking and warmth and used cores and hammer stones to manufacture a variety of stone tools. Other early dated sites on the Swan Coastal Plain are located at the site of the Fiona Stanley Hospital dating to 33,000 BP (Dortch, Dortch and Cuthbert, 2009), on an old river terrace in the Helena Valley dated to 29,400 BP (Schwede, 1983, 1990) and a site at Minim Cove near the mouth of the Swan River which has been dated to 9,930 BP (Clark and Dortch, 1977). Yellabidde Cave on the northern fringe of the southwest has also been dated to 25,500 cal BP with occupation continuing through to the recent past (Monks *et al.*, 2016).

Further south, Devils Lair on the Leeuwin – Naturaliste Ridge, was first visited by Aboriginal people approximately 48,000 cal. BP (Turney *et al.*, 2001) with nearby Tunnel Cave first occupied at 26,693 cal BP (Dortch, 1994, 1996). Near Albany, on the south coast, the Kalgan Hall site shows occupation from about 18,000 cal BP to recent times (Ferguson, 1985). In the Wheatbelt, excavated sequences from Frieze Cave, near York, and Mulka's Cave, near Hyden only show occupation within the last few thousand years (Hallam, 1975, pp. 95–96; Rossi, 2014). Nevertheless, there is no doubt that the eastern side of the Darling Range has been occupied for as long as neighbouring parts of the southwest.

No sites have been documented in the areas surrounding the Project Area, though no surveys or heritage assessments have been completed in or around the Project Area within a 5 km radius. A number of Aboriginal sites have been recorded in the broader Wheatbelt region. Artefact scatters are the most common site type and occur widely in the landscape, comprising dolerite and quartz flakes. These types of sites in the wider region occur most commonly close to watercourses and valley bottoms.

Other places include quarries, camps, hunting places, mythological places, water sources, modified trees, man-made structures, natural features, burials/skeletal material, engravings, grinding patches/grooves, ochre, and food resource. This suggests that there is a diverse archaeological

signature across this part of the Wheatbelt landscape indicating a wide range of activities were being carried out by Noongar people over a long period of time.

Most field surveys in the region have been small-scale and thus provide little opportunity for regional synthesis or predictive modelling. In her synthesis of the archaeological evidence from research conducted on the Swan Coastal Plain and the Darling Scarp, Anderson (1984) formulated a seasonal land use model of human movement between the Swan Coastal Plain, the Darling Scarp and the Darling Range. Her model is summarised as follows:

1. Groups essentially based on the Swan Coastal Plain and the Darling Plateau were associated with specific core territories within those zones and had stronger cultural ties within four larger units such as Tindale (1974b) outlines.
2. In summer and autumn, the plains groups concentrated in larger numbers on the coast, estuaries and larger inland water bodies to collect fish, waterfowl and other water-based resources. The very large archaeological sites on the plain are the result of repeated visits to such venues, probably over long periods of time.
3. In winter and early spring, when the coastal resources were less abundant, some of the plain based people moved into the jarrah forest in the Darling Range to relieve the pressure on available food sources; the remainder of the people fragmenting and ranging more widely. The extent of penetration into the densest and most uniform stands of the forest zone was only about 30-35 km. The predominantly small sites throughout the jarrah forest are evidence of the mobility necessitated by less prolific resources and the pursuit of game.
4. In late spring there was a gradual movement of people back toward the coast.
5. The western plateau area of the scarp is seen as having a less distinctly seasonal pattern of movement. The groups would possibly have been more nomadic and moved over wide ranges, taking advantage of the large mammal population and plant foods in the open woodlands.
6. The eastern jarrah forest (i.e. that portion more than 30 km east of the escarpment and gradually grading into wandoo woodland) was exploited by plateau groups, some of whose ranges penetrated well into the jarrah zone. More extensive swamps in the eastern jarrah forest may have allowed use of the area for a greater part of the year, especially if below-ground water was tapped. The large sites near Boddington are consistent with this general interpretation.
7. There was also some less patterned movement, more direct and rapid, through the forest zone from plain to plateau and vice versa by individuals and groups of varying sizes, for specific trade, social and ritual purposes (Anderson, 1984, p. 37).

Anderson's (1984, p. 24) preliminary results suggested that site densities in the wandoo woodlands on the plateau seemed to be higher than those in the jarrah forests and lower than on the Swan Coastal Plain. Artefact sites were quartz-dominated, with dolerite the other main raw material. Sites were all close to rivers, creeks and lakes.

In the south-east Wheatbelt, Bird (Bird, 1985) surveyed a transect from Lake Grace to the coast at Bremer Bay. On the basis of her results, she proposed a seasonal model of site size and distribution. The widest range of food resources were associated with the woodlands of the valley bottoms and these were commonly also the location of the most reliable water sources in the form of soaks and occasional freshwater swamps. Large sites were more commonly associated with the more reliable water sources occurring in the valley bottoms and also in association with granite outcrops. Populations dispersed during the wet season to take advantage of ephemeral water sources and congregated at more reliable water sources during the summer.

