Archaeological and Ethnographic Heritage Places Located Within The Extension Hill Magnetite Project Area

A Consolidated Report

Prepared For Extension Hill Pty Ltd.

February 2010

Edited By

Megan Tehnas B.A. (Hons)

CONFIDENTIALITY

The information contained within this report in regards to heritage sites on *Badimia* and *Widi* Mob country should be used for no other purpose than those associated with the proposed works. No specific restrictions apply to the viewing of the enclosed information.

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The Aboriginal Heritage Act 1972 (The Act)

- Defines the meaning of "Aboriginal Site" in section 5 of the Act;
- Protects all Aboriginal Sites whether recorded on the Aboriginal Sites Register or not, or otherwise known to the Registrar of Aboriginal Sites, Department of Indigenous Affairs (DIA) or the Aboriginal Cultural Material Committee (ACMC); and
- Provides for "offences relating to Aboriginal Sites" in Section 17.

An Aboriginal Site may:

- Exist in any area of Western Australia;
- Not have been recorded in the DIA Aboriginal Sites Register; and

- Not have been identified in previous heritage surveys or reports on that area but remains fully protected under the Act.

Under the Act, it is an offence for anyone to excavate damage, destroy, conceal or in any way alter an Aboriginal site, or any object, without the Minister's permission.

For the purposes of the Act, certain places and objects are identified as heritage sites. They are:

- A place of importance and significance where people of Aboriginal descent have, or appear to have, left any object made or used for a traditional cultural purpose, before or now;
- A sacred, ritual or ceremonial site which is important to Aboriginal people;
- A place associated with Aboriginal people which the ACMC says 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; and
- A place where objects are traditionally stored or where they are now stored.

The act also protects objects which are, or have been, of sacred, ritual or ceremonial significance to Aboriginal people, or have been used for any cultural purpose.

When anyone wants to use land which might disturb an Aboriginal site or object, they are advised to undertake detailed anthropological and archaeological heritage surveys to find if there are any sites or objects in the area. These include searches of the Sites Register and should also involve discussions with Aboriginal groups who have an interest in the sites or objects.

DISCLAIMER

The information, opinion, ideas and recommendations presented in this document is partly based on the experience of the author, research, and recognised procedures, which are believed to be accurate, but not infallible. The advice contained herein is given in good faith and follows acceptable professional standards and procedures, but is not meant to encourage any activity, practice or exercise, which may have ceased, changed or have been superseded for any reason without the knowledge of the author. The author assumes no responsibility or liability for any loss or damage caused directly or indirectly by the information presented in this document.

SPATIAL ACCURACY

Handheld GPS units of various models were used during past heritage surveys in the Project Area. All co-ordinates presented in this report are given on MGA Zone 50 GDA94 Datum unless otherwise stated.

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1. Acronyms and Definitions

Aboriginal Site (Site)	A place to which the Act applies under section 5.
ACMC	Aboriginal Cultural Material Committee
The Act	*The Aboriginal Heritage Act 1972.*
AHA	*The Aboriginal Heritage Act 1972.*
AIC	(Consultant) Australian Interaction Consultants
B	(Material) Basalt
C	(Typology) Core. An artefact with more than one negative flake scar, and no bulbs of percussion.
Ch	(Material) Chert
CR	(Typology) Core Reduction
DIA	Department of Indigenous Affairs
EHPL	Extension Hill Pty Ltd. (The Proponent)
Eureka	(Consultant) Eureka Archaeological Research and Consulting
F	(Artefact Termination) Feather
Fl	(Typology) Flake. Can be recognised be the presence of a positive bulb of percussion, a single interior surface and a point of applied force.
FF	(Typology) Flake Fragment. Defined by the presence of a single interior surface and no point of applied force.
GDA94	Geographic Datum of Australia 1994
GPS	Global Positioning System
GR	(Material) Granite
H	(Artefact Termination) Hinge
I	(Material) Ironstone
In	(Artefact Termination) Indeterminate
L	(Artefact Breakage) Longitudinal
MGM	Mount Gibson Mining Ltd
PA	Project Area
PPA	EHPL's Proposed Magnetite Project Area
S	(Artefact Termination) Step
T	(Artefact Breakage) Transverse
U	(Artefact Termination) Undefined
YC	(Consultant) Yamatji Communications

2. Survey Participants and Acknowledgements

Many people have participated in heritage surveys for EHPL's Proposed Magnetite Project over the years. For this consolidation report, the Survey Participants are listed below. See Appendix 1 for a complete list of Participants of individual Heritage Surveys.

AIC	
Anthropologists	**Archaeologists**
Adele Austin	Ryan Coughlan
Jeremy Maling	Claire Greer (Nee Claire Allen)
Ron Parker	Sarah Ibbitson
	Donald Lanzke

Eureka
Archaeologists
Monica Jimenez-Lozano
Ian Ryan

Yamatji Communications		
Anthropologists	**Archaeologists**	**Heritage Officer**
Dr. Tony Doulman	Scott Chisholm	Vaughan Lane
	Stephen Corsini	
	Phillip Shiner	
	Megan Tehnas	

Badimia (Registered - WC68/68) Survey Representatives	
Mrs Teresa Bell	Mr Edward Fogarty
Mrs Gloria Fogarty	Mr Glynn Fogarty
Mr Graham Fogarty	Mr Fabian George
Mr Olly George	Mr Percy George
Mrs Olive Gibson	Mr Chris Hedlam
Mr Roderick Hedlam	Mr Vincent Jones
Mr Albert Little	Mr James Little
Mr Victor Little	Mr Ashley Walsh
Mr Frank Walsh	Ms Janice Strickland

Widi Mob (Unregistered - WC97/072) Survey Representatives	
Baymis Martin	Mr David Martin
Mr Dean Martin	Mr Errol Martin Jnr
Mr Errol Martin Snr	Mr Greg Martin
Ms Joan Martin	Mr Justin Martin
Mr Kieren Martin	Mr Ronald Martin

The editor would like to thank:

- Harry Goff, Manager Environment and Community, Extension Hill Pty Ltd.
- Leanne Rough, Documents Controller, Extension Hill Pty Ltd.

3. Executive Summary

This Report was written to consolidate all archaeological and ethnographic heritage findings at Extension Hill Pty Ltd's (EHPL) Proposed Magnetite Project Area (PPA) for submission to the ACMC under Section 18 of *The Act*. It aims to bring all previously recorded information regarding both Registered and unregistered Sites and Features that fall within the PPA. Two Native Title Claimant Groups – *Badimia* (Registered WC 96/98) and *Widi* Mob (Unregistered WC 97/072) have been consulted regarding these heritage sites.

This consolidation report examines the results of Surveys dating back to 2004 as completed by three heritage companies – Australian Interaction Consultants (AIC), Eureka Archaeological Research and Consulting (Eureka) and Yamatji Communications (YC).

Extension Hill and the Mt Gibson Ranges (the area in which the EHPL's PPA is located) is situated approximately 80 kilometres north of the town of Wubin, along Great Northern Highway in Western Australia.

Eight (8) DIA Registered sites fall within the proposed PPA boundaries. One of these (DIA Site 24395: Mt Gibson Rockshelter Complex) will not be affected by the proposed works as EHPL will be avoiding the Site in its entirety.

Fourteen (14) archaeological and ethnographic sites have been recorded within the PPA. Two of these sites (EH 01 and EH 03) have been previously subject to archaeological excavations which resulted in several radiocarbon dates that due to sampling biases were not deemed to be wholly applicable by the researcher (Fordyce 2004: 38). EH 03 has since had artefacts salvaged from within and around it to the satisfaction of the *Badimia* Traditional Owners.

Six (6) isolated archaeological features and stone artefacts were also recorded as a result of previous Surveys.

The Site / Features and their locations are detailed in Table 3.1 below:

Site Name	DIA Site	Field Code	Easting	Northing
Extension Hill 01	21622	EH 01	516367	6727556
Extension Hill 02	21623	EH 02	518169	6727896
Extension Hill 03	21624	EH 03	515330	6729215
Extension Hill Rock Hole and Artefact Scatter 01	-	EH-RHAS-01	515538	6729164
Iron Hill 1	21626	IH-1	517516	6724421
Mount Gibson Rockhole (Also known as Mt Gibson Gnamma Hole 2; and Ashley's Wagu).	24389	MG-GH4	514881	6729551
Mount Gibson Spring	24394	MG-S	514881	6729551
Extension Hill	25293	EH-00	517543	6725383
Mount Gibson Artefact Scatter 01	-	MG-AS-01	517428	6729796
Mount Gibson Artefact Scatter 02	-	MG-AS-02	516976	6730555
Mount Gibson Rockshelter 1	-	MG-R01	517584	6729877
Mt Gibson Gnamma Hole 1	-	MG-GH1	517581	6729882
Mt Gibson Gnamma Hole 2	-	MG-GH2	517581	6729882
Mt Gibson Gnamma Hole 3	-	MG-GH3	517649	6729903
Airstrip Isolated Artefact 01	-	AS-ISO 01	513389	6724032
Airstrip Isolated Artefact 02	-	AS-ISO 02	512631	6723993
Airstrip Stone Formation 01	-	AS-SF 01	512794	6723833
Mt Gibson Isolated Artefact 01	-	MG-ISO-01	520063	6720558
Mt Gibson Isolated Artefact 02	-	MG-ISO-02	520468	6720419
Mt Gibson Isolated Artefact 03	-	MG-ISO-03	519714	6723372

***Table 3.1** – Aboriginal Heritage Sites / Features located within EHPL's PPA.*

It is therefore recommended that:

- If EHPL intend to disturb or destroy any of the Heritage Sites / Features listed in Table 3.1 above, the following must be carried out:
    - A Section 18 Application must be made to the Minister for Indigenous Affairs as appropriate under *The Act*.
    - Further consultations with the relevant Indigenous Group/s prior to any land clearing or site disturbance so that steps may be taken to salvage any archaeological /heritage materials if desired. A qualified archaeologist and representatives of the relevant Native Title Group are to conduct the mitigation.
    - Monitors from the relevant claimant groups are to be employed by EHPL and/or MGM during the land clearing stages of the proposed developments. Should any heritage materials be uncovered at this time, EHPL and/or MGM should engage a qualified archaeologist to record these before land clearing work is to re-commence.

4. Purpose of the Heritage Survey Report

An archaeological survey is conducted in order to identify tangible evidence of past human activities and to place that data within a social and scientific framework. By examining the surviving material record, the past can be interpreted (Trigger 1989). An ethnographical survey is conducted in order to record the social memory and knowledge of the Traditional Owners connected to a particular area.

This report has been created so as to combine all research previously conducted at EHPL's Proposed Magnetite Project into one document. As the location of the proposed mine footprint will directly impact upon a number of registered Aboriginal Heritage Sites, EHPL is required to submit a Section 18 Application to the Minister for Indigenous Affairs to meet their obligations and responsibilities under *The Act*.

The aims of this report are:

- To present the results of the archaeological and ethnographic recordings of all Aboriginal Heritage Sites located within the Proposed Magnetite Project Footprint.

- To advise the ACMC on the recommendations made by the heritage consultants and the *Badimia* (WC 96/98) and *Widi* (unregistered WC 97/072) People regarding these heritage sites.

- To protect information concerning local heritage materials from being lost and damaged when the proposed mining operations commence in the area.

4.1 - The Proposed Project Development

EHPL are proposing to mine and process magnetite from Extension Hill and Extension Hill North, both of which are part of the Mt Gibson Ranges, located approximately 80 km north of Wubin and 350 km north-east of Perth. EHPL has given MGM the rights to mine and process hematite from these areas.

The mine is to be an open cut operation that will produce both direct shipping grade hematite ore and magnetite concentrate (For Maps, see Appendix 2). Also to be constructed are an underground pipeline within a services corridor which will transport the magnetite slurry west to Geraldton Port. Infrastructure at Geraldton Port will then strip the magnetite ore from the slurry for export.

A Summary of the key proposal characteristics is presented in Table 4.1 below:

Element	Description of approved changes to proposal
Project Life	Approximately 40 years. Hematite project life minimum 5 years Hematite mining rate 3MTPA
Ore quantity	Magnetite approximately 1000 Million tonnes. Hematite approximately 13 Million tonnes.
Waste Management	Overburden will be stockpiled in a dump to the east of the pit. Tailings from magnetite processing will be combined with the overburden dump.
Processing requirements	• Dry and wet processing of magnetite to produce approximately 10 Million tonnes per annum of magnetite concentrate. • Dry processing of hematite.
Size of final pit	Approximately 2,500 metres long and 1000 metres wide.
Depth of final pit	Not more than 500 metres below the ground level (approximately 370 metres below the groundwater level)
Height of waste dump	460mRL
Dewatering	Approximately 2,500 cubic metres per day
Mine water supply	Dewater for potable and domestic supplies: 80 cubic metres per day. Dewater for dust suppression: 2,055 cubic metres per day Process water and slurry transportation water: 5.5 gigalitres per annum from the Tathra borefield (piped 168 kilometres to the mine site) and drying of tailings.
Vegetation Disturbance	Not more than 1038 hectares at the mine site (251 hectares for the mine pit and 548 hectares for the waste dump. 99ha for Magnetite processing. Temporary laydown area to be rehabilitated 24 hectares). Not more than 90 hectares along the services corridor
Hematite ROM process plant	13ha (Ministerial Statement 753; Amendment 4)
Underground pipelines within the services corridor	• Slurry pipeline from the mine site to Geraldton Port • Return water pipelines from Geraldton Port to Three Springs, from Three Springs to the mine site, and from the Tathra Borefield to the return water pipeline near Three Springs
Width of services Corridor	• Not more than 15 metres in pastoral section (from Monger's Lake to the mine site) • Not more than 20 metres in the agricultural section (from Geraldton Port to Monger's Lake)
Airstrip	Relocate south (28.5ha)
Deviation of Great Northern Highway	21 ha
Hematite Village	South of plant site 21 ha (including access track)
Magnetite Village	West of plant site (40ha)
Power	Electricity from SWIS grid to supplement gas power station

Table 4.1 – *Summary of the Key Proposal Characteristics*

5. - Desktop Study

A desktop survey of the DIA Site Register Search was conducted prior to the commencement of the physical survey. The results of the Site Register Search are used to inform the Survey Team of the location and nature of any previously recorded sites in, or in close proximity to the Survey Area.

The following polygon was entered into the database on an MGA 50 zone:

Point	Easting	Northing
1	510000	6731500
2	523500	6731500
3	523500	6720000
4	520000	6720000
5	520000	6722500
6	515150	6722500
7	515150	6724000
8	510000	6724000

Table 5.1 - *DIA Site Register Search polygon for EHPL's PPA.*

Within this polygon (see Appendix 2 for map), eight Aboriginal heritage sites have been registered. The details for these sites are as follows:

Site ID	Status	Access	Restriction	Site Name	Additional Info	Coordinates
21622	P	O	N	Extension Hill 01	Artefacts / Scatter	516367mE 6727556mN
21623	P	O	N	Extension Hill 02	Artefacts / Scatter	518169mE 6727896mN
21624	I	O	N	Extension Hill 03	Rockshelter	515330mE 6729215mN
21626	I	O	N	Iron Hill 1	Artefacts / Scatter	517516mE 6724421mN
24389	L	C	N	Mt Gibson Rockhole	Water Source	Not available for closed sites
24394	L	C	N	Mt Gibson Spring	Artefacts / Scatter	Not available for closed sites
24395	L	C	N	Mt Gibson Rockshelter Complex	Artefacts / Scatter	Not available for closed sites
25293	L	O	N	Extension Hill	Ceremonial / Mythological, Water Source	517543mE 6725383mN

Table 5.2 - *Registered Sites located within the DIA Site Register Search polygon for EHPL's PPA.*

Eight related reports have been submitted to the DIA relating directly to these sites. The details for these reports are detailed in Table 5.3 below:

Site #	Catalogue #	Title	Author	Status
23576	HSR GM 2009 ELD	A Report of the Archaeological Survey of the Accent Resources NL Proposed Drill Pads and Tracks at Magnetite Range, Murchison, WA	Elder, James	Open
21296	HSR GM 2004 AUS	An archaeological survey of the proposed mining operations at Mount Gibson, Western Australia	AIC	Open
21287	HSR GM 2004 RYA	Preliminary advice of the results of an archaeological survey of Mount Gibson Iron Ltd's lease area, Mount Gibson Western Australia for Mount Gibson Iron Ltd.	Ryan, Ian	Open
22690	HSR GM 2006 AUS	Report of an ethnographic survey and archaeological reconnaissance with the *Widi* Mob Native Title Claim Representatives of amended section 18 area and extended infrastructure locations at the Extension Hill Project, Mt Gibson, Western Australia	AIC	Open
22689	HSR GM 2006 AUS	Report on an archaeological and ethnographic survey of the proposed Magnetite Concentrate project at Extension Hill in the Mount Gibson Ranges, Western Australia with Representatives of the *Widi* Native Title Claim	AIC	Open
22706	HSR GM 2005 AUS	Report on an archaeological survey of a proposed slurry pipeline between Mt. Gibson and Geraldton, Western Australia	AIC	Open
22842	HSR GM 2004 AUS	Report on an ethnographic survey of the proposed hematite / magnetite project at Mt Gibson, Western Australia	AIC	Open
22910	HSR GM 2008 AUS	Section 18 Report of the Proposed Haul Road and Associated Works between Perenjori and Mt Gibson, Western Australia	Tony Farnham	Closed

Table 5.3 - *DIA registered site reports for the PPA.*

5.1 - Summary of DIA Site Files

Site ID: 21622

Site Name: Extension Hill 01

Co-Ordinates: 516367mE 6727556mN (30 m extent)

Access: Open

Resolution ID: 5141

Resolution Number: 04168

ACMC Meeting ID: 3988

ACMC Meeting Date: 07/12/2004

Site Accession Status: 5(a), 39.2(c)

Informants: *Widi* Mob Native Title Claimant Group

Summary:

EH 01 was first recorded by Australian Interaction Consultants (AIC 2004) during an archaeological survey of the Project Area. The Site was originally assessed as being an occupation site that consists of an artefact scatter located at a breakaway containing two caves. The scatter is recorded as being extensive but low density and likely to extend north along a dry creek bed that runs along the base of the breakaway. Artefacts represent the early stages of flake production. The Original location of the artefact scatter is possibly located at the top of the slopes and is assumed to have gradually spread down the breakaway. The site was considered to contain a high potential for additional cultural material. EH 01 was considered to have been occupied for extended periods of time. The presence of a large amount of smoke staining in the caves was considered significant.