Both models therefore suggest that water sources are critical to occupation east of the Darling Scarp and that rivers, creeks and lakes and swamps are likely to be important activity nodes in the landscape. Granite outcrops are also important because of the range of resources that they offer, including both water and quartz which was the primary raw material used for stone tool making in the region.

European Archaeological Context

There appears to be no major archaeological studies for the Project Area or surrounds, despite the great potential for archaeological research in this region. The Shire of West Arthur's historical past has mostly been constructed from historical documents.

SECTION THREE – DUE DILIGENCE ASSESSMENT

PREDICTIVE STATEMENTS

The archaeological and ethnographic predictive statements and subsequent risk assessment are based on the results of the location and types of Aboriginal sites (Aboriginal Cultural Heritage) that have been previously recorded in this region.

Based on the predictive statements made in Table 8 below, there appears to be an overall **high** chance of encountering Artefact Scatters / Isolated Artefacts, Quarries, Human-made Structures including Lizard Traps, Ethnographic sites including Mythological / Aboriginal Ceremony and Songlines, Water Sources including gnamma holes and Historic Sites; a **moderate** chance of encountering Scarred Trees, Grind Stones / Grinding Patches, Rock Engravings, and Rock Shelters; and a **low** chance of Potential Archaeological Deposits, Rock Paintings, Burials within and around the Activity Area.

Table 8. Predictive Statements for the Activity Area

Site Type	Site Description	Landform/Environment	Predictive Statement
Artefact Scatters / Isolated Artefacts	Stone flakes, cores, and debris from stone artefact manufacture. Some flakes may show signs of having been used. Tools that have been deliberately shaped (formal tools) may include scrapers, backed blades and adzes.	Found in both surface and subsurface contexts across many different landforms, including around creek lines, gravel flats, plains and rock shelters. There is a demonstrated association between water sources and artefact scatters on the Swan Coastal Plain.	There is a high chance that this type of site would be found in the Project Area. The most common materials used to manufacture stone artefacts in this area are quartz and dolerite.
Scar Trees	Modified trees in this region may relate to Aboriginal use of trees. Aboriginal people removed bark from the main trunk of a tree to manufacture dishes or shields. In other cases, scarring may be caused during the extraction of honey.	These types of sites will occur in locations where there are trees that are more than 150 years old.	Examples of modified trees have been found elsewhere in the region and blazed trees are known to be present throughout the Southwest. Based on the level of remnant vegetation, there is a moderate chance that this type of site will be encountered in the Project Area.
Grind Stones / Grinding Patches	Grinding stones are stones that have been used for grinding seeds or sharpening stones, resulting in a distinctive abraded surface. Grinding patches are similarly utilised patches of bedrock.	Grinding patches occur on suitably flat areas of bedrock, whereas Grindstones can be found throughout the landscape, but are often closely associated with water sources.	There is a moderate chance that this type of site would be encountered in the Project Area.

Site Type	Site Description	Landform/Environment	Predictive Statement
Potential Archaeological Deposits (PAD)	Potential archaeological deposits may contain cultural material and could possibly be dated if charcoal or other dateable organics are present. Preservation of any organic material may vary depending on the soil type.	These types of sites are generally found in rock shelters where sediment builds up overtime. Outside of rock shelters, in open air artefact scatters, sites are usually contained to the surface where the artefacts build up in a single palimpsestic deposit which rarely extends below the surface.	The soil profile in the Project Area suggests limited potential for substantial subsurface deposits. There may be a low chance of encountering archaeological deposits along water ways.
Rock Art	Rock art may be in the form of engravings or paintings. There are many different styles of engravings, including incised, pecked, grooved and abrasion.	This site type is found on bedrock outcrops of different sizes and formations. The surface is mainly flat. Paintings are mostly found in sheltered contexts such as rock shelters or overhangs providing good conditions for the preservation of the pigment used in the art. Engravings can be found in both open and closed contexts.	There is a moderate chance of finding engravings in the Project Area, especially if there are suitable rocks. There is a low chance rock paintings would be encountered.
Quarries	These types of sites consist of stone sources, either in the form of bedrock or large nodules that are in their primary context. Quarries may be classed as stone procurement sites that usually have an associated artefact scatter containing stone reduction/knapping areas.	Located in areas where there are suitable outcrops of stone.	Dolerite quarries are found elsewhere in this region. Given the geology of Hillman Reserve and Mount Harris, there is a high chance that this site type would be found in the Project Area.
Burials	Burials may include an isolated bone fragment or could involve complete individuals or multiple burials.	Skeletal material generally occur in areas where the ground is softer such as along creek banks or in dunes.	The soil profile of the area suggests there is limited potential for burials to be encountered as the soils are hard and shallow. Softer areas along the creek line; however, may have been used for burials.
Rock Shelters	Rock shelters were used for shelter and other purposes by Aboriginal people. They may have conducted certain	These occur where there is suitable bedrock present and may include overhang and cave formations.	Julikan Rock / Mount Harris is a large rock formation that may incorporate areas of rock overhang, which may create this site type; there is

Site Type	Site Description	Landform/Environment	Predictive Statement
	activities while in a shelter, such as making stone tools or caching items.		a moderate chance that this type of site would be encountered in the Project Area.
Human-Made Structures	Human-made structures include remnant structures used for housing, stone arrangements or other. House structures possibly constructed from branches, stone, corrugated iron, mud or other materials most likely in the historic period. Stone arrangements may include semi-circular rings of stacked stone, lizard traps, cairns, hunting hides, and standing stones.	The preservation of remnant structures, particularly those used for housing, may depend on the materials used, exposure to the elements and land use activities. Stone arrangements are present in areas where suitable rock is present; however, these types of sites are not very common overall.	There is a high chance that this site type would be found in the Project Area, particularly associated with the granite outcrops where there is high potential for encountering lizard traps and other structures.
Ethnographic sites, including Mythological / Aboriginal Ceremony and Songlines	These types of sites are places of significance to Aboriginal people and may be connected to ceremonial activities and/or spiritual stories. In addition, there may be ethnographic information related to the historic use of the area by Aboriginal people.	These may be present across a range of different landscapes. Certain natural features may be considered a part of these types of sites, including specific landforms, rock formations, water sources, and plant or animal concentrations.	Given the multiple natural features within the Project Area, there is a high chance that this type of site would be encountered within the Project Area.
Water Sources	These types of places include rock holes, natural springs, creeks, pools and soaks that were an important source of water for Aboriginal people and later on the early settlers.	These are mostly located in low-lying areas where water collects along creeks and in soaks, or they may be associated with rock formations.	There is a high chance that this type of site will be encountered within the Project Area. There are gnamma holes located on Julikan Rock / Mount Harris and there is high potential for gnamma holes on the granite outcrops observed in satellite imagery; there are multiple water sources in this region.
Historic Sites	Historic sites may or may not have a shared history between Aboriginal people and early settlers. Historical sites may include homesteads, stockyards, building	These may be located anywhere across the landscape but especially in and around previously recorded historical heritage sites and Aboriginal sites (such as reserves or farm camps)	There is a high chance that there are historic features that are related to the early phases of settlement in the Project Area.

Site Type	Site Description	Landform/Environment	Predictive Statement
	ruins, stone walls, wells, fences, bridges, small camps, old tracks, blazed trees, and other farm infrastructure.	that have a known historic component.	

RISK ASSESSMENT

There are three levels of assessed risk for encountering Aboriginal and historical cultural heritage within the Activity Area: High, Moderate and Low. Detailed descriptions of each level of risk are provided below. It is highly recommended that ground-truthing occur to refine the areas of archaeological risk.

High Risk

Aboriginal Heritage

Areas of high risk include the landforms where cultural heritage sites are typically found in this region, such as the granite outcrops which have very high potential for Aboriginal Heritage. Areas with high-risk show signs of minimal disturbance, with limited impacts to sub-surface soils. High risk areas are more likely to occur where there is undisturbed bedrock and rock formations, along undisturbed watercourses and where there is remnant vegetation.

Historical Heritage

One registered heritage place is located within the Project Area, Hillman Dam (P8808). Unfortunately, there are no detailed maps of the Project Area that show where any other early structures might have been, so a combination of satellite imagery and ground truthing would be required to provide a more accurate picture of where historical features may occur in the area. For the purposes of this due diligence assessment, high risk areas have been identified using the existing local heritage inventory maps that provide a boundary for previously recorded European cultural heritage in this area.

Moderate Risk

Aboriginal Heritage

Areas of moderate risk include landforms that Aboriginal people were likely to have used occasionally or alternatively, may include landforms that would have been intensively used but have since been impacted by the construction of infrastructure and roads and agricultural practices. It is important to note that artefacts have been found in cleared paddocks elsewhere in the region and so land clearing is not necessarily an indicator that an area has been heavily impacted.

Historical Heritage

Areas of moderate risk include areas away from previously identified historical sites that are still likely to contain historical features such as fences, stone walls, wells, outbuildings, and other infrastructure.

Low Risk

Aboriginal and Historical Heritage

Low risk areas are where there is a low likelihood of encountering cultural heritage sites and where modern impacts are high to both the surface and sub-surface soils.