EH 01 was subject to mitigation via archaeological excavation in 2007.

Site ID: 21623

Site Name: Extension Hill 02

Co-Ordinates: 518169mE 6727896mN

Access: Open

Resolution ID: 5141

Resolution Number: 04168

ACMC Meeting ID: 3988

ACMC Meeting Date: 07/12/2004

Site Accession Status: Section 5(a); 39.2(c)

Informants: *Widi* Mob Native Title Claimant Group

Summary:
Extension Hill 02 is a low density artefact scatter located in the low-lying land of Extension Hill. It was recorded as being a very small artefact scatter probably representing an area that was occupied only briefly. No artefact manufacture was noted to have occurred at the site, however artefacts were utilised there.

Extension Hill 02 is located in an area described as walking through country and artefacts were probably utilised and/or discarded during the journey to an occupation site.

Site ID: 21624

Site Name: Extension Hill 03

Co-Ordinates: 515330mE 6729215mN (10 m extent)

Access: Open

Resolution ID: 5141

Resolution Number: 04168

ACMC Meeting ID: 3988

ACMC Meeting Date: 07/12/204

Site Accession Status: Insufficient Information

Informants: *Widi* Mob Native Title Claimant Group

Summary:
Recorded as being a Rockshelter and Natural Feature. Extension Hill 03 is one of three rockshelters located on a series of breakaways. No artefacts were located at the rockshelter and AIC identified black staining on the roof of the rockshelter to be the likely result of smoke. It was considered that the area had high potential for the recovery of archaeological materials (AIC 2004: 27). The consultant stated that all archaeological evidence from the Mount Gibson area is important to the understanding of human adaptation, occupation and activity in semi-aid zones and that information from these sites are unique and should not be destroyed. It was thus recommended that all archaeological sites at Mt Gibson, including Extension Hill 03, should be avoided by the proposed developments.

Site ID: 21626

Site Name: Iron Hill 01

Co-Ordinates: 517514mE 6724433mN (+10m extent)

Access: Open

Resolution ID: 5141

Resolution Number: 04168

ACMC Meeting ID: 3988

ACMC Meeting Date: 07/12/2004

Site Accession Status: Insufficient Information

Informants: *Badimia* Native Title Claimant Group – Olive Gibson, Gloria Fogarty, Olly George & Victor Little.

Summary:

Iron Hill 1 is a small artefact scatter with a single isolated flake nearby. The site measures 25m x 10m and all artefacts were recorded from it. It was ascribed a low degree of archaeological significance due to limited research potential. Also, it was not considered to be significant in terms of the regional archaeology of the central Murchison region.

Site ID: 24389

Site Name: Mt Gibson Rockhole

Co-Ordinates: Not available for Closed Sites

Access: Closed

Resolution ID:

Resolution Number:

ACMC Meeting ID:

ACMC Meeting Date:

Site Accession Status:

Informants: *Widi* Mob Native Title Claimant Group and Ms Joan Martin (DEC).

Summary:

The Author was not able to obtain access to the Site File for 24389 Mt Gibson Rockhole.

Site ID: 24394

Site Name: Mt Gibson Spring

Co-Ordinates: Not available for Closed Sites

Access: Closed

Resolution ID:

Resolution Number:

ACMC Meeting ID:

ACMC Meeting Date:

Site Accession Status:

Informants: *Widi* Mob Native Title Claimant Group and Ms Joan Martin (DEC).

Summary:

The Author was not able to obtain access to the Site File for 24394 Mt Gibson Spring.

Site ID: 24395

Site Name: Mt Gibson Rockshelter Complex

Co-Ordinates: Not available for Closed Sites

Access: Closed

Resolution ID:

Resolution Number:

ACMC Meeting ID:

ACMC Meeting Date:

Site Accession Status:

Informants: *Widi* Mob Native Title Claimant Group and Ms Joan Martin (DEC).

Summary:

The Author was not able to obtain access to the Site File for 24395 Mt Gibson Rockshelter Complex. This Site will not be affected by EHPL's PPA as there are plans to avoid it in its entirety.

Site ID: 25293

Site Name: Extension Hill

Co-Ordinates: See Table 5.4 below.

Access: Open

Site ID 25293 has no registry status resolutions defined

Resolution ID:

Resolution Number:

ACMC Meeting ID:

ACMC Meeting Date:

Site Accession Status:

Informants: *Widi* Mob Native Title Claimants

Summary:

Extension Hill is recorded as being a site of Mythological and Ceremonial significance, with no gender restrictions. Within the site boundaries is a water source (in the form of a number of rock holes – number unspecified) and an unidentified number of isolated artefacts "located across ridges" (A. Austin 2004: Site Recording Form). The site is described as being a "significant Dreamtime Story of the Dunnart and the Parenti (goanna). Places on the hills were used in the Dreamtime for ceremonies. The Dunnart was known as a talented painter and the Parenti asked Dunnart to paint him up" (ibid.). Further details of this story are recorded by Hames Consultancy Group (2004).

Point	Easting	Northing
1	515145	6728721
2	515990	6726855
3	515889	6726275
4	516204	6725317
5	516633	6724838
6	517667	6723791
7	517629	6722934
8	518259	6722253
9	519823	6723287
10	518890	6724472
11	517932	6725140
12	518146	6725468
13	519533	6725380
14	518423	6726590
15	517289	6727158
16	515359	6728860
17	515145	6728721

Table 5.4 – *Location polygon for DIA Site 25293 Extension Hill.*

5.2 – Previous Heritage Survey Reports

A number of reports have been previously written pertaining to the Heritage Sites located within the Proposed Magnetite Project Area. All of these reports are available from the Documents Catalogue at the Extension Hill Pty Ltd Offices in West Perth, but not all have yet been submitted to the DIA. This Consolidation Report will present all pertinent information from these reports in later Chapters regarding the Heritage Sites recorded within the Proposed Project Area.

The reports which contain additional information regarding the Registered DIA sites are presented in Table 5.5 below.

Author	Date	Report Title	EHPL Catalogue #	Informants	Reference
Eureka / Ryan, I. & Morse, K.	Oct 04	Report on the Results of an Archaeological Survey of the Mount Gibson Iron Ltd's Lease Area, Mount Gibson, Western Australia	10-800-NT-REP-0032_0	Badimia	Eureka 2004
AIC	Nov 04	Report on an archaeological and ethnographic survey of the proposed hematite/magnetite project at Mt Gibson, Western Australia	10-800-NT-REP-0024_	Widi Mob	AIC 2004a
AIC	Nov 04	An Archaeological Survey of the Proposed Mining Operations at Mount Gibson, Western Australia	10-800-NT-REP-0033_0	Widi Mob	AIC 2004b
Hames Consultancy Group	Nov 04	Section 18 Application Under the Aboriginal Heritage Act (1972) to Undertake Mining Operations at Mt Gibson Western Australia	10-800-NT-REP-0021_A	Widi Mob	Hames Consultancy Group 2004
AIC	Aug 05	Preliminary Advice of Tailings Pond and Waste Dump	10-800-NT-REP-0010_0	Badimia	AIC 2005a
AIC	Nov 05	Work Area Clearance Survey of the Proposed Magnetite Concentrate Project at Extension Hill in the Mount Gibson Ranges (Tenement Number: G59/30), Western Australia with Representatives of the Badimia Native Title Claim	10-800-NT-REP-0025_	Badimia	AIC 2005b
AIC	June 06	Report on an Archaeological and Ethnographic Survey of the Proposed Magnetite Concentrate Project at Extension Hill in the Mount Gibson Ranges, Western Australia with Representatives of the Widi Native Title Claim.	10-800-NT-REP-0034_0	Widi Mob	AIC 2006a
AIC	June 06	Preliminary Advice of an Ethnographic Survey and Archaeological Reconnaissance	10-800-NT-REP-0019_A	Widi Mob	AIC 2006b
AIC	June 06	Report of an Ethnographic Survey and Archaeological Reconnaissance with the Widi Mob Native Title Claim Representatives of Amended Section 18 areas and Extended Infrastructure Locations at the Extension Hill Project, Mt Gibson, Western Australia	10-800-NT-REP-0028_0	Widi Mob	AIC 2006c

YC	Dec 07	Preliminary Advice: Archaeological Survey with Badimia Native Title Claimants - Extension Hill Iron Ore Project Area, December 2007	10-800-NT-REP-0007_0	Badimia	YC 2007
YC	June 08	A Report of an Archaeological Survey of Extension Hill Pty Ltd Mine Operations Expansion area for Submission to the Minister For Indigenous Affairs for a Section 18 Application Under The Aboriginal Heritage Act 1972 with Badimia Native Title Claimant Representatives	10-800-NT-REP-0004_0	Badimia	YC 2008a
YC	June 08	A Report of an Ethnographic Survey of Extension Hill Pty Ltd Mine Operations Expansion area for Submission to the Minister For Indigenous Affairs for a Section 18 Application Under The Aboriginal Heritage Act 1972 with Badimia Native Title Claimant Representatives	10-800-NT-REP-0005_0	Badimia	YC 2008b
Fordyce, B.	Nov 08	Report of a Section 16 excavation of DIA site 21622 (Extension Hill 01) and DIA site 21624 (Extension Hill 03) at Mt Gibson, WA. Prepared for Asia Iron.	10-800-EN-REP-0021_0	Widi Mob	Fordyce 2008
YC	May 09	A Report Detailing Potential Options and Recommendations Regarding the Rockshelters at Mt Gibson Iron's Extension Hill Project Area, Western Australia	10-800-NT-REP-0008_0	-	YC 2009c
Tehnas, M	Sept 09	A Report of the Archaeological Surveys conducted at the Proposed Air Strip and Accommodation Areas at Extension Hill, Western Australia	10-800-NT-REP-0035.001_0	Badimia	Tehnas 2009a
YC	Sept 09	A Report of the Ethnographic Surveys conducted at the Proposed Air Strip and Accommodation Areas at Extension Hill, Western Australia	10-800-NT-REP-0035_0	Badimia	YC 2009a
Tehnas, M	Sept 09	A Report of the Artefact Salvage at the Extension Hill 03 Rockshelter (DIA Site 21624), and a Section 18 recording of a Nearby Rock Hole and Artefact Scatter at Extension Hill, Western Australia	10-800-NT-REP-0015_A	Badimia	Tehnas 2009b

Tehnas, M	Dec 09	A Report of the Archaeological Heritage Clearance Survey conducted at the Mt Gibson, Western Australia	10-800-NT-REP-0017_A	Badimia	Tehnas 2009c
YC	Dec 09	A Report of the Ethnographic Heritage Clearance Survey conducted at the Mt Gibson, Western Australia.	Not yet available	Badimia	YC 2009b
Tehnas, M	Dec 09	A Section 18 Recording of Extension Hill 01 Rockshelter (EH01) at Extension Hill, Western Australia.	Not yet available	Badimia	Tehnas 2009d

Table 5.5 – *All Heritage Survey Reports which record information regarding Heritage Sites in EHPL's PPA.*

5.3 – Archaeological Background

An awareness of the regional archaeological background of a given survey area is important as it enables the archaeologist to make predictive statements regarding the expected archaeological characteristics within that region. The regional background can be augmented by the results of previous research undertaken for archaeological surveys within the vicinity of the survey area.

Arid Zone Archaeology

(YC 2008a: 5-7; Tehnas 2009a; 2009b; 2009c; 2009d).

The survey area is situated in the semi-arid/arid zone of Australia. Most archaeological research of the arid zone of Australia has focused on the timing of Pleistocene occupation and abandonment during the time of the Last Glacial Maximum (LGM)[1], and subsequent Holocene re-occupation by Aboriginal people. (Smith 1987; Lampert and Hughes 1988; Veth 1989a; Ross, Donnelly and Wasson 1992; Bowdler 1990).

It remains difficult to ascertain the precise nature of arid zone occupation prior to the LGM. According to Ross *et al* (1992), the arid zone has never been well watered and hyper-arid conditions during the LGM would have made the arid zone unsuitable (Hiscock n.d.). Early occupation was therefore either opportunistic (Veth 1989a; Hiscock n.d.) or required certain behaviour modifications in order for people to live in arid conditions (Ross *et al* 1992). Such modifications may have resulted in population adjustments and human groups retreating to areas of greater resources and water (Lampert and Hughes 1980; 1987; Smith 1988; Veth 1989a), which Veth (1989b) terms 'refuges'. These refuges are "…piedmont/montane uplands and riverine/gorge systems, both providing networks of permanent water sources capable of withstanding climatic extremes" (Veth 1989b:256).

Gould (1980) has suggested that two types of environmental adaptation were employed by Aboriginal groups in order to survive in the arid zone: 'adaptive processes and 'adaptive behaviour'. Adaptive process is an adaptation involving large-scale responses to the continuing climatic patterns that produce aridity and is characterised by a risk minimisation

[1] Between 15,000 Before Present (BP) and 25,000 BP

strategy. In contrast, adaptive behaviour is a response to short-term changes in climatic conditions, for example, periods of extreme drought or high rainfall.

With climate amelioration during the late Pleistocene and early Holocene at around 12,000 BP, human populations again moved into the marginal areas of the corridors and to a lesser extent, barrier deserts. Most sites have been found within the 'corridors' thus possibly reflecting a post LGM re-colonisation (Veth 1989a). According to Smith (1988), there seems to have been neither a sudden increase in population nor new sites within the arid zone in the early Holocene. In contrast to the occupation patterns of the late Pleistocene and early Holocene, the late Holocene saw a substantial increase in sites within the arid zone and an increased utilisation of those sites, as evidenced at *Mandu Mandu* Creek in North-west Australia (Morse 1988), Colless Creek in Queensland (Hiscock 1988), and *Puritjarra* in Central Australia (Smith 1987, 1988). Data captured from these sites supports Veth's (1989a: 239) assertion that sites numbers and occupation intensity is a function of the emergence of reciprocity networks and the development of seed grinding technology and not of environmental conditions.

The evidence for the antiquity of human occupation of the arid zone is scant and, until relatively recently, few radio-carbon dates were available. A date of 2160 +/-105 BP has been obtained from charcoal in deposits at Agnew rockshelter, whilst at two hearth sites at Wiluna, dates of 1040+/-80 BP and 4090+/-100 BP were obtained from charcoal (O'Connor and Veth, 1996). In order to redress the paucity of archaeological research in the semi arid/arid zone, O'Connor and Veth (1996) undertook the Arid Zone Project. The aim of the project was to investigate the timing and characteristics of the occupation of the semi arid/arid zone of south-western Australia. The study involved an archaeological survey of the area from the north-eastern Goldfields to the Wheatbelt of Western Australia, and included excavations at three rock shelters. One of these rock shelters, known as Katampul, located mid-way between Leinster and Leonora, indicated evidence of human occupation from the Pleistocene to the present. O'Connor and Veth obtained five radiocarbon dates from charcoal samples within the rockshelter's stratified deposit, ranging from 21,170+/-190 BP to 350+/-350 BP.

As a result of the regional survey and previous work undertaken in the Arid Zone, Veth (1989; 1993; 1995; 1996), made a series of assumptions regarding the general characteristics of archaeological material within the Semi arid/Arid Zone:

- Most of the archaeologically visible sites that represent the greatest social complexity and longevity are located near permanent water sources;

- The more permanent sites near water sources will reflect greater lithological variability and more intense stone reduction;

- The proportions of retouched and utilised tools will be comparatively high;

- Large quantities of debitage from tool manufacture and rejuvenation should be present;

- Less complex sites will be located near ephemeral water sources; and

- Ubiquitous low-density occurrences of isolated artefacts are the result of numerous task specific events reflecting both resource procurement and maintenance of extractive tools (cf Gould, 1980). Hook's (n.d) model of artefact distribution within the Kalgoorlie/Kambalda area predicts a similar archaeological signature for the survey area, which she contends will tend to exhibit the following characteristics:

    - A high level of archaeological material will be located adjacent to granite exposures
    - A medium level of archaeological material will be associated with salt lake features, hills and breakaways;
    - A very low level of archaeological material will be located within calcareous plains; undulating plains and dune fields, except where suitable lithic raw material (eg chert, silcrete) is present within the environment.

It is expected that the archaeological signature of the survey area will conform to the archaeological characteristics outlined by Veth (1989; 1993; 1995; 1996) and Hook (n.d.).

(Eureka 2004: 1-2)

Aboriginal occupation of the arid mid west region of Western Australia has been demonstrated for the Murchison Basin from at least 9,950 BP (Bordes *et al* 1983: 4). Occupation of the W0379 Rockshelter site near Agnew has been dated to 2,160 ± 105 BP (Liberman *et al* 1977). Mid Holocene dates have been recorded from two open hearth sites near Wiluna (both mid Holocene) (Veth 1990).

Earlier occupation has been demonstrated at several locations relatively close to the study area. At the Katumpul Rockshelter in the Eastern Goldfields, occupation has been dated to as early as 21,000 BP (O'Connor and Veth 1996).

North of the study region, near Newman in the Pilbara, occupation has been demonstrated at the Newman Rockshelter and Newman Orebody XXIX sites. At these sites dates of between 26,300 and 20,740 BP have been recorded (Maynard 1980, Troilett 1982, Brown 1987). Evidence of human occupation around the same time has been found some distance north-west of the study area at the Malea Rockshelter, north east of Newman (McDonald Hales and Associates 1997).