Summary

Based on the above predictive statements and examination of the types of landforms present in the survey area, Archae-aus has assessed that there is a **low, moderate and high** risk of impacting Aboriginal and Historical heritage within the Activity Area.

- **High Risk:** Areas where there is remnant vegetation, undisturbed bedrock and rock formations including the granite outcrops in the Project Area, and along watercourses.
- **Moderate Risk:** The majority of the remaining area outside of high risk areas given the high likelihood of encountering Aboriginal artefacts and historical European features throughout the Project Area.
- **Low Risk:** Small sections of the Project Area, including graded tracks, sealed roads, dams, and modern structures.

The above risk assessment is also supported by an assessment of risk using the Aboriginal Heritage Due Diligence Guidelines Heritage Risk Matrix, the proposed impacts will fall between significant disturbance (includes new roads or tracks, land clearing, intensive soil or core sampling) and moderate disturbance (includes soil excavation, major construction works and mechanical earthmoving) (Figure 3). As the works will take place in moderately altered environments and minimally altered environments, the risk of encountering Aboriginal cultural materials is **medium to high**.

Figure 3. DPLH's Aboriginal Heritage Risk Matrix

SCHEDULE 2 – THE ABORIGINAL HERITAGE RISK MATRIX

LAND ACTIVITIES – CATEGORIES 1-5		1. Negligible disturbance	2. Minimal disturbance	3. Moderate disturbance	4. Significant disturbance	5. Major disturbance
Previous Land Use	Built Environment - e.g. urban environment, towns, metropolitan region.	Low	Low	Low	Low	Medium
	Significantly Altered Environment - e.g. cultivated and cleared land.	Low	Low	Low	Medium	High
	Moderately Altered Environment - e.g. partially cleared lands, re-vegetated landscape.	Low	Low	Medium	Medium	High
	Minimally Altered Environment - e.g. urban bush land, regrowth areas	Low	Medium	Medium	High	High
	Unaltered Environment - e.g. protected areas or pristine environment.	Low	Medium	High	High	High
	Risk Assessment	Actions				
Low Risk (Review)	Review the landscape and proposed activity (see sections 2.4 - 2.8 - assessing the landscape and the activity). Refer to the AHIS.					
Medium Risk (Review /Exercise Caution)	Review the landscape and proposed activity (as above). The precautionary principle (see page 2) applies. Refer to the AHIS and contact the DAA. A range of actions may be recommended, including: no action, consultation with the relevant Aboriginal people, an Aboriginal heritage survey or modification of the proposed activity to avoid or minimise site impact.					
High Risk (Consult / Survey / Approvals)	Refer to the AHIS. Consult with the DAA and the relevant Aboriginal people. Dependent on consultation outcomes you may need to include: an Aboriginal heritage survey, modification of the proposed activity to avoid or minimise (see sections 2.24 - 2.28) impact to the site and/or other heritage management strategies. The land user may also need to apply for approval or consent (see section 2.26) to the activity.					
For major development projects refer to sections 2.10 - 2.12 for further advice.						

Zones of Archaeological Potential within the Activity Area

Based on the ACH predictive statements in Table 8, there is overall **high potential** for encountering ACH within parts of the Activity Area. Only areas that have been disturbed, such as Hillman Dam (not the area surrounding the dam, and the road access options into Hillman Nature Reserve have been excluded from the zone of high potential.

Map 5 delineates the **Zones of ACH potential** and risk within the Activity Area.

Potential Heritage Impacts and Mitigation

Future ground disturbance work within the proposed Hillman Nature Reserve Walk Trail Activity Area could pose a risk of harm to any potential ACH within the area.

A Tier 3 Activity / Activity involving Significant Disturbance will cause permanent damage to any potential or known heritage. Accordingly, the following mitigation measures are proposed:

- Archaeological and ethnographic heritage field survey assessment of the development envelope, including consultation with the GKBAC / SWALSC nominated Wilman Representatives and Knowledge Holders.
- An update to the risk assessment following the field assessment.
- Following the relevant approval process¹⁵ based on the results of the field assessment, if impact to ACH is unavoidable.

¹⁵ Will need to confirm what the approval process will be moving forward once the transition back to the *Aboriginal Heritage Act 1972* is officially confirmed and is completed.

478000E

479000E

480000E

481000E

482000E

6318000N

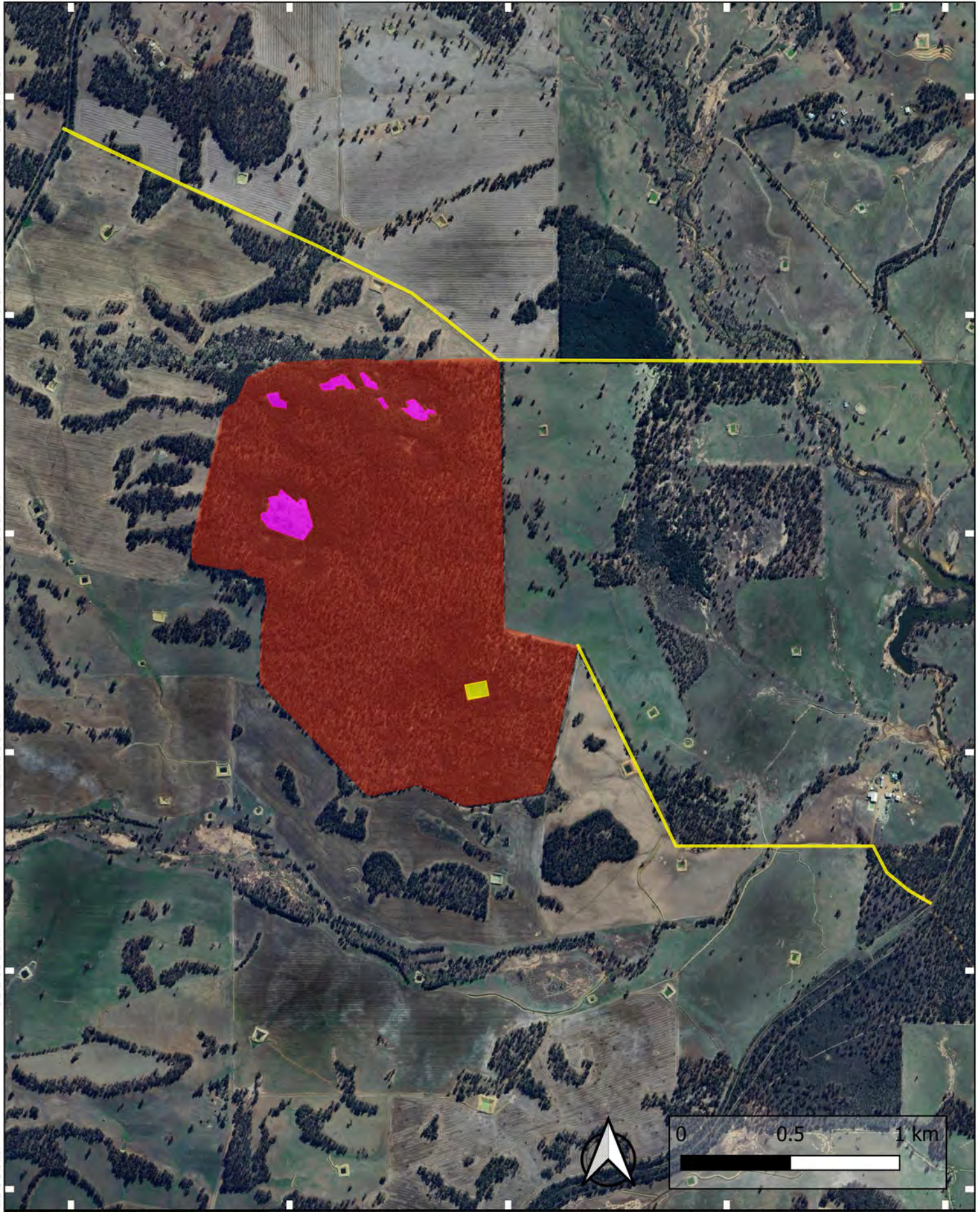
6317000N

6316000N

6315000N

6314000N


6313000N



Legend

Potential for Aboriginal Cultural Heritage

- Very High
- High
- Moderate



archae-aus

Map 5. Aboriginal Cultural Heritage Potential throughout the Activity Area.

Drafted by Lauren Jolliffe, 14th September 2023. GDA20, Zone 50.

SURVEY ADVICE

Based on the desktop assessment of the Project Area, the proposed Hillman Nature Reserve Walk Trail mainly poses a **medium to high risk** of impacting both Aboriginal and European Heritage sites. There is a **low risk** of impacting sections of the Project Area where there are stone channels, existing roads, graded tracks, dams, and modern buildings. Section Five breaks down the different areas of risk.

A heritage field assessment / survey is highly recommended because the presence or absence of Aboriginal sites cannot be confirmed at a desktop level. This is due to a lack of previous localised surveys in the area and the identified zones of high potential, particularly around the granite outcrops, which need to be assessed in the field.

The field assessment for this work should include all zones of high archaeological potential, a sample survey of zones of moderate archaeological potential, and the footprint of the proposed area of ground disturbance work. It must be noted that the above assessments were based on aerial imagery alone and may be reassessed following an on-ground heritage survey. Furthermore, any landforms such as stone outcrops and water sources that were not able to be identified on the aerial imagery, but become apparent during the survey, should be targeted regardless of whether they are within the zones of high or moderate archaeological potential. An ethnographic survey is highly recommended owing to the natural landscape of Hillman Nature Reserve, and particularly Julikan Rock and presence of rock holes on and around the Julikan Rock and other granite stone outcrops.