Archaeological research in the arid interior of Australia, and particularly Western Australia, has focussed on the Pilbara region. Research in this region has important implication for understanding archaeology of the study region. The stone artefact assemblages and subsistence remains form the earliest levels of the Newman Rockshelter, Newman Orebody XXIX, Mesa J J24 and Malea Rockshelter sites suggests that between 26,300 and 20,700 BP visits to these sites were low level, brief and intermittent. Activities at these sites at this time appear to have been focussed on small groups of people using stone artefacts and preparing and consuming meals. At around 20,000 BP, coinciding with the onset of the glacial conditions, the amount of cultural materials at these sites decreased. Simultaneously, the intensity of human occupation at the Milly's Cave site in the north-east Hamersley Plateau increased. This has been interpreted as indicating a general trend towards the reduction of the size of territory and a preference for areas of dependable resources during the period of the glacial maximum starting at around 3,700 BP when new types of retouched tools, such as backed artefacts and adzes, appear (Brown 1987).

Apparently associated with this is a major expansion of rock art in the Pilbara (Lorblanchet 1983) and a significant increase in the intensity of Rockshelter use and the number of Rockshelters occupied for the first time (Marwick 2002). This increase in intensity and diversity of cultural activities may represent an increase in population and possibly the emergence of cultural systems known from early description of inland Aboriginal groups in the Pilbara (Withnell 1901). If this interpretation of a population increase in arid Western Australia at around 3,600 BP is correct, then archaeological sites located during this survey are highly likely to date within this time span. Such surface scatters were probably the result of economic, subsistence and cultural activities similar to those recorded ethnographically.

The Midwest Region

(AIC 2005b: 14-15)

There has been few archaeological studies performed on the Indigenous archaeology of the Midwest region, however those that have been performed suggest a stone tool technology similar in many respects to that of the Swan Coastal Plain. The largest excavation relating to the stone artefact technology of the area was performed by eminent French archaeologist François Bordes and a group of colleagues along the Greenough River system between 1978 and 1981. The closest of the sites with artefactual material that can be associated with the study area was Billibilong I, approximately 150kn northeast of Geraldton which exhibited stratigraphic layers dating between 2030–5340 years BP. The stone assemblage of this excavation were characterised by microlithic artefacts less than 5cm in length, including flakes, utilised fragments, blades and adze flakes composed of chert or quartz (Bordes *et al* 1983: 16– 20). The cores found tended to be amorphous or bipolar, and Bordes *et al* notes that they were 'presumably collected as nodules and fragments from the gravel-strewn plains adjacent to the river flood plain.' (Bordes *et al* 1983: 18).

The treatment of cores and flakes found in Bordes' excavation suggested an Indigenous material culture that had a flexible, informal approach to stone artefact production, and was likely to be very mobile rather than being tied to any one area through specific material needs. As such, the general archaeological signature for Aboriginal sites of the Midwest area is likely to be scatters of quartz or chert artefacts, found in floodplain areas where nodules of raw material were eroding out of the ground near water sources.

5.4 – Ethnographic Background

(AIC 2006a: p. 13-14)

Ethnography has been broadly defined as 'descriptive studies of human societies' (Gould, J. & Kolb, 1964: 245). Most anthropological authorities associate the approach with face-to-face fieldwork among persons of the cultural group (society) in which the researcher is interested. As Roger Keesing says:

> *The ethnographer brings to the task techniques of mapping and census taking and skills of interviewing and observation …. routines of "gathering data" – taking a census, recording genealogies, learning about the local cast of characters, and querying informants about matters of customs and belief (Keesing, 1976: 9, 10).*

The Heritage Survey

In an Aboriginal Heritage survey, the anthropologist or archaeologist interviews informants on the spot who point out areas of cultural significance to their people. In the Australian context, the ethnographic section of a Heritage report includes statements about the sacredness of places: whether they are associated with Dreaming stories and tracks or with related ceremonies and rituals, or with supernaturally charged localities that are the abodes of the ancestors' spirits, such as a grave site or a mourning site or a place where a death has occurred (including massacre sites).

Such places are duly recorded for the heritage report. Often the information is summed up in one sentence, partly because the place (site) in question is small (for example, a waterhole) but also because a recital of a full Dreaming story is inappropriate for the purposes of the survey. There is an element of secrecy in the telling of sacred beliefs and practices that is part of Indigenous respect paid to the ancestors. Certain knowledge is restricted to persons who are initiated (men or women depending on the situation) and, if it is imparted to the anthropologist, it is privileged information.

Also, sacred areas are very often inter-related so that the broader context of the physical environment is important to know. For example, a specific waterhole is usually associated with a string of other waterholes and connecting waterways that are manifestations of the Rainbow Serpent and/or other Dreaming characters such as Kangaroo or Dingo who travelled across the country forming the landscape. In respect to the sacred, archaeological and ethnographic findings often complement one another. For instance, an arrangement of stones on the ground is archaeologically significant because it is an example of material culture; it is ethnographically significant because it indicates an area where sacred ceremonies and rituals took place.

The ethnographer, while working within the unique parameters of a Heritage survey, nevertheless applies the same approaches and skills as those noted by Keesing above (and other authorities). Mapping is an important aspect of the Heritage survey in the use of GIS technology and maps showing the location of sites. 'Census' data and the recording of genealogies take place in the background and are important for the identification and acknowledgement of Indigenous informants, who are usually given brief personal profiles in the reports. There is interviewing during pre-consultation and later in the field, where on-the-spot observation also takes place. Spiritual customs and beliefs, and whether they apply to a site or not, are the meat of the ethnographic Heritage survey.

See Appendix 4 for compiled Ethnohistories for the *Badimia* People and the *Widi* People.

6. Methodology

The methodologies used to survey EHPL's Proposed Magnetite Project Area varied between the Consultants who conducted the field surveys. Overall, the basic Research Methodology commonly used between all consultants can be described as follows:

1. Pre-consultation with the Traditional Owners and Proponent.
2. DIA Database Site Registry Search (using the Aboriginal Heritage Inquiry System, or AHIS).
    - Polygon of the Survey Area entered into AHIS.
    - Previously identified sites in the Survey Area established.
3. Field Consultation with Traditional Owners
    - Archaeological Methodologies varied depending on the Survey Aims (For example, Methodologies for a Section 18, Section 16 and Site Identification differed greatly – See Appendix 5). Generally, field inspection was completed with a number of Traditional Owners using pedestrian transects and vehicular inspections.
    - Ethnographic Methodologies consisted of interviews with Traditional Owners and field inspections.
4. Analysis of results (out of field) for the Section 16 mitigations at EH 01 and EH 03.
5. Reporting of results to the Proponent.

Appendix 5 lists the Methodologies used by each Consultant for every survey completed.

6.1 - The Survey Participants

It is a requirement of the professional anthropological and archaeological organisations (Anthropological Society of Western Australia Inc. the Australian Anthropological Society Inc. and the Australian Association of Consulting Archaeologists Inc.) that Aboriginal people from the relevant claimant groups, in this case the *Badimia* (Registered - WC 96/98) People and the *Widi Mob* (Unregistered - WC 97/072), participate in heritage surveys. This ensures that the views of relevant traditional owners concerning ethnographic and archaeological sites are adequately represented and recorded during the conduct of heritage surveys.

There are two (2) Native Title Claims within which EHPL's Proposed Magnetite Project Area falls. These are presented below:

Badimia **(Registered - WC 96/98)**

The Heritage Surveys conducted by Eureka Archaeological Research and Consulting and Yamatji Communications was conducted with the cooperation and involvement of selected representatives of the *Badimia* People. The *Badimia* People claim traditional responsibility for and rights to the heritage of their claim area and assert their rights to participate in heritage surveys and to be consulted under *The Act*.

Following previous experience of the Consultants working in the *Yamatji* region, individuals delineated by membership of the *Badimia* Group were considered to be appropriate for inclusion in the consultation process. Following consultations with the *Badimia* Working Group representatives of the *Badimia* group were selected for inclusion in each heritage survey (YC 2009a; 2009b).

Widi Mob **(Unregistered – WAG 6193/98 – WC 97/072)**

The Heritage Surveys conducted by Australian Interaction Consultants were conducted with the cooperation and involvement of selected representatives of the *Widi Mob*.

Widi Mob NTC: (unregistered) WAG6193/98 (WC97/072) covers the entire Extension Hill Proposed Magnetite Project Area. AIC identified that the *Widi Mob* hold Native Title Claim over Mount Gibson. AIC conducted pre-consultation with the *Widi Mob* to arrange and conduct the field surveys (AIC 2004a: 9).

7. Survey Area

7.1 - Climate

The climate of the survey area is classified, according to the modified Köppen system of climate classification, as hot persistently dry grassland with summer drought (Stern; de Hoedt, and Ernst, 2001). The Australian Bureau of Meteorology records the average annual temperature for Paynes Find (the closest weather station to the Survey Area) to be 27.7° Celsius. Monthly, these temperatures range from a maximum and minimum of between 37.3°C to 20.8°C in January, and 18.3°C to 5.4°C in July (Australian Bureau of Meteorology 2010). The annual average rainfall from 1919 to 2009 was 280.3 millimetres, with Paynes Find located within a semi-arid desert environment with year-round rainfall (*ibid*. 2010).

7.2 - Vegetation

The Project Area lies within the Austin Botanical District of the Murchison Region. Vegetation within this region is termed 'Mulga Low Woodland' and is dominated solely by the Mulga (*Acacia aneura*), which is found in all environments from saline lacustrine to stony breakaways (Beard 1976a, 1976b). Associated understory plants in the project area may include *Eremophilia margarethae* on loamy soil, *E. Granatica* and *E. Dielsiana* on hilly country and *E. Abietina* on rocky ground (Beard 1974a, 1974b). The landform is generally level at the foot of the scree slope, though has areas of moderate incline, and is covered in quite dense mulga scrub, thicket and trees (including a number of Eucalypts alongside the creek bed), where the canopy sits no higher than about 10m.

7.3 - Geology

The Proposed Magnetite Project Area is located in the Murchison province of the Yilgarn Craton, an immense geological feature covering approximately 657,000 square kilometres of Western Australia. The geology of the Murchison province is predominantly comprised of Archaean greenstone and granitic-migmatitic rock (Williams 1975: 33). Soils within the survey area are characterised by red-brown sandy loam with outcropping of lateritic fragments and pisolitic nodules (Dr E. Dechow, pers. Comm.). Banded Ironstone Ridges are the dominating geological feature within the Proposed Project Area.

7.4 - Land Integrity

Extension Hill is the dominate land form within the Project Area. Site disturbance is predominantly in the form of drainage lines and catchment areas, though soil erosion is also minimally evident.

The Proposed Project Area falls on unallocated crown land adjacent to the Mt Gibson Pastoral Lease. The impact from pastoral activities around Extension Hill appears to be minimal. Ground Disturbance comes predominantly in the form of access tracks and drill pads – mostly on Extension Hill North.

Ground surface visibility for the Project Area varied greatly. This data is presented in Table 7.1 Below.

Area	Visibility (%)
Surrounding EH 01	60 - 80
Surrounding EH 03	60 - 80
Northern Extension Hill	40 - 80
Eastern Extension Hill	80
Mt Gibson Rockshelter Complex	70
Surrounding Iron Hill 1	25
Mt Gibson	< 30
Foot of Mt Gibson and Surrounding Area	40 - 90
Proposed Airstrip and Accommodation Village	10 – 15 (< 30)

Table 7.1 – *Ground Surface Visibility throughout EHPL's PPA.*

8. Field Survey, Site Recording and Assessment

The Archaeological and Ethnographic Surveys at EHPL's Proposed Magnetite Project Area have conducted by three Heritage Companies since 2004. AIC, Eureka and YC conducted surveys with the two Native Title Claimant Groups whose Claim Areas fall within the Project Area. **Appendix 3** provides an overview of the Field Surveys Completed from 2004 to 2009.

The Project Area is located approximately 350 km north of Perth, and approximately 80 km north of Wubin. The Project Area is situated on Unallocated Crown Land adjacent to Mt Gibson Station on the both eastern and western sides of Great Northern Highway in Western Australia.

The Proposed Project Area can be bounded by a polygon. The co-ordinates for this polygon are provided in Table 8.1 below.

Point	Easting	Northing
1	510000	6731500
2	523500	6731500
3	523500	6720000
4	520000	6720000
5	520000	6722500
6	515150	6722500
7	515150	6724000
8	510000	6724000

***Table 8.1** – Survey polygon co-ordinates for EHPL's PPA.*

Within the PPA, eight (8) Aboriginal Heritage Sites have been previously registered with the DIA. These are:

- 21622: Extension Hill 01;
- 21623: Extension Hill 02;
- 21624: Extension Hill 03;
- 21626: Iron Hill 1;
- 24389: Mt Gibson Rockhole;
- 24394: Mt Gibson Spring;
- 24395: Mt Gibson Rockshelter complex;
- 25293: Extension Hill.

Of these, DIA Site 24395: Mt Gibson Rockshelter Complex will not be affected, damaged or destroyed by the Proposed Magnetite Project. EHPL intend to avoid the Rockshelter Complex in the Project Developments. For this reason, a Site Assessment for DIA Site 24395: Mt Gibson Rockshelter Complex will not be presented within this report as EHPL's Section 18 Application over their PPA will not be including this Site.

In total, fourteen (14) Aboriginal Heritage Sites have been previously located during previous Heritage Surveys conducted within the PPA. These are presented in Table 8.2 below.

Site Name	Field Code	Easting[2]	Northing[2]
Extension Hill 01	EH 01	516367	6727556
Extension Hill 02	EH 02	518169	6727896
Extension Hill 03	EH 03	515330	6729215
Extension Hill Rock Hole and Artefact Scatter 01	EH-RHAS-01	515538	6729164
Iron Hill 1	IH-1	517516	6724421
Mount Gibson Rockhole (Also known as Mt Gibson Gnamma Hole 2; and Ashley's Wagu).	MG-GH4	514881	6729551
Mount Gibson Spring	MG-S	514881	6729551
Extension Hill	EH-00	517543	6725383
Mount Gibson Artefact Scatter 01	MG-AS-01	517428	6729796
Mount Gibson Artefact Scatter 02	MG-AS-02	516976	6730555
Mount Gibson Rockshelter 1	MG-R01	517584	6729877
Mt Gibson Gnamma Hole 1	MG-GH1	517581	6729882
Mt Gibson Gnamma Hole 2	MG-GH2	517581	6729882
Mt Gibson Gnamma Hole 3	MG-GH3	517649	6729903

Table 8.2 – *Heritage Sites located within EHPL's PPA.*

[2] Please see Chapters relating to each Site for complete geographical information (polygons).

Six (6) isolated archaeological features were found within the PPA. These are presented in Table 8.3 below.

Archaeological Feature	Description	Easting	Northing	Reference
AS-ISO 01 (Airstrip Isolated Artefact 01)	Basalt Core Debitage	513389	6724032	*Tehnas 2009a:*
AS-ISO 02 (Airstrip Isolated Artefact 02)	Basalt Core Debitage	512631	6723993	*Tehnas 2009a: 25*
AS-SF 01 (Airstrip Stone Formation 01)	Nine stones of local material arranged together forming a line. This kind of stone formation was likely created as a marker to help people navigate the landscape.	512794	6723833	*Tehnas 2009a: 25*
MG-ISO-01 (Mt Gibson Isolated Artefact 01)	A single fragment of basalt core reduction / core preparation debris located in an open wash area with surrounding open woodland. Ground surface visibility high (90%).	520063	6720558	*Tehnas 2009c: 31*
MG-ISO-02 (Mt Gibson Isolated Artefact 02)	Two Ironstone artefacts – one flake and one fragment of core reduction / core preparation debris. Located in an area of low-lying scrub with a ground surface visibility of 40%.	520468	6720419	*Tehnas 2009c: 31*
MG-ISO-03 (Mt Gibson Isolated Artefact 03)	One ironstone flake showing retouch along the dorsal edge blade. Located in a wash/soak area at the Foot of Mt Gibson, Ground surface visibility was deemed to be at 70%.	519714	6723372	*Tehnas 2009c: 31*

***Table 8.3** – Archaeological Features located within EHPL's PPA.*

Plate 8.1 - *AS-ISO 01. 513389mE 6724032mN.*

Plate 8.2 - *AS-ISO 02. 512631mE 6723993mN.*

Plate 8.3 – *AS-SF 01. 512794mE 6723833mN.*

Plate 8.4 - *MG-ISO-01. Dorsal Surface. 520063mE 6720558mN.*

Plate 8.5 - *MG-ISO-02. Artefact #1. 512631mE 6723993mN.*

Plate 8.6 – *MG-ISO-02. Artefact #2. 512631mE 6723993mN.*

Plate 8.7 – *MG-ISO-03. Ventral Surface. 519714mE 6723372mN.*

Plate 8.8 – *MG-ISO-03. Dorsal Surface. 519714mE 6723372mN.*

	Art. #	Mat.	Type	L (mm)	W (mm)	T (mm)	Platform		% Cortex	Term.	Comments
							L (mm)	W (mm)			
MG-ISO-01	1	B	CR	49	45	16	37	16	45	S	520063mE / 6720558mN
MG-ISO-02	2	I	CR	46	82	18	21	7	20	S	520468mE / 6720419mN
	3	I	Fl	31	10	5	9	5	5	U	
MG-ISO-03	4	I	Fl	47	42	8	24	8	5	F	519714mE / 6723372mN. Retouched on dorsal edge.

Table 8.4– *Mt Gibson Isolated Artefact Recordings.*

8.1 - Extension Hill 01 (EH 01)

DIA Site: 21622

Location: See Table 8.5 Below.