These surveys will require the participation of the appropriate Wilman Traditional Owners and Knowledge Holders that have been nominated by SWALSC (or GKBAC if the current SWALSC arrangement changes)¹⁶.

Accordingly, in order to facilitate archaeological and ethnographic surveys, the Shire of West Arthur would be best advised to enter into a Noongar Standard Heritage Agreement (NSHA) with the South West Land and Sea Council (SWALSC) for the Wilman People Indigenous Land Use Agreement (ILUA) area (if not already done so).

The Shire of West Arthur can contact DPLH and/or SWALSC to start the NSHA process as soon as possible as this will provide a level of certainty for engaging the appropriate Knowledge Holders and within a reasonable timeframe. According to SWALSC¹⁷:

The Noongar Standard Heritage Agreement (NSHA) provides a uniform process for proponents to engage with Noongar traditional knowledge holders and conduct Aboriginal Heritage Surveys. The NSHA also allows for compliance with the Aboriginal Heritage Act 1972, and the Aboriginal Heritage Due Diligence Guidelines¹⁸.

If your organisation is undertaking ground disturbing activities within any of the settlement agreement areas, which may affect Aboriginal cultural heritage it would be prudent to have your activities covered by an NSHA.

¹⁶ <https://www.wa.gov.au/government/document-collections/noongar-standard-heritage-agreement-south-west-native-title-settlement>

¹⁷ <https://www.noongar.org.au/noongar-standard-heritage-agreements>

¹⁸ And presumably under the new ACHA and ACH Guidelines.

Please note, Archae-aus is not permitted to carry out the NSHA or Activity Notice processes on behalf of the proponent. The SWALSC legal team prefers to prepare the agreements.

Contact Details

South West Aboriginal Land and Sea Council

legal.team@noongar.org.au

(08) 9358 7400.

DPLH (South West Native Title Settlement Heritage)

swsheritage@dplh.wa.gov.au

(08) 6551 7985

Gnaala Karla Booja Aboriginal Corporation

contact@gkb.org.au

(08) 8166 1950

SUMMARY OF ADVICE

The desktop due diligence assessment is complete. Based on this assessment, Archae-aus **advise** that Shire of West Arthur are aware that:

1. This desktop Due Diligence Assessment examines the risk of harm to any known or potential ACH within the proposed Hillman Nature Reserve Work Trail Project Area, which includes future development works.
2. At the time of writing, the *Aboriginal Cultural Heritage Act 2021* (ACHA) is set to be repealed and will be replaced by the former *Aboriginal Heritage Act 1972* (AHA) and its associated amendments; however, these changes have not yet taken effect and any activities conducted during the transition period will need to be compliant with the ACHA.
3. A search of the Aboriginal Cultural Heritage Inquiry System (ACHIS) reveals that there is no known Aboriginal Cultural Heritage (ACH) Places intersecting the Activity Area; the closest ACH Places are over 10 km from the Activity Area (*Kangaroo Print Pool (Jennamarta)* / DPLH ID 30064), (*Arthur River* / DPLH ID 37754) and (*Black Wattle* / DPLH ID 4501).
4. It is currently uncertain as to whether the absence of any ACH within the Activity Area is a reflection of the lack of heritage surveys rather than the actual absence of Aboriginal Cultural Material (ACH) altogether.
5. A search of the Heritage Council's InHerit register revealed one historic heritage place intersecting the study area (*Hillman Dam* / P8808).
6. That nearby places of historic value may be impacted by the proposed Activity.
7. The desktop research indicates that there is **moderate to very high potential** for encountering Aboriginal Cultural Heritage in the Activity Area.
8. Based on the preliminary risk assessment for the Activity Area, an archaeological and ethnographic heritage survey is required to confirm if there is any Aboriginal Cultural Heritage that is at risk of harm by the proposed Hillman Nature Reserve Walk Trail project, and to confirm whether there is further ACH within areas of moderate to very high archaeological or ethnographic potential, or if the works pose any indirect risks to the nearby ACH Places.
9. The heritage surveys will confirm the required next steps, including any necessary approvals, based on a formal assessment of the risk of harm to any ACH within the Hillman Nature Reserve Activity Area.
10. That the Shire of West Arthur, as the main proponent, will need to submit an Activity Notice to GKBAC, in order to confirm and facilitate the recommended ACH Investigations / heritage surveys, and so that the appropriate Wilman representatives can be nominated for the heritage surveys.

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APPENDIX ONE – ACHIS SEARCH RESULTS

APPENDIX TWO – COORDINATES

All coordinates are in GDA94 MGA Zone 50.

Table 9. Study Area Coordinates

Polygon	Node	Easting	Northing	Polygon	Node	Easting	Northing
Hillman Reserve	1	478803	6316714	Hillman Reserve	33	478576	6315860
Hillman Reserve	2	478957	6316784	Hillman Reserve	34	478554	6315883
Hillman Reserve	3	479305	6316802	Hillman Reserve	35	478550	6315905
Hillman Reserve	4	479472	6316790	Hillman Reserve	36	478555	6315984
Hillman Reserve	5	479509	6316799	Hillman Reserve	37	478693	6316554
Hillman Reserve	6	479534	6316790	Hillman Reserve	38	478717	6316585
Hillman Reserve	7	479852	6316804	Hillman Reserve	39	478753	6316599
Hillman Reserve	8	479925	6316797	Hillman Reserve	40	478803	6316714
Hillman Reserve	9	479951	6316794	Option 2	41	478753	6316599
Hillman Reserve	10	479961	6316773	Option 2	42	478803	6316714
Hillman Reserve	11	479984	6315566	Option 2	43	479132	6317308
Hillman Reserve	12	480319	6315485	Option 2	44	478505	6317594
Hillman Reserve	13	480190	6314895	Option 2	45	478505	6317594
Hillman Reserve	14	480162	6314812	Option 2	46	478030	6317814
Hillman Reserve	15	479920	6314765	Option 2	47	478030	6317814
Hillman Reserve	16	479799	6314753	Option 2	48	477965	6317848
Hillman Reserve	17	479581	6314850	Option 2	49	477961	6317851
Hillman Reserve	18	479528	6314831	Option 2	50	477965	6317859
Hillman Reserve	19	479416	6314810	Option 2	51	478035	6317823
Hillman Reserve	20	479386	6314798	Option 2	52	478509	6317603
Hillman Reserve	21	479348	6314806	Option 2	53	479136	6317317
Hillman Reserve	22	479103	6315062	Option 2	54	479136	6317317
Hillman Reserve	23	478975	6315195	Option 2	55	479563	6317103
Hillman Reserve	24	478901	6315269	Option 2	56	479563	6317103
Hillman Reserve	25	478861	6315322	Option 2	57	479563	6317103
Hillman Reserve	26	478871	6315587	Option 2	58	479645	6317041
Hillman Reserve	27	478895	6315700	Option 2	58	479645	6317041
Hillman Reserve	28	478881	6315793	Option 2	59	479645	6317041
Hillman Reserve	29	478814	6315803	Option 2	60	479953	6316799
Hillman Reserve	30	478777	6315839	Option 2	61	479951	6316794
Hillman Reserve	31	478737	6315832	Option 2	62	479942	6316795
Hillman Reserve	32	478688	6315837	Option 1	63	479639	6317033

Polygon	Node	Easting	Northing	Polygon	Node	Easting	Northing
Option 1	64	481884	6316790	Option 3	77	481933	6314303
Option 1	65	481889	6316790	Option 3	78	481832	6314361
Option 1	66	479645	6317041	Option 3	79	481832	6314361
Option 1	67	479645	6317041	Option 3	80	481728	6314446
Option 1	68	479953	6316799	Option 3	81	481728	6314446
Option 1	69	479951	6316794	Option 3	82	481667	6314565
Option 3	70	479942	6316795	Option 3	83	480766	6314566
Option 3	71	479639	6317033	Option 3	84	480764	6314566
Option 3	72	481884	6316790	Option 3	85	480314	6315483
Option 3	73	481889	6316790	Option 3	86	480312	6315488
Option 3	74	481837	6314370	Option 3	87	480321	6315492
Option 3	75	481933	6314314	Option 3	88	480771	6314575
Option 3	76	481938	6314312				

Table 10. Zone of Very High Archaeological Potential - Coordinates

Polygon	Node	Easting	Northing	Node	Easting	Northing
A	41	478960	6316200	76	479194	6316709
	42	479016	6316153	77	479226	6316719
	43	479038	6316138	78	479247	6316727
	44	479047	6316158	79	479335	6316737
	45	479075	6316151	80	479355	6316720
	46	479079	6316119	81	479370	6316699
	47	479107	6316031	82	479397	6316686
	48	479101	6316026	83	479401	6316659
	49	479063	6315969	84	479349	6316675
	50	479022	6315983	85	479321	6316732
	51	478905	6316025	86	479335	6316737
	52	478871	6316066	87	479404	6316616
	53	478871	6316090	88	479424	6316621
	54	478899	6316099	89	479450	6316576
	55	478910	6316122	90	479434	6316572
	56	478903	6316162	91	479404	6316616
	57	478933	6316170	92	479568	6316613
	58	478944	6316162	93	479585	6316598
	59	478960	6316200	94	479602	6316579
	60	478947	6316645	95	479622	6316555
	61	478954	6316615	96	479634	6316570
	62	478985	6316598	97	479666	6316558
	63	478984	6316573	98	479666	6316550
	64	478923	6316584	99	479658	6316547
	65	478893	6316635	100	479641	6316551
	66	478947	6316645	101	479631	6316543
	67	479247	6316727	102	479634	6316527
	68	479302	6316662	103	479611	6316517
	69	479260	6316665	104	479567	6316528
	70	479252	6316680	105	479535	6316553
	71	479211	6316676	106	479514	6316572
	72	479206	6316659	107	479539	6316572
	73	479153	6316656	108	479549	6316587
	74	479140	6316681	109	479532	6316601
	75	479174	6316688	110	479557	6316611