Site Description *(YC 2009d)*
EH 01 consists of two large caves and two smaller sheltered overhangs set into a breakaway. Within these are two areas that show quarrying activity and a very sparse artefact scatter that extends from the Rockshelter down the scree slope towards the ephemeral creek. The face of EH 01 is oriented in a north-west direction.

Ephemeral water sources in the form of gnamma holes and rock holes are located nearby. These are present in bedrock exposed via erosion processes with one showing signs of cultural adaptation. These are located at **516317mE / 6727673mN**.

The individual features of EH 01 were recorded as follows:

Cave 1 – The larger of the two caves;

Overhang 1 – The smaller and more protected of the two overhangs. Quarried;

Overhang 2 – The larger of the two overhangs; and

Cave 2 – The smaller of the two caves.

A Site boundary for EH 01 was defined during the survey and is presented in Table 8.3 below:

]

Point	Easting	Northing
1	516397	6727554
2	516366	6727515
3	516345	6727523
4	516316	6727542
5	516352	6727602

Table 8.5 – *Co-ordinates of the polygon for EH 01.*

A small ephemeral creek runs north to south at the foot of the scree slope and is visible at the following co-ordinates:

Point	Easting	Northing
1	516342	6727552
2	516348	6727562
3	516356	6727593
4	516376	6727617

Table 8.6 – *Location of the ephemeral creek adjacent to EH 01.*

Plate 8.9 – *Gnamma Holes associated with EH 01.*

Plate 8.10 – *Detail of Gnamma Holes associated with EH 01.*

8.1.1 - Cave 1

Location: 516370mE / 6727555mN

Cave 1 is the larger of EH 01's two caves, consisting of two chambers. The Cave itself measures 14m x 7m x 2.5m (length x width x height), with the length extending from the dripline to back wall. Chamber 1 was recorded as being the one closest to the back wall and measures 6.5m x 5m x 1.5m. The two chambers are separated by a small step (0.28m in height). Chamber 2 measures 7.3m x 7m x 2.5m. The floor of the entire cave slopes upwards towards the back wall.

At the back of the cave is a small opening which allows light into the cave. It is roughly circular in shape, measuring approximately 0.5m x 0.5m. At the time of recording, the entire roof surface was covered in crickets and spiders so that its appearance was difficult to ascertain. From what could be viewed, both dark lichen and light fire staining was observed in scattered patches. The cave floor consisted of a covering of kangaroo faecal matter and stone debris associated with quarrying activity that appears to have taken place within the Cave.

A small section on the southern wall of Chamber 2 has been quarried, judging by the scars left in the wall and the associated knapping floor before it. A clay based white ochre-like stone appears to be the exploited material, though it is finer grained and harder to crumble as other ochre sources in the region seem to be, such as ochre quarries near Karara. The quarry is largely in good condition, though no formed artefacts were located. Instead, the assemblage present consisted almost entirely of detritus associated with the quarry. The quarry measured 1.60m x 0.4m x 0.5m (length x width x height). The detritus extended across the mouth of the cave and out onto the scree slope.

Plate 8.11 – *EH 01 Cave 1 at 516368mE 6727556mN.*

Plate 8.12 – *EH 01 Cave 1 at 516336mE 6727532mN.*

Plate 8.13 – *Quarried Wall in Chamber 2 EH 01. 516336mE 6727532mN.*

8.1.2 - Overhang 1

Location: 516366mE / 6727549mN

Overhang 1 is a small shelter created as a result of natural erosion, and has had its walls quarried for white ochre stone. The Overhang measures 5m x 1.8m x 0.9m (length x width x height), and the quarried area features southern part of the Overhang. Quarry scars on the wall surface are visible, as are ochre chips and a large quantity of white powder covering the knapping floor (these chips appear to be resultant of a combination of human means, natural fracturing and erosion). The quarry scars most visibly appear as large, deep cuts or striations that run against the natural fracture lines of the mineral deposit, though it also appears that the ochre also was flaked off along the fracture lines.

The quarry is largely in good condition, though no formed artefacts were located. Instead, the assemblage present consisted almost entirely of detritus associated with the quarry. The quarry measures approximately 1.5m x 0.65m (length x height).

No formal stone tools or other artefacts were visible in the immediate vicinity of the Overhang. However, the deposit beside the Overhang wall appears to be of some depth and may contain cultural materials in the sub-surface stratum.

Plate 8.14 –*EH 01 Overhang 1. 516360mE 6727551mN*

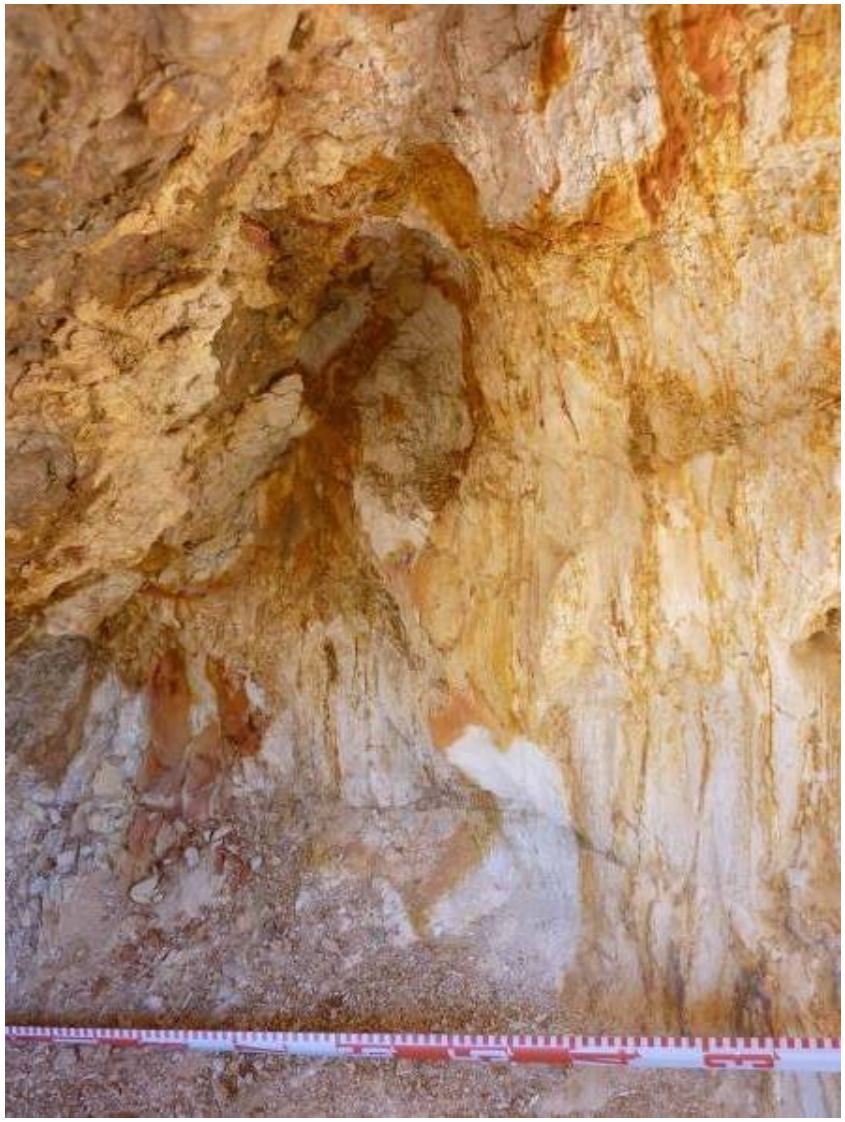


Plate 8.15 –*EH 01 Overhang 1 Quarry. 516364mE 6727550mN*

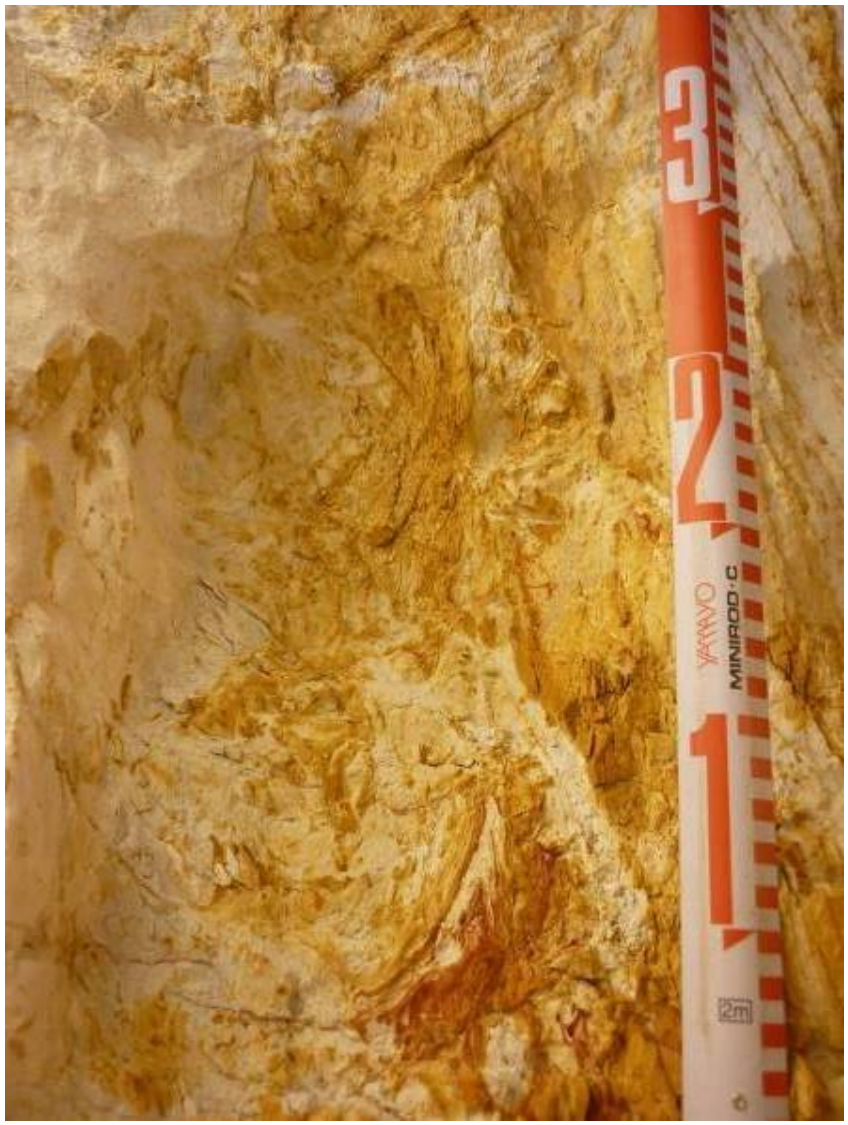


Plate 8.16–*EH 01 Overhang 1 Quarry. 516364mE 6727550mN*

8.1.3 - Overhang 2

Location: 516366mE / 6727541mN

Overhang 2 is a larger overhang / shelter created as a result of natural erosion, and has had its walls quarried for white ochre stone. The Overhang measures 10.2m x 2.8m x 2.3m (length x width x height), and the quarried area features along the bottom of the southern part of the Overhang. Quarry scars on the wall surface are visible, as are ochre chips and a large quantity of white powder covering the knapping floor. Like in Overhang 1, the quarry scars most visibly appear as large, deep cuts or striations that run against the natural fracture lines of the mineral deposit, though it also appears that the ochre also was flaked off along the fracture lines.

The quarry is largely in good condition and measures approximately 4.50m x 0.9m (length x height).

No formal stone tools or other artefacts were visible in the immediate vicinity of the Overhang. Instead, the assemblage present consisted almost entirely of detritus associated with the quarry. The detritus extended across the mouth of the cave and out onto the scree slope.

Plate 8.17–*EH 01 Overhang 2. 516356mE 6727550mN*

Plate 8.18 –*EH 01 Overhang 1 Quarry. 516348mE 6727546mN*

8.1.4 - Cave 2

Location: 516361mE / 6727530mN

Cave 2 is the smaller of the two caves at EH 01. It is single chambered and does not contain a Quarry as Cave 1 and the two Overhangs do. The dimensions of Cave 2 are 5.60m x 3.70m x 1.40m (length x width x height), with the length of the cave extending from the back of the cave to dripline. The dripline is oriented facing west-north-west.

As with Cave 1, during the time of recording the entire roof surface was covered in crickets and spiders so that it was difficult to view. From what could be observed, dark lichen was present in scattered patches. The cave floor was sandy and clear of much detritus with the exception of some kangaroo excreta. No artefacts were located within or surrounding Cave 2.

Plate 8.19 –*EH 01 Cave 2 facing north-east. 516358mE 6727527mN*

8.1.5 - Recorded Artefact Scatter

The artefact scatter associated with EH 01 is both small in size and sparse in distribution. The two surveyors examining the Site walked transects spaced 2m to 3m apart and given the sample size it was deemed appropriate to record all artefacts spotted. Only 12 artefacts were located during the Survey and all of these were recorded for Section 18 litigation. Previous surveys of the area record artefacts that were not located during the November 2009 recordings, such as a 'single grindstone fragment' which was located by Australian Interaction Consultants in 2004, but unable to be relocated in 2007 (AIC 2008: 20).

The identified artefact scatter is predominantly comprised of pieces of core reduction (manufacturing debris), with the only other typology represented being flakes in a small quantity (2 flakes / 17% of the assemblage). Artefact material consists of Chert (2 artefacts / 17%), Ironstone (5 artefacts / 42%), Basalt (1 artefact / 8%) and Granite (4 artefacts / 33%).

EH 01 is approximately 87 m by 81 m in size (NS x EW). Visible surface artefact density across 7047m^2 is 0.017 /m^2. Artefacts appear to be mostly concentrated in 3 areas with there being up to 4 artefacts / m^2. However, one of these concentrations of artefacts are believed to be out of context and positioned by members of a previous Survey (See Sample #1). The ground at the front of the Caves and Overhangs is covered in debitage that can be associated with quarrying activities. This debris is both dense and unquantifiable. Across the entire extent of the artefact scatter there are no fewer than 12 artefacts and estimated to be no more than 20 or 30, though this depends on what may be located the sub-surface deposits.

Three sample squares and one isolated artefact were recorded by the archaeologists (See Table 9.3). It is estimated that 85% - 90% of the overall surface artefactual material was recorded.

Plate 8.20 – *EH 01 Sample Square 1, Artefacts #1 - #4 (L-R).* <u>*Not*</u> in situ *– 516373mE 6727556mN.*

Plate 8.21 – *EH 01 Sample Square 2. 516364mE 6727557mN.*

Plate 8.22 – *EH 01 Isolated Artefact #8. 516386mE 6727606mN.*

Plate 8.23 – *EH 01 Sample Square 3. 516333mE 6727539mN.*

Artefact No.	Sample Square	Location	Raw Material	Typology	L (mm)	W (mm)	T (mm)	Plat. (W)	Plat. (T)	% Dorsal Cortex	Term.	Comments
1	1	516373mE 6727556mN	Ch	CR	97	80	33	72	34	25	F/S	Artefacts # 1 - #4 are not considered to be *in situ* as they were found in a pile next to Cave 1.
2			I	CR	71	66	22	-	-	15	U	
3			I	F	32	39	10	28	9	5	F	
4			I	F	16	18	5	16	3	0	F	
5	2	516364mE 6727557mN	I	CR	29	28	10	27	7	45	U	
6			I	CR	21	27	5	8	3	15	U	
7			Ch	CR	15	31	7	19	6	30	U	
8	ISO	516316mE 6727606mN	B	CR	75	52	21	33	14	5	S	Retouch on Dorsal Edge
9	3	516333mE 6727539mN	G	CR	68	62	19	34	13	20	F	
10			G	CR	56	55	29	43	23	30	S	
11			G	CR	45	43	23	40	20	20	S	
12			G	CR	51	41	13	10	3	30	F	Termination broken laterally.

***Table 8.7** – Artefacts Recorded at EH01.*

8.1.6 - Section 16 Recording of Extension Hill 01

(Fordyce 2008: 28)

Test Pit 2

A site datum for test pits 2 and 3 was established outside of Cave 1 at 516366E, 6727556N ± 0.5m, MGA Zone 50 (average of 45,000 readings). The Datum height above sea level was recorded as 273.29m ± 0.5m. Test pit 2 was placed at 516375E, 6727554N approximately 5m into the cave. The 0.5m² test pit was excavated to an average depth of 0.32m when bedrock was reached. Table 2 below details the stratigraphic units identified within test pit 2.

No cultural material was identified test pit 2 and charcoal was underrepresented throughout the excavation. A small amount of charcoal was present in Stratigraphic Units 2 and 6, however it proved to be too little to reliably date. As such, radiocarbon dates were not obtained from test pit 2.

Stratigraphic Unit	Sediment Description
(1)	Fibrous layer of unstratified fine, dry top soil (7.5YR 5/4). Mix of kangaroo hair, excrement and small stones from rockshelter roof.
(2)	Dry soil containing small stones and hair fibres (7.5YR 5/4). Several charcoal flakes also present, along with beetle carcasses and rock salt.
(3)	Layer of light sand (7.5YR 5/6) – possibly decayed stone from bedrock
(4)	Dark Humic layer (7.5YR 4/3) containing acacia leaves and several twigs. Quite loose soil, possibly a burrow.
(5)	Fine dry soil lens (7.5YR 5/4) with chalky white stones – same material as rockshelter walls, containing rock salt crystals. Only seen in section 2.
(6)	Dark brown lens (7.5YR 3/3) containing small amount of wood and charcoal fragments. Only seen in section 1.

Table 8.8 - *Stratigraphic Units, Test Pit 2*

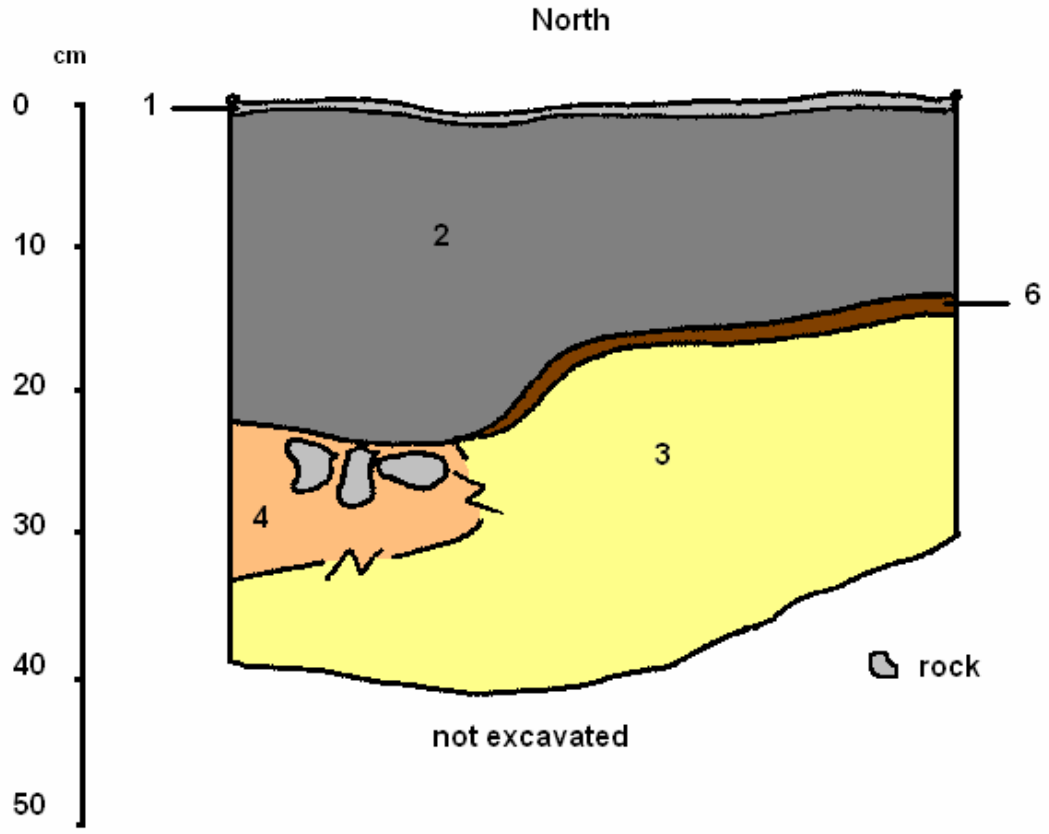


Figure 1- *Test pit 2 Section 1 drawing*

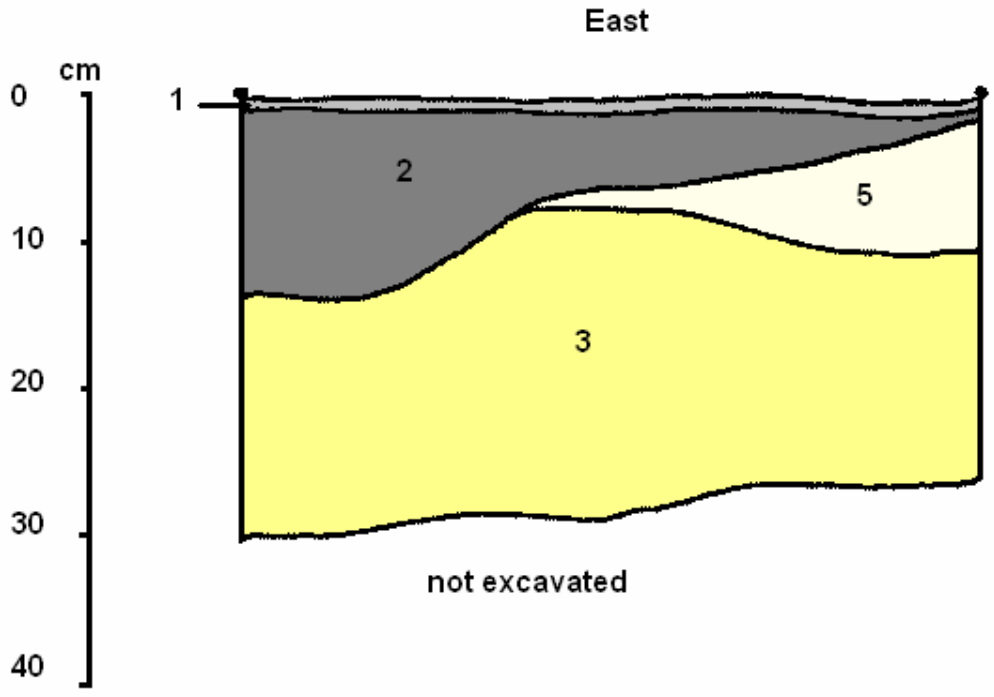


Figure 2- *Test pit 2 Section 2 drawing*

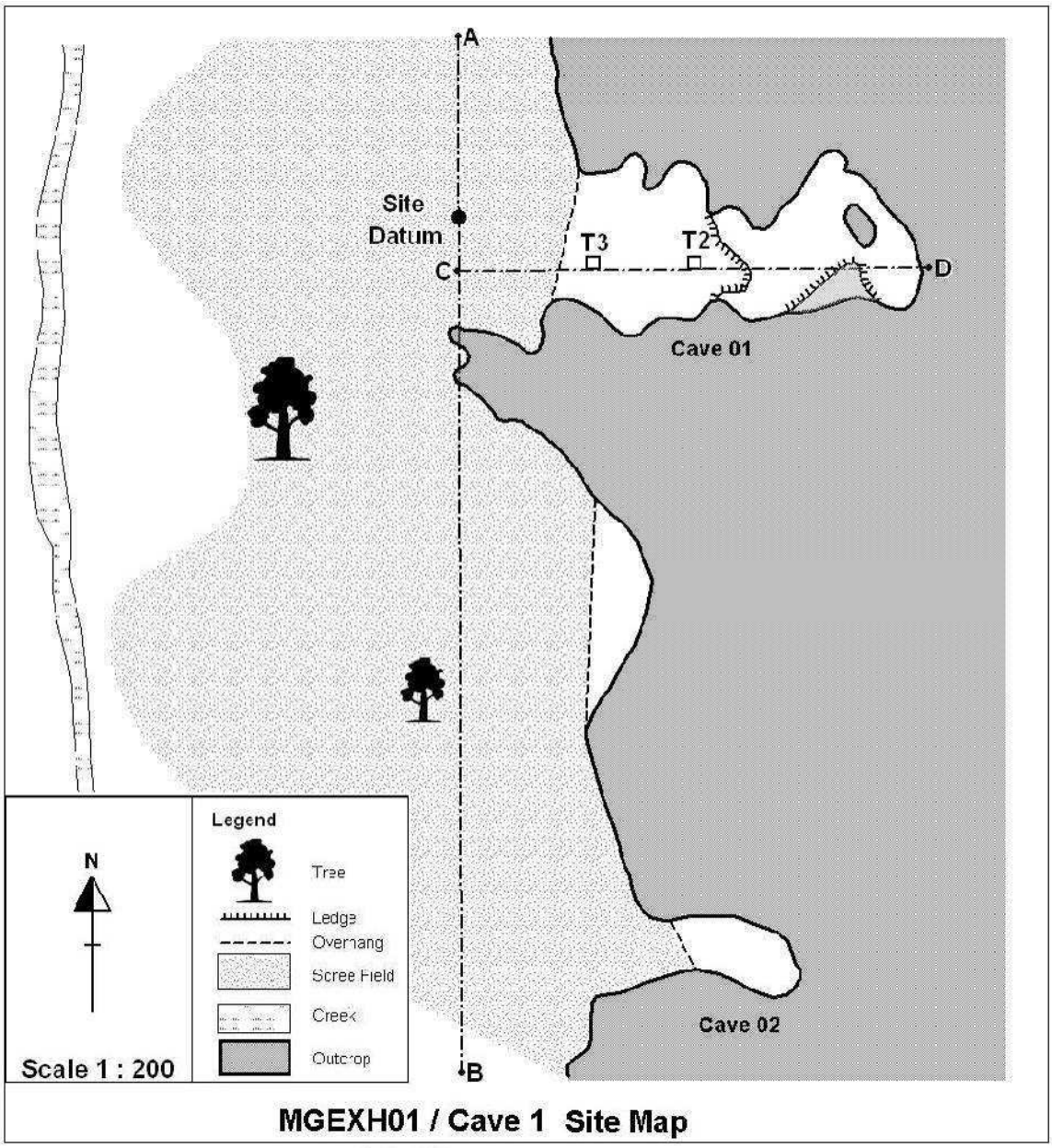


Figure 3 - *MGEXH01 / Cave 1 Site Map*

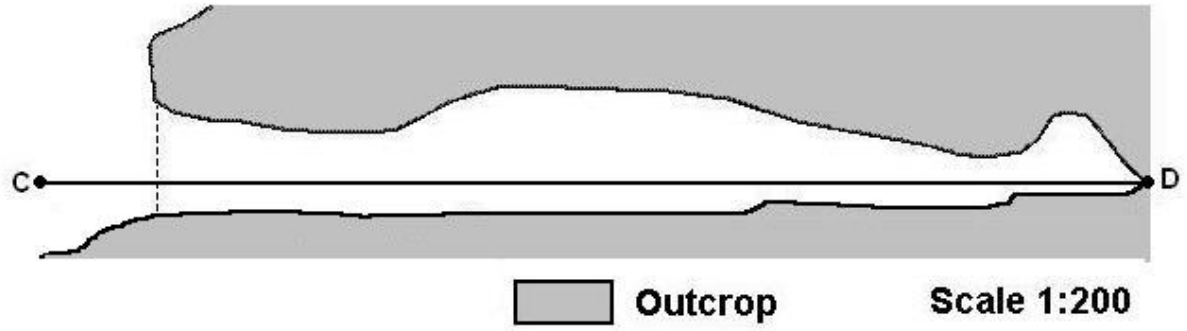


Figure 4 - *MGEXH01 / Cave1 Site Profile*

Test Pit 3

Test pit 3 was placed at 516371.5E, 6727554N, approximately 1m within the dripline of Cave 1. The 0.5m² test pit was excavated to an average depth of 0.32m when bedrock was reached. Table 3 below details the stratigraphic units excavated in test pit 3.

Charcoal pieces were present throughout the excavation and were also present in a series of discreet lenses of ash. No cultural material was recovered from within test pit 3, but radiometric dating was undertaken on charcoal samples from stratigraphic units 2, 6 and 7 in order to establish a chronology of sedimentation within the cave. Dates returned from the C14 testing (shown in table 4 below) indicate that the stratigraphic sequence of the site is relatively intact and offers a lower age of around 3280 ± 38 years BP (from Stratigraphic Unit 7). Stratigraphic Unit 6 returned a date of 1812 ± 40 years BP and charcoal from Stratigraphic Unit 2 was dated at 127 ± 21.

This intact sequence is despite a significant amount of disturbance upon the Stratigraphic sequence of test pit 3, caused by an animal burrow (Stratigraphic Unit 4) cutting through the surrounding layers. Small animal bones were present in this layer, along with digested feather fragments and beetle carapaces conglomerated within excrement.

The large amount of charcoal within test pit 3 is likely the result of bushfires (natural or anthropogenic) blowing material into the cave as there was no evidence of structural features associated with hearths or firepits within the excavation. It is unlikely that lens of ash recorded as Stratigraphic Unit 7 (see table 3 below) represents a hearth like feature, as there are no cultural material or bones within the feature. Time limitations and a similarly limited scope of works prevented the expansion of the pit to further investigate the extent of this ashy lens and the total sampling of the cave represents less than 1.25% of the cave surface.

Stratigraphic Unit	Sediment Description
(1)	Unstratified topsoil consisting of fibrous animal hairs, rockfall and detritus. (7.5YR 4/3)
(2)	Dry soil (7.5YR 5/4) containing kangaroo excrement, small stones, fibrous material, fur and insect carcasses.
(3)	Fine ashy lens (7.5YR 6/2) containing charcoal.
(4)	Accumulation of red stones, mixed animal bones and plant material. (7.5YR 5/3)
(5)	Dark layer of soil beneath **(2)** (10YR 2/1). Very dry containing lots of small stones, some charcoal and roots.
(6)	Light, dusty lens (10YR 5/4) containing stone fragments from cave roof.
(7)	Grey ashy layer (7.5YR 4/1) with frequent charcoal, wood fragments and stone. Mixes with above, lower features.
(8)	Cream coloured stony layer (5YR 7/3). Appears to be a concreted 'cap' over charcoal layer **(7)**.
(9)	Brown layer (7.5YR 4/3) of sandy material containing lots of stone. Very chalky, with occasional charcoal fragments.

Table 8.9 - *Stratigraphic Units, Test Pit 3*

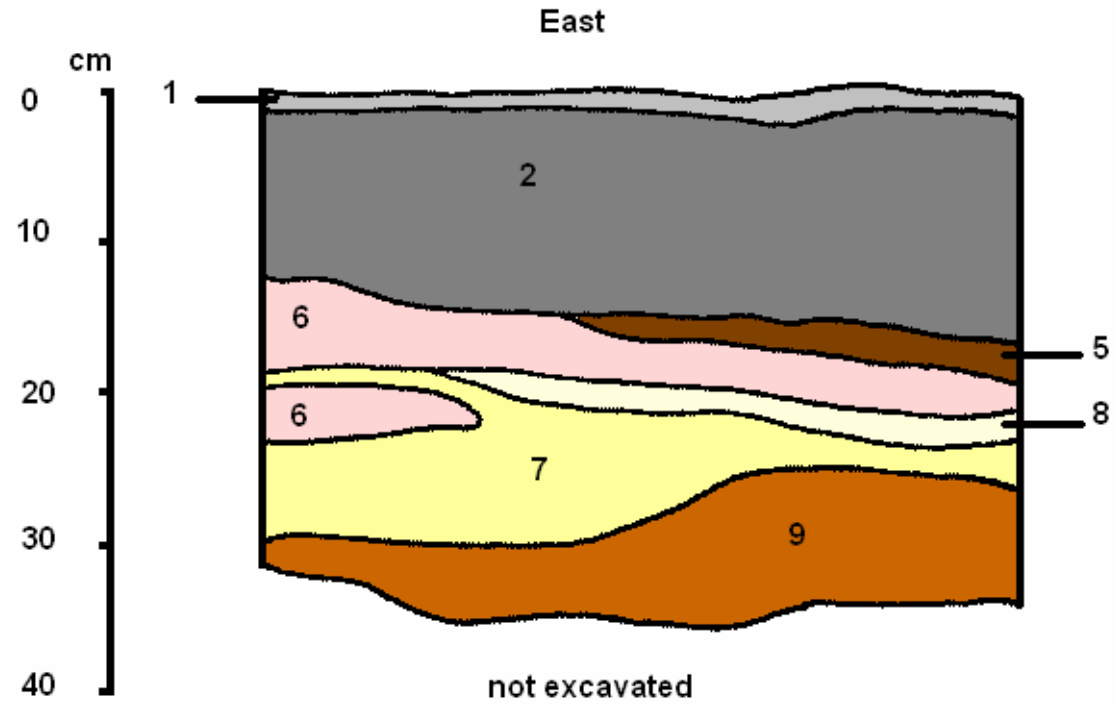


Figure 5 - *Test pit 3 Section 1 drawing*

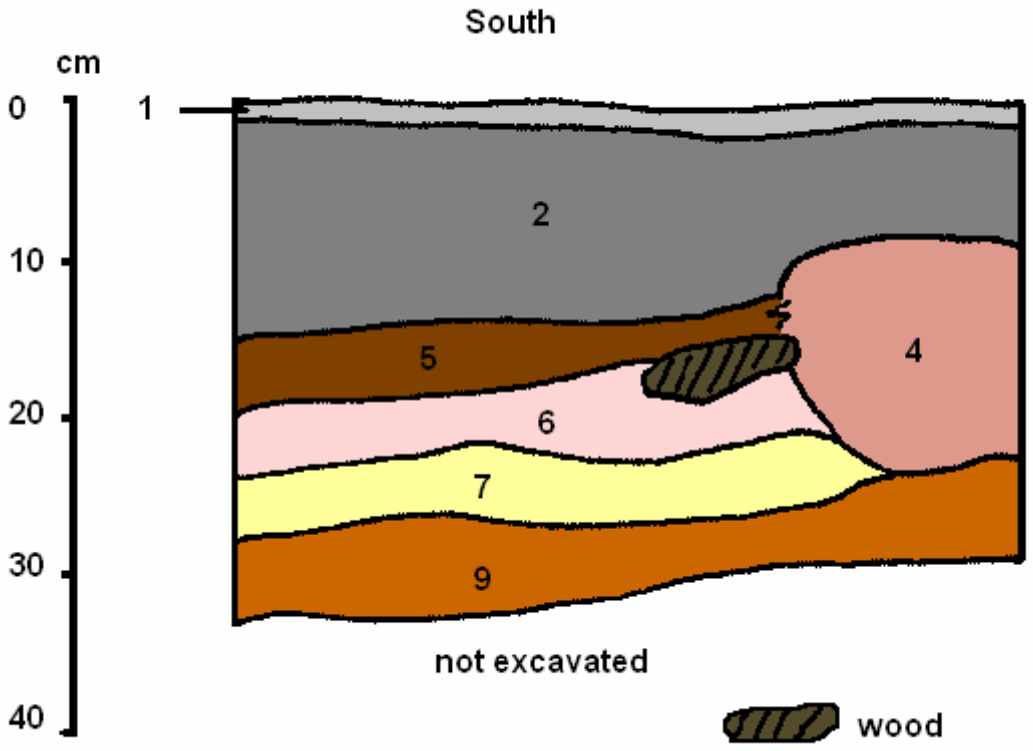


Figure 6 - *Test pit 3 Section 2 drawing*

Depth below surface (cm)	Sample Code	Pit #	Context	Sample weight (g)	Type of 14C determination	% Modern	Result (years BP)	Calibrated Age 1 sigma (68.2% probability)	Calibrated Age 2 sigma (95.4% probability)
1.8 – 14.5	Wk- 23164	3	(2)	4g	AMS	98.4 ± 0.3	127 ± 21	250BP - 230BP (7.8%) 140BP - 20BP (60.4%)	260BP - 220BP (14.6%) 150BP - -1BP (80.8%)
16.0 – 18.5	Wk- 23165	3	(6)	4g	Conventional	79.8 ± 0.4	1812 ± 40	1730BP - 1600BP (66.8%) 1580BP - 1570BP (1.4%)	1820BP - 1560BP (95.4%)
22.0 – 28.0	Wk- 23166	3	(7)	11g	Conventional	67.1 ± 0.3	3280 ± 38	3445BP - 3425BP (10.8%) 3415BP - 3340BP (57.4%)	3470BP - 3260BP (95.4%)
4.6 – 8.8	Wk- 23167	1	(2)	7g	Conventional	94.0 ± 0.4	497 ± 36	525BP - 490BP (68.2%)	545BP - 455BP (95.4%)
3.6 – 9.1	Wk- 23168	1	(3)	3g	AMS	98.4 ± 0.3	130 ± 30	250BP - 220BP (8.6%) 140BP - 20BP (59.6%)	260BP - 220BP (15.1%) 150BP - -1BP (80.3%)
14.2 – 19.7	Wk- 23169	1	(4)	5g	Conventional	98.1 ± 0.4	157± 36	270BP - 220BP (18.9%) 150BP - 50BP (34.9%) 30BP - -11BP (14.4%)	280BP - 170BP (29.6%) 160BP - -11BP (65.8%)
19.7 – 24.2	Wk- 23170	1	(8)	1g	AMS	97.3 ± 0.3	217 ± 30	290BP - 270BP (7.7%) 220BP - 150BP (60.5%)	300BP - 260BP (20.8%) 230BP - 140BP (74.6%)