111	479568	6316613
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Table 11. Zone of High Archaeological Potential – Coordinates

Polygon	Node	Easting	Northing	Node	Easting	Northing
B	112	478803	6316714	147	478576	6315860
	113	478957	6316784	148	478554	6315883
	114	479305	6316802	149	478550	6315905
	115	479472	6316790	150	478555	6315984
	116	479509	6316799	151	478693	6316554
	117	479534	6316790	152	478717	6316585
	118	479852	6316804	153	478753	6316599
	119	479925	6316797	154	478803	6316714
	120	479951	6316794	155	479801	6315306
	121	479953	6316789	156	479815	6315238
	122	479953	6316789	157	479912	6315257
	123	479961	6316773	158	479899	6315326
	124	479984	6315566	159	479801	6315306
	125	480313	6315487	160	478960	6316200
	126	480317	6315478	161	478944	6316162
	127	480190	6314895	162	478933	6316170
	128	480162	6314812	163	478903	6316162
	129	479920	6314765	164	478910	6316122
	130	479799	6314753	165	478899	6316099
	131	479581	6314850	166	478871	6316090
	132	479528	6314831	167	478871	6316066
	133	479416	6314810	168	478905	6316025
	134	479386	6314798	169	479022	6315983
	135	479348	6314806	170	479063	6315969
	136	479103	6315062	171	479101	6316026
	137	478975	6315195	172	479107	6316031
	138	478901	6315269	173	479079	6316119
	139	478861	6315322	174	479075	6316151
	140	478871	6315587	175	479047	6316158
	141	478895	6315700	176	479038	6316138
	142	478881	6315793	177	479016	6316153
	143	478814	6315803	178	478960	6316200
	144	478777	6315839	179	479247	6316727
	145	478737	6315832	180	479226	6316719
	146	478688	6315837	181	479194	6316709

B	182	479174	6316688	209	479631	6316543
	183	479140	6316681	210	479641	6316551
	184	479153	6316656	211	479658	6316547
	185	479206	6316659	212	479666	6316550
	186	479211	6316676	213	479666	6316558
	187	479252	6316680	214	479634	6316570
	188	479260	6316665	215	479622	6316555
	189	479302	6316662	216	479602	6316579
	190	479247	6316727	217	479585	6316598
	191	479335	6316737	218	479568	6316613
	192	479321	6316732	219	479404	6316616
	193	479349	6316675	220	479434	6316572
	194	479401	6316659	221	479450	6316576
	195	479397	6316686	222	479424	6316621
	196	479370	6316699	223	479404	6316616
	197	479355	6316720	224	478947	6316645
	198	479335	6316737	225	478893	6316635
	199	479568	6316613	226	478923	6316584
	200	479557	6316611	227	478984	6316573
	201	479532	6316601	228	478985	6316598
	202	479549	6316587	229	478954	6316615
	203	479539	6316572	230	478947	6316645
	204	479514	6316572			
	205	479535	6316553			
	206	479567	6316528			
	207	479611	6316517			
	208	479634	6316527			

Table 12. Zones of Moderate Archaeological Potential – Coordinates

Polygon	Node	Easting	Northing	Node	Easting	Northing
C	1	479801	6315306	22	481889	6316790
	2	479899	6315326	23	481889	6316780
	3	479912	6315257	24	479953	6316789
	4	479815	6315238	25	479951	6316794
	5	479801	6315306	26	479953	6316799
	6	477965	6317859	27	480321	6315492
	7	478509	6317603	28	480771	6314575
	8	479136	6317317	29	481672	6314575
	9	479563	6317103	30	481736	6314453
	10	479645	6317041	31	481837	6314370
	11	479953	6316799	32	481938	6314312
	12	479951	6316794	33	481933	6314303
	13	479942	6316795	34	481832	6314361
	14	479639	6317033	35	481728	6314446
	15	479558	6317095	36	481667	6314565
	16	479132	6317308	37	480766	6314566
	17	478505	6317594	38	480764	6314566
	18	478030	6317814	39	480312	6315488
	19	477961	6317851	40	480321	6315492
	20	477965	6317859			
	21	479953	6316799			



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