Table 8.10 - *Radiocarbon determinations; calibrated ages calculated with OxCal v3.10 (Fordyce 2008: 36)*

8.1.7 – Evaluation of Extension Hill 01

(AIC 2004b: 25)

This site represents an area that people probably occupied regularly for an extended period of time. The caves here are extremely smoke-stained and although no artefacts were found within the caves, it is highly probable the smoke staining is from hearths/camp fire used by people. The site contains an accumulation of occupation debris and a grinding fragment located, noted with polish, indicates that domestic activities like seed grinding were occurring here. This location was also probably visited to utilise the natural outcrop of siltstone as it is of very high quality and excellent for flake manufacture. Other artefacts were probably also utilised here and manufactured during the later stages of production, when they were needed. This site offers the shelter of the caves and the water source of the creek bed and was probably a favourable place to occupy.

(Fordyce 2008: 39)

The excavation of DIA sites 21622 (Extension Hill 01) and 21624 (Extension Hill 03) has provided little insight into the prehistoric use of the area other than to confirm that the caves were being exploited at some time in the past. No formal hearths or hearth like structures were in evidence in either of the caves and the charcoal recovered from test pits 1 and 3 are more likely the result of bushfires than of cultural origin (though the bushfires themselves may have been lit by people as part of a fire-stick farming strategy).

The excavation of two test pits at Extension Hill 01 (DIA site 21622) does little to add to or dispute the interpretation of this series of rockshelters as an occupation area, likely exploited during the wetter, winter months. The siltstone present in the surrounding outcrops would have provided ample raw material for artefact manufacture and the caves themselves shelter for several individuals, or perhaps an entire family. The ephemeral creekline running past the western side of the site would have attracted animals to the area during rare instances of water flow and provide a vital resource.

The lack of artefactual material within the excavation pits of Cave 1 was surprising, as this site was initially viewed as holding the highest potential for an intact subsurface archaeological record. Furthermore, the C14 dates obtained from charcoal within test pit 3

returned dates indicating an uninterrupted stratigraphic sequence, which would have provided valuable contexts for relative dating had any material been uncovered.

Discreet ash layers were identified within test pit 3, the deepest of which returned dates of 3280±38 BP. Due to the proximity of the test pit to the cave mouth, it is likely that this layer is the result of burning wood blowing into the cave during bushfire events, as there were no hearth-like features or artefactual material present to indicate that this was the result of cultural activity (although the bushfires themselves may have been lit by humans).

Unfortunately, time limitations prevented more than 2 test pits being placed within Cave 1 and although the sampling strategy endeavoured to target the areas within the rockshelter that represented the highest potential for uncovering artefactual material, the total area sampled represented little more than 1.25% of the available surface area. This means that it is quite possible for there to be archaeological material present within the cave, but outside of the sampled areas.

The white clay or gypsum present in the outcrop containing Cave 1 would also have been a target resource, one that could be readily transportable, or perhaps used in ceremonial activities in the immediate vicinity. This offers an alternate interpretation of the site as the location for ceremonial activities, perhaps as a meeting ground or initiation area. The artefacts located in the vicinity of this site do little to refute or confirm either interpretation; the presence of a grindstone fragment nearby (though unable to be relocated during the excavation) could be seen as evidence for both ceremonial and domestic activities.

The C14 dating undertaken on the stratigraphic sequence uncovered during the excavation of Test pit 3 has potential to add to the regional understanding of depositional sequences within rockshelters of a similar geological composition. Comparative excavations within similar rockshelters would need to be undertaken before such a data set could be applied on a regional basis, but the foundations for such an analysis have now been laid.

(Tehnas 2009d: 51)

The Extension Hill and the Mt Gibson Ranges can be considered to be of great heritage significance to the *Badimia* people. Extension Hill 01 (EH 01 - DIA Site 21622) is considered to be part of a greater cultural landscape, one which was used by people as a camping place and a source of water.

In 2007 AIC conducted a Section 16 investigation of EH 01 and concluded that there was little evidence to suggest anything more than that the area had been exploited at some point in the past. A Radiocarbon (C14) Date was obtained from a sample obtained from the Test Pit at EH 01 which gave a maximum age of 3280±38 BP. The author acknowledged that this date may not be representative of a genuine date of occupation as the sample was obtained from a discreet ash layer without any associated hearths or cultural materials present in the stratigraphical context. Additionally, the author suggested that as the test pit was located close to the mouth of Cave 1, it is likely that the ash could have been the result of a bush fire (Fordyce 2008: 38).

Were Veth's Permanent Water Source Theory (1989; 1993; 1995; 1996) applicable, we would expect EH 01 to have been occupied constantly through the year with a subsequent increase in the lithic variability visible. However, the two times these rock holes were visited (June 2008 and November 2009) there was no water present within them, suggesting that they may be ephemeral rather than permanent as previously thought.

An abundant raw material for artefact manufacture, good, large shelter in the form of the caves and the ephemeral creek and rock holes suggest that the area is likely to have been in use predominantly in the winter months or during periods following rainfall. At this time, the creek would have been an attractive resource for both the human community as it not only supplied them with water but it would have attracted animals to the area.

The small size of the artefact scatter suggests an area that was infrequently used, and the 2007 excavations revealed that no lithic material was present in either of the two test pits that had been placed at EH 01. Little can be interpreted from the small number and range of

artefacts found to indicate whether EH 01 had any function other than one of a seasonal domestic camp. There is some small possibility that the site may have been used for ceremonial activities or as a meeting place from the quarried stone outcrop, however there is little other archaeological evidence to confirm this interpretation.

EH 01 can be classified as a site of moderate to high significance. While it may not be the best example of a habitation site, with at least two other habitation sites known to exist within a 5km of it, it is the only Rockshelter site to feature ochre quarries in the area and therefore have significance as a potentially ceremonial site. It is also a good example of what can be best interpreted as a seasonal camp in the Extension Hill Area. Though the longevity of use has not been conclusively determined, EH 01 contributes to the understanding of human use and movement through the Mt Gibson and Extension Hill Area. Additionally, the *Badimia* Elders believe Extension Hill 01 to be highly important as it represents to them "somewhere where the old fellas used to live before the Whitefellas came along. Those big caves would have been home, where they burnt their fires" (Mr. Percy George; Pers. Comm. November 2009).

The effect on EH 01 by EHPL's proposed developments is total. As shown by **Table 10.1**, The Site will be wholly impacted by developments at the proposed Open Cut Magnetite Mine as it falls within the project area.

8.2 – Extension Hill 02 (EH 02)

DIA Site: 21623

Location: 518169mE / 6727896mN

Site Description

(AIC 2004b: 27)
This site is a low-density artefact scatter, located in low lying land of Extension Hill. This is a very small artefact scatter and probably represents an area that was occupied briefly. These artefacts do not represent an accumulation of occupation debris and are probably the result of a brief visit.

The artefacts are manufactured during the final stages of production and were probably carried around in this final state. No manufacture occurred at this site, however the artefacts seemed to be utilised here.

These artefacts were located in an area described as walking through country and were probably utilised and/or discarded during the journey to an occupation site. An extensive wider search of the area would most certainly reveal more artefacts surrounding this site. A number of isolated artefacts were located approximately 700m from this site at a breakaway.

(YC 2008a: 16)
This site was found to consist of a sparse scatter (four artefacts within a wash area) with very low levels of intra site contextuality within the assemblage. It is considered that this scatter is the result of the area been utilised as "passing through" country rather than for occupation of resource exploitation. It is of low archaeological significance.

Plate 8.24 – *Extension Hill 02 (EH 02)*

Plate 8.25 – *Quartz Flake found at EH 02.*

8.3 – Extension Hill 03 (EH 03)

DIA Site: 21624

Location: 515319mE 6729213mN (Also see Table 8.11 below).

Site Description

(AIC 2004b: 27)

This area comprises at least three rockshelters located on a series of breakaways to the north of the proposed mining activities. One of the rockshelters appears to have had the opening artificially enlarged. A second Rockshelter attracted some interest from Joan Martin, the Widi mob representative, when it was described to her, as it comprises a long narrow tunnel, which may open up into a large space further inside (Plate 10). No artefacts were located around these rockshelters, however they all contained black staining on their roofs which is likely to be the result of smoke. The general area is, however, identified as having a high potential for the recovery of archaeological materials and further research is likely to reveal artefacts.

Point	Easting	Northing
1	515317	6729209
2	515318	6729210
3	515319	6729212
4	515319	6729213
5	515318	6729213
6	515317	6729214
7	515316	6729214
8	515316	6729212

Table 8.11 – *The extent of the artefact scatter surrounding EH 03 (Tehnas 2009b: 48).*

8.3.1 - Section 16 Archaeological Excavation

(Fordyce 2008)

This site was identified during a survey of Extension Hill in 2004 by AIC. The area comprises at least three rockshelters located on a series of breakaways to the north of the proposed mining activities. An ephemeral creekline / drainage channel passes to the north of the main series of breakaways. The area is vegetated with thick mulga scrub along the lateritic ridgelines and opens up around the creeklines, which area dominated by York gum.

One of the rockshelters (Cave 3) appears to have had the opening artificially enlarged. This cave was the focus of the initial phase of excavation during 2007. A second Rockshelter (Cave 4), located 20m around the breakaway comprises a long narrow tunnel, which may open up into a large space further inside, however the entrance was too narrow to allow investigation. A third rockshelter (Cave 5) is located approximately 90m to the northeast of Cave 3 and is the largest of the three, measuring 8m x 0.5m at the mouth (length x height). The inside of the cave contains minimal sediment however and the ceiling drops quickly to approximately 30cm, so it was disregarded as a potential site for test pitting.

A small artefact scatter containing approximately four artefacts was located in close proximity to Cave 5, on the top of the breakaway itself. The artefacts consist of three quartz flakes and a single basalt core. They appear to have been placed in their current position quite recently and do not represent an *in situ* deposition. It is likely that they were collected from the surrounding area and placed in their current location during an earlier survey of the area.

Cave 3 is relatively small and measures approximately 1.25m x 1m (width x height) at the dripline. The cave opens up slightly inside and measures 3m x 2.5m x 1m (length x width x height) as a maximum. The roof of Cave 3 was covered with patches of black lichen, which gave it the appearance of smoke scarring. The cave floor is composed of a thick matting of kangaroo fur, excreta and detritus. Some rock is also lying on the surface, apparently rockfall from the ceiling and walls of the cave. Test pit 1 was placed within the cave, approximately 1m within the dripline, at a point deemed to contain the greatest depth of sediment.

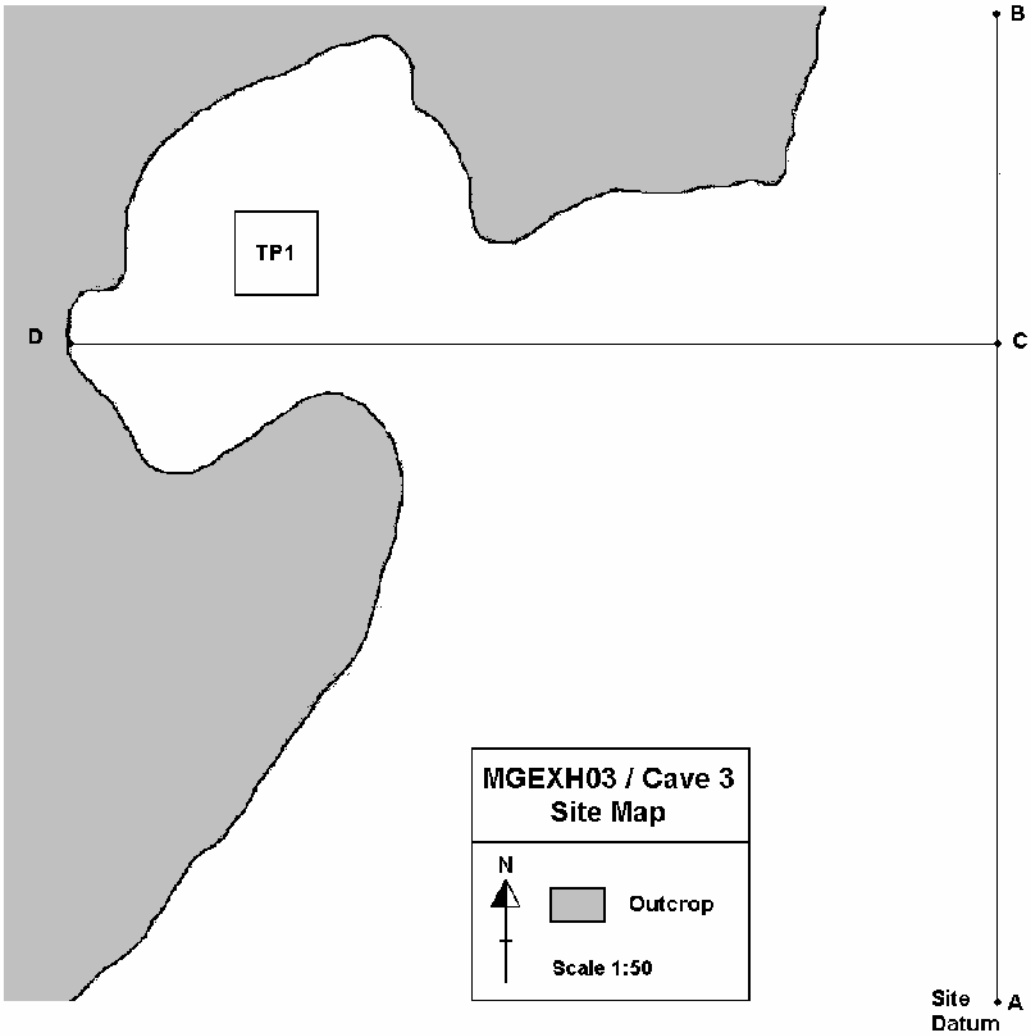


Figure 7 - *MGEXH03 / Cave 3 Site Map*

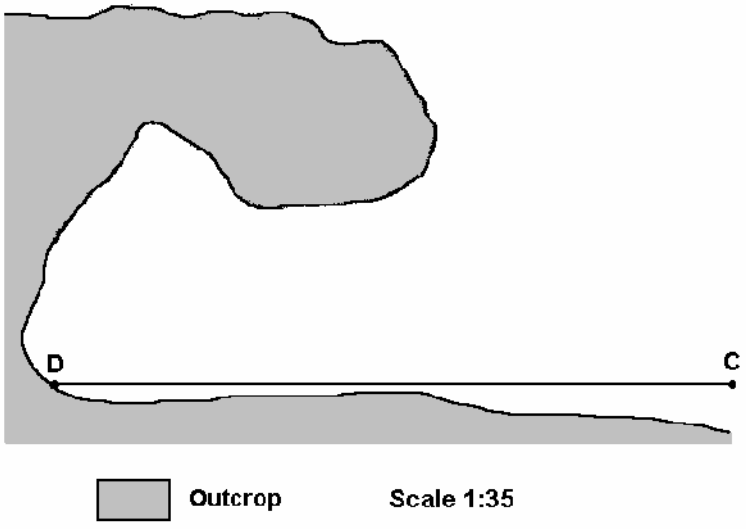


Figure 8 - *MGEXH03 / Cave 3 Site Profile*

8.3.2 - Results of the Section 16 Excavation

(Fordyce 2008: 24)

Test Pit 1

From observations of the internal features of the cave and probing with a thin metal rod, the maximum depth of sedimentation (30cm average) was observed in the larger of the two chambers, approximately 5m into the cave. The smaller chamber at the rear of the cave contained a minimal amount of sediment (less than 10cm average depth). Test pit 2 was placed towards the back of the larger chamber, approximately 5m from the dripline, at the point deemed to hold the greatest depth of sedimentation and test pit 3 was placed 1m within the cave.

A site datum was established for test pit 1 at 515322E, 6729213N, ± 0.6m , MGA Zone 50 (average of 38,000 readings). The height above sea level of this datum was recorded as 369.94m. The north east corner of test pit 1 was placed at 515317.7E, 6729208.9N ± 0.6m, approximately 1m into Cave 03. The 0.5m² test pit was excavated to a depth of 0.29m, where bedrock was reached. Table 1 below details the stratigraphic units encountered during the excavation of test pit 1.

Charcoal was found throughout the pit, in each of the stratigraphic units. The charcoal is likely to relate to bushfires as there is no evidence of structural features associated with hearths or firepits within the excavation. Four radiocarbon dates were obtained from within test pit 1, all from samples of charcoal recovered from sieves. Table 8.10 (See EH 01) details the results of the radiometric dating.

Two small quartz artefacts were identified within test pit 1, recovered from within the 5mm sieves. One of the flakes was recovered from Spit 2 of Stratigraphic Unit 2 and consisted of a crystalline quartz angular fragment. C14 dates obtained from charcoal within this stratigraphic unit show a relative age of 497 ± 36 years BP. The second artefact was recovered from Stratigraphic Unit 8 and is a crystalline quartz flake exhibiting use wear damage along one of its margins. Relative dating of charcoal from this Stratigraphic Unit returned dates of 217 ± 30 years BP. This is curious as the lower layers returned dates younger than the uppermost layer. This Indicates that either a large amount of bioturbidation has modified the stratigraphic profile of this site, or contamination of the charcoal samples has occurred. No other cultural material was recovered from test pit 1.

Stratigraphic Unit	Sediment Description
(1)	Very dry sandy fibrous layer (7.5YR 4/3) containing insects, kangaroo excrement, detritus and stones from roof fall. Layer of soil covering the floor of the cave.
(2)	Similar to **(1)** but much less excrement (7.5YR 4/3). Very fibrous – even fur like. Containing shiny green beetle carcasses, pupae casing and small stones.
(3)	Lighter in colour (7.5YR 5/4) finer sandy layer containing frequent charcoal fragments, fewer stones and fibrous material.
(4)	Darker, humic layer (7.5YR 3/4) containing abundant kangaroo excrement, small roots and charcoal fragments. Possibly a decayed tree root or an animal burrow cutting through context **(5)**.
(5)	Dry, sandy layer (10YR 4/3) containing frequent stones (small and medium), frequent charcoal fragments and small roots. Quite fibrous.
(6)	Small lens of fine, ash-like soil, lighter in colour (7.5YR 5/2). Very fine, occasional small stones and charcoal flecks.
(7)	Hard stone, weakened on the edge where the burrow **(4)** cut through. Possibly the natural bedrock (5YR 5/4).
(8)	Very dry stony layer (5YR 5/4) some medium sized, but mainly very small. Occasional charcoal flecks. Appears to be the natural bedrock broken down due to weathering from the animal burrow cutting through **(4)**.
(9)	Dry chalky lens light in colour. Frequent small stones, whitish in colour, loose. Occasional roots present. Layer only seen in Section 2.

Table 8.12 - *Stratigraphic Units, Test Pit 1*

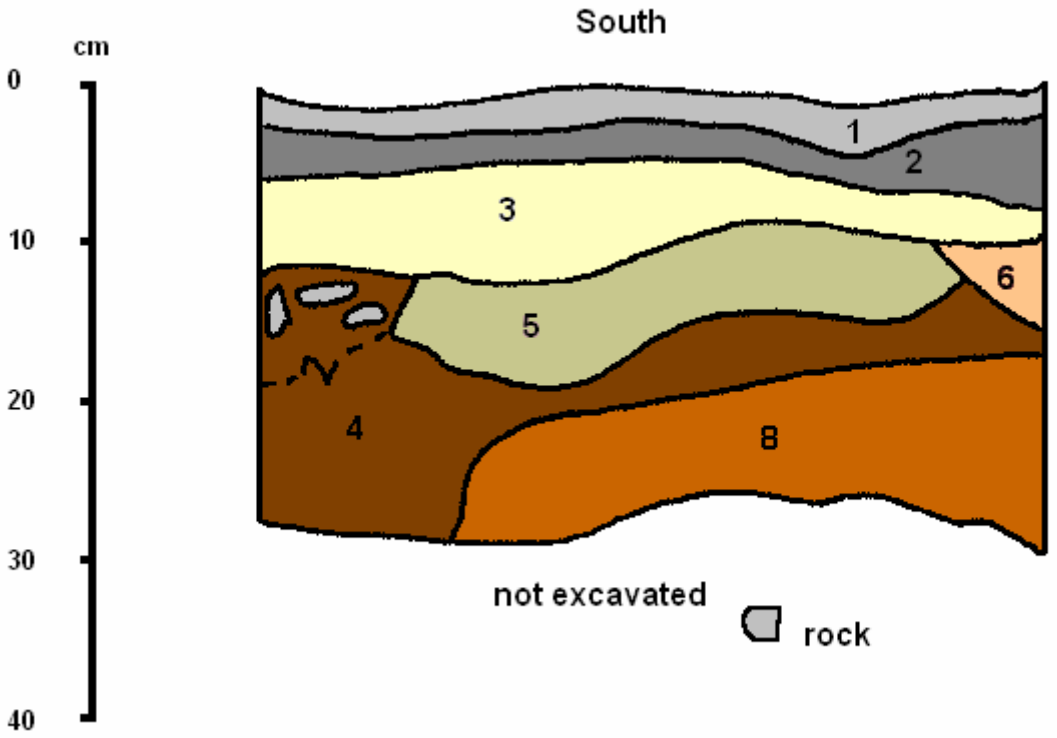


Figure 9 - *Test pit 1 Section 1 drawing*

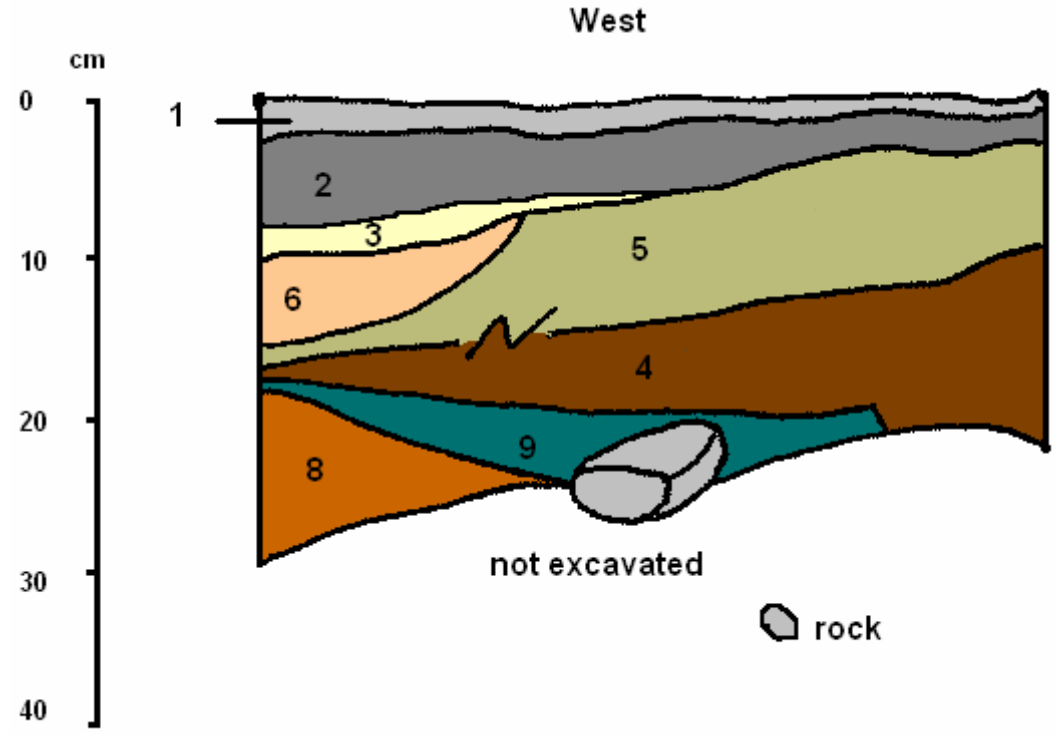


Figure 10 - *Test pit 1 Section 2 drawing*

Artefacts

Two definite artefacts were recovered from the sieves at Test Pit 1. Both were crystalline quartz artefacts exhibiting distinctive features. Artefact 1 (Figure 11 below) was recovered from Stratigraphic Unit 8 and resembles an edged scraper. Possible use wear was present along the margins of the dorsal surface.

Artefact 2 (Figure 12 below) was a small angular fragment of very clear crystalline quartz, glass like in appearance. Retouch was present along several margins.

No artefactual material was present within Test Pits 2 or 3.

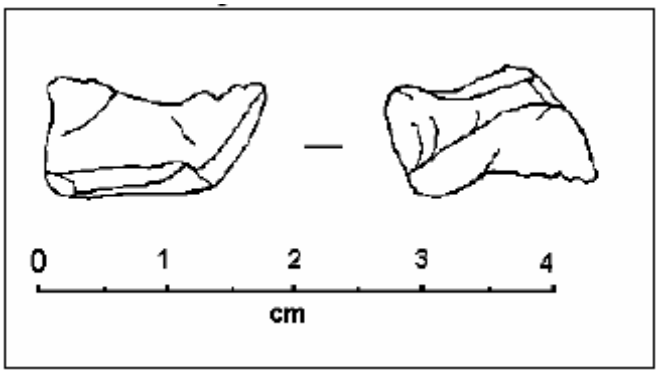


Figure 11 – *Artefact 1 of Test pit 1*

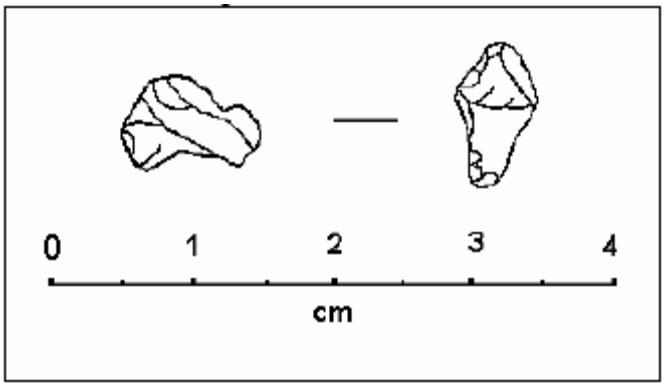


Figure 12 – *Artefact 2 of Test Pit 1*

8.3.3 - Artefact Salvage of Extension Hill 03

(Tehnas 2009b: 47)

The Extension Hill 03 Rockshelter (DIA Site 21624) is one of three Rockshelters on Extension Hill that were excavated under a Section 16 permit in 2007 by Australian Interaction Consultants. As EH 03 is to be destroyed to make way for a proposed open cut magnetite mine the *Badimia* people requested that a salvage of all archaeological materials from in and around the Rockshelter be undertaken.

Plate 8.26 – *EH 03 (DIA Site 21624) facing NW at 515322mE 6729217mN*

The floor surface of the rockshelter has been heavily disturbed as a combined result of frequent use by local fauna (kangaroos) and from the s16 excavation that was undertaken in 2007. Very loose soil underlying a layer of floral detritus, kangaroo fur and excrement made up the composition of the rockshelter floor. The deposit itself is quite shallow, ranging from between 5cm and 10cm, and sits upon bedrock.

Plate 8.27 – *EH 03 Rockshelter with baseline.*

The squares and their locations are detailed in Table 8.13 below:

Salvage Square	Location	Size (m)	West Corner	East Corner	Total No. of Artefacts collected
A	Inside Rockshelter	2 x 1	515316mE 6729216mN	515318mE 6729215mN	1
B	Mouth of Rockshelter	1 x 1	515317.5mE 6729215mN	515318.5mE 6729214mN	1
C	Front (west) of Rockshelter	2 x 1	515316.5mE 6729214mN	515318.5mE 6729213mN	10
D	Front (east) of Rockshelter	1 x 1	515318.5mE 6729214mN	515319.5mE 6729213mN	8
E	Front (SW) of Rockshelter	1 x 1	515317mE 6729213mN	515318mE 6729212mN	1
F	Front (SE) of Rockshelter	1 x 1	515318mE 6729212mN	515319mE 6729211mN	2

Table 8.13 – *Details pertaining to the Salvage Squares at EH 03.*

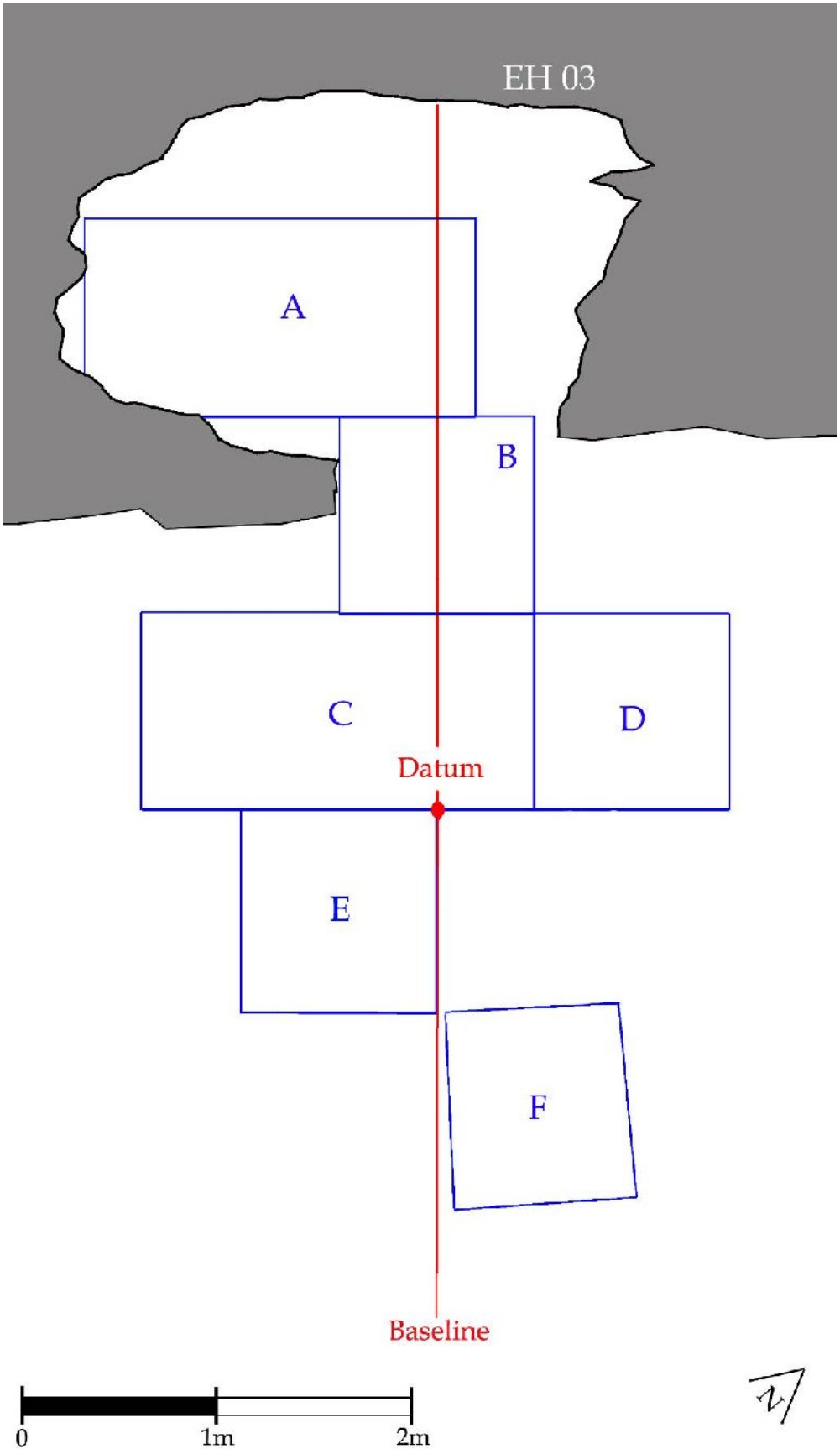


Figure 13 – *Map of EH 03 and the Artefact Salvage Squares.*

Salvage Square	Soil Composition	Artefacts found	See Table
A	Kangaroo faecal matter, vegetation debris and gray loamy sand.	One piece of basalt debitage, likely to be the result of artefact manufacture through core reduction.	8.15
B	Light gravel, sand, light vegetation debris and a small amount of kangaroo faeces.	One crystal quartz microflake.	8.16
C	Same as Salvage Squares A and B, but contained far less kangaroo faecal matter.	Ten artefacts. All but one was made from basalt (the other was crystal quartz). Two of the basalt artefacts were distinct flakes, with the remaining 8 being bits of debitage.	8.17
D	Same as Salvage Square C.	Eight artefacts – 5 of basalt and 3 of chert. All artefacts were identified as being debitage or core reduction.	8.18
E	Same as Salvage Squares C and D.	One piece of quartz core reduction.	8.19
F	Similar composition to Salvage Square E, though stone rubble was larger in size and larger fragments of floral matter was present.	Two basalt artefacts were recovered from Salvage Square F. One is a piece of core reduction, the other a little ambiguous as either a bit of artefact debitage or a microflake.	8.20

Table 8.14 – *Results of EH 03's Artefact Salvage.*

Artefact No.	Raw Material	Typology	L (mm)	W (mm)	T (mm)	Platform Width	Platform Thickness	Overhang removal	% Dorsal Cortex	Termination	Breakage	Comments
1	B	Db	31	17.5	9.5	7		N	70	S	-	Core reduction?

Table 8.15 *– Artefacts Collected from Salvage Square A*

Artefact No.	Raw Material	Typology	L (mm)	W (mm)	T (mm)	Platform Width	Platform Thickness	Overhang removal	% Dorsal Cortex	Termination	Breakage	Comments
1	CQz	MF	13	8	2.5	-	-	N	0	F	-	

Table 8.16 - *Artefacts Collected from Salvage Square B*

Artefact No.	Raw Material	Typology	L (mm)	W (mm)	T (mm)	Platform Width	Platform Thickness	Overhang removal	% Dorsal Cortex	Termination	Breakage	Comments
1	B	Fl	20	21	45	9.5	2	N	5	F	-	
2	B	Fl	18.5	14.5	5	10.5	3.5	N	5	F	-	
3	B	Db	9	15.5	2.5	13.5	2.5	N	5	F	L	
4	B	Db	8	5	3	3	3	N	0	S	L	
5	B	Db	10.5	5	2	5	2	N	5	In.	-	
6	B	Db	6.5	5	1.5	3	1	N	5	S	-	
7	B	Db	11	8	3.5	-	-	Y	40	F	-	
8	CQz	Db	12	13	4.5	7	2.5	Y	0	H	-	
9	B	Db	12	9	3	5	2	N	25	F	L	
10	B	Db	8	10	3	10	3	N	40	F	T	

Table 8.17 - *Artefacts Collected from Salvage Square C.*

Artefact No.	Raw Material	Typology	L (mm)	W (mm)	T (mm)	Platform Width	Platform Thickness	Overhang removal	% Dorsal Cortex	Term.	Breakage	Comments
1	B	Db	23.5	30	9	-	-	N	20	F	-	1 flake removed from Ventral side?
2	B	Db	10	8	3.5	7	3.5	N	10	H	-	
3	B	Db	9.5	4.5	2.5	4.5	2.5	N	5	S	T	
4	B	Db	18.5	8	5	7	5	N	70	H	-	
5	B	CR	31	33	11	-	-	N	65	H	-	
6	Ch	CR	11	8	4.5	-	-	N	70	H	-	
7	Ch	Db	15	7.5	5	15	5	Y	30	F	-	
8	Ch	Db	7	10.5	4.5	10.5	4.5	Y	50	S	-	

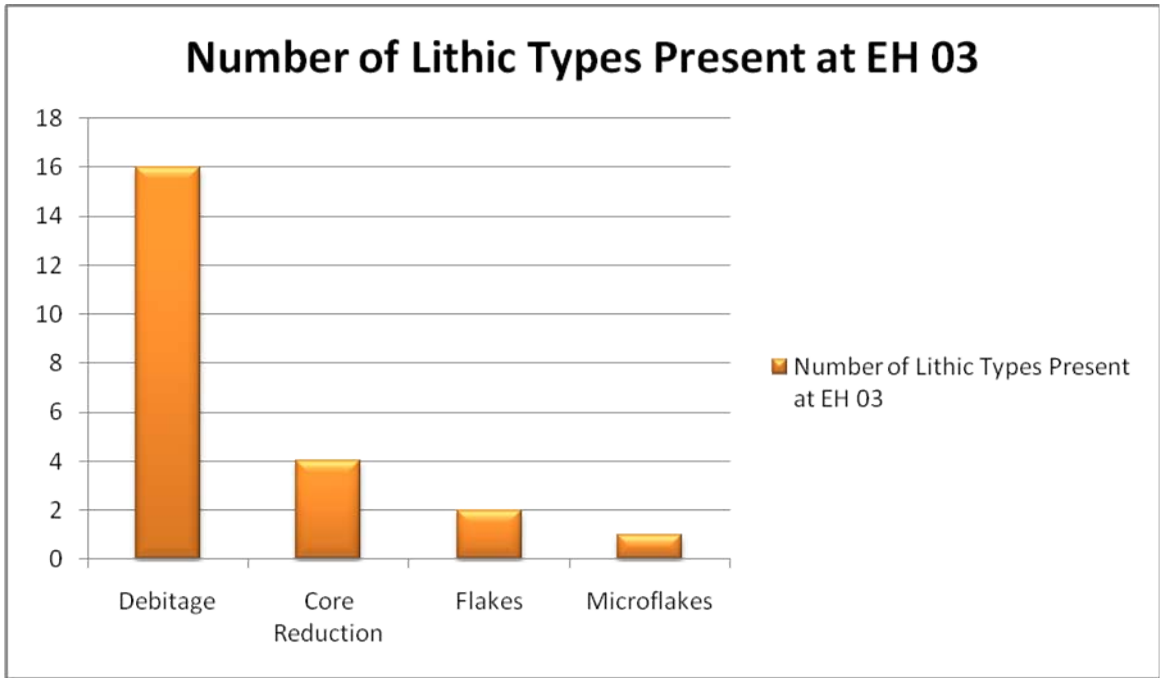
Table 8.18 - *Artefacts Collected from Salvage Square D*

Artefact No.	Raw Material	Typology	L (mm)	W (mm)	T (mm)	Platform Width	Platform Thickness	Overhang removal	% Dorsal Cortex	Termination	Breakage	Comments
1	CQz	CR	14	8.5	4	-	-	-	40	S	-	

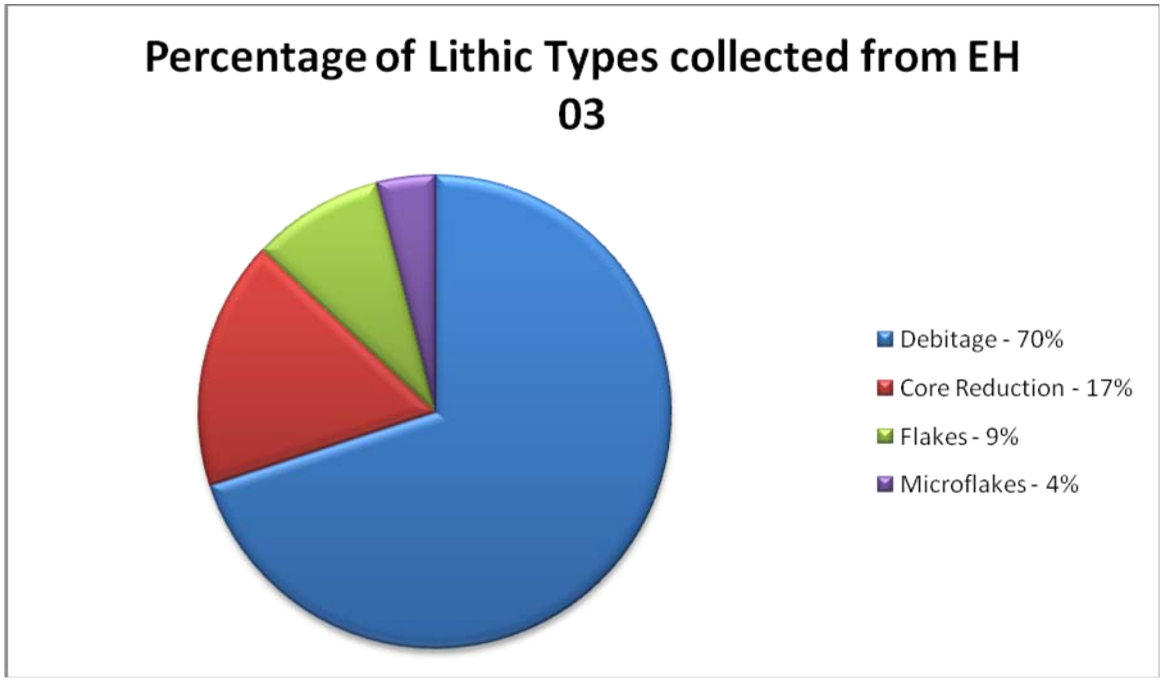
Table 8.19 - *Artefacts Collected from Salvage Square E*

Artefact No.	Raw Material	Typology	L (mm)	W (mm)	T (mm)	Platform Width	Platform Thickness	Overhang removal	% Dorsal Cortex	Termination	Breakage	Comments
1	B	CR	28	22	5	12.5	5.5	-	50	F	-	
2	B	Db / MF	12	7.5	2	6	2	-	25	F	-	

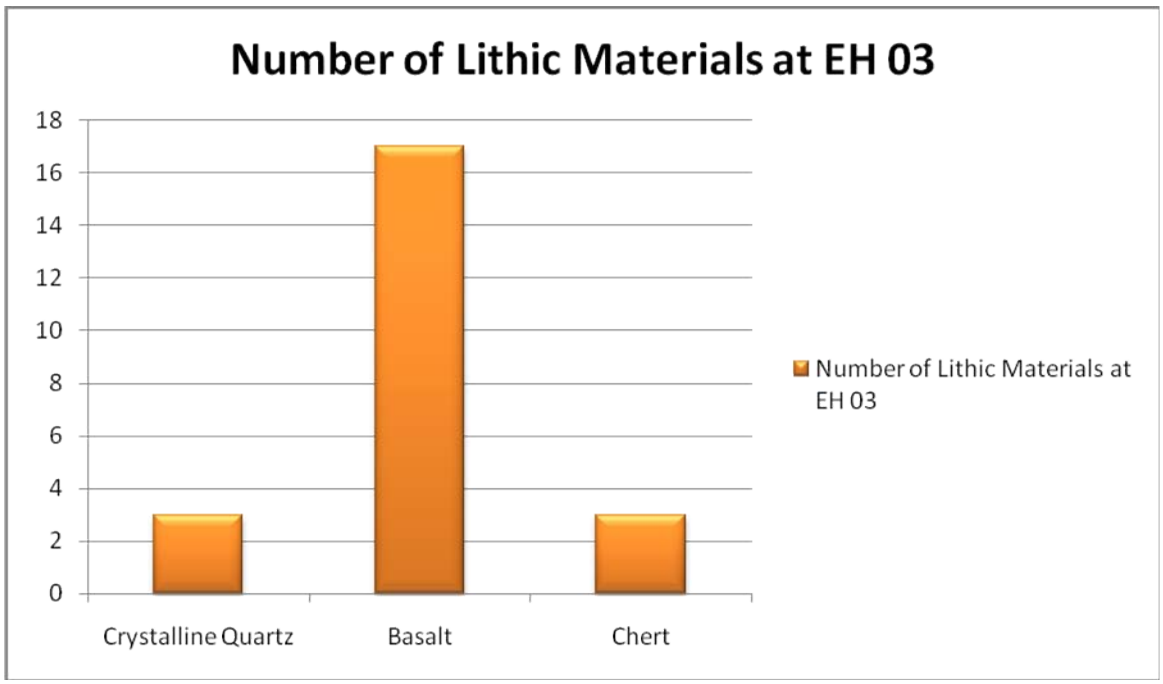
Table 8.20 - *Artefacts Collected from Salvage Square F*



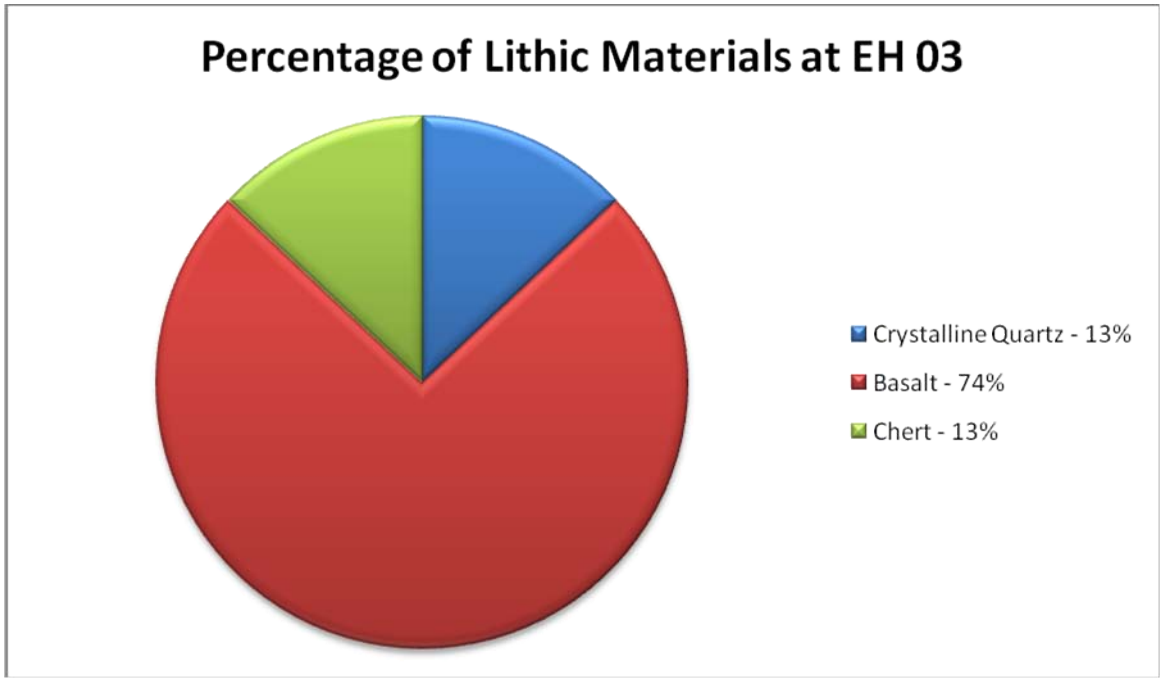
Graph 1 – *Number of Lithic Types Present at EH 03*



Graph 2 – *Percentage of Lithic Types Present at EH 03*



Graph 3 *- Number of Lithic Materials Present at EH 03*



Graph 4*- Percentage of Lithic Materials Present at EH 03*

8.3.4 - Evaluation of Extension Hill 03

(Fordyce 2008: 38).

The excavation of DIA site 21624 (Extension Hill 03) has provided little insight into the prehistoric use of the area other than to confirm that the caves were being exploited at some time in the past. No formal hearths or hearth like structures were in evidence in either of the caves and the charcoal recovered from test pits 1 and 3 are more likely the result of bushfires than of cultural origin (though the bushfires themselves may have been lit by people as part of a fire-stick farming strategy).

Too few artefacts were recovered from the test pits to perform any kind of meaningful statistical comparison and residue analysis was similarly beyond the scope of the project. Interestingly, the crystalline quartz recovered from Cave 3 represents a lithic material also found in a large artefact scatter recorded by AIC in 2006 at Mt Gibson Spring (DIA site 24394), located approximately 4km to the north west. Through a loose application of relative dating, it could be concluded that the C14 dates obtained from the excavation units within Cave 3 containing crystalline quartz may also be applied to the deposition of similar artefacts around the Mt Gibson Spring site, providing a rough estimate of age. Unfortunately, the C14 results from the excavation units containing these artefacts returned dates within the uncertainty period of modern carbon and can only be viewed with scepticism.

The charcoal within Cave 3 returned dates almost wholly within the modern uncertainty period and even more unfortunately, the oldest dates obtained from the excavation came from the upper contexts. This indicates that a large amount of disturbance has occurred within the cave and that burrowing by animals has likely destroyed any sub surface integrity the site may once have held.

Unfortunately, time limitations prevented more than 2 test pits being placed within Cave 1 and although the sampling strategy endeavoured to target the areas within the rockshelter that represented the highest potential for uncovering artefactual material, the total area sampled represented little more than 1.25% of the available surface area. This means that it is quite possible for there to be archaeological material present within the cave, but outside of the sampled areas.

So what further information can we add to our understanding of this DIA site from an excavation that essentially returned no applicable results? The presence of cultural material within Cave 3 of Extension Hill 03 (DIA site 21624) confirms that the rockshelter was being exploited culturally in the recent past, perhaps even post-contact, though the lack of integrity within the stratigraphic contexts renders the C14 dates next to useless for the purposes of relative dating.

It is possible that Cave 3 was being exploited at a similar time as crystalline quartz was being deposited around Mt Gibson Spring (DIA site 24394). A comparison of the material present in both sites using X-ray spectroscopy would be needed to confirm this hypothesis and even this would only reveal whether the material had come from the same lithic source, not whether they shared a similar antiquity.

Based on the artefactual material present within Cave 3 it is possible that the site was being used as a hunting outpost or hide. An individual could wait within the cave and keep watch over the ephemeral creek line below, perhaps preparing a barb for attaching to a spear while waiting (such as artefact 2 above). It is unlikely that the site was utilised as an occupation area, as a larger range of artefactual material would be expected if this was the case, both within the cave and in the immediate surrounds.

(Tehnas 2009b: 65).

In 2007 Australian Interaction Consultants (AIC) conducted a Section 16 investigation of EH 03 (DIA Site 21624) and concluded that the rockshelter was being used in the recent past, possibly as late as post-contact. A Radiocarbon (C14) Date was obtained from a sample obtained from the Test Pit at EH 03 which gave a maximum age of 497 $\pm$ 36 BP. The author acknowledged that disturbance within the deposit itself contributed to a date that may not be wholly accurate based on poor stratigraphical integrity of the sample (having been obtained from a upper context, rather than a lower one as would be expected). The author of the report also suggested that it was unlikely that EH 03 would have been used as an occupation area based on the limited number of artefactual material located during the excavation and in the immediate surrounds (Fordyce 2008: 38-39). It is important to note that the nearby Rock Hole and Artefact Scatter (EH-RHAS-01) was not identified within the

report, rather the author suggested that Mt Gibson Spring (DIA Site 24394) was related archaeologically to the EH 03 based on similar lithic materials found at both sites (Fordyce 2008: 4; 39).

The artefact salvage of EH 03 revealed that the presence of cultural material was more extensive than previously expected by both AIC and Yamatji Communications. Only a small number of Crystalline Quartz artefacts were recovered which was all that had been previously assumed to be there (The two artefacts located during the 2007 excavation were both Crystalline Quartz, as were the few that were found in a scatter nearby (Fordyce 2008: 40)). The majority of the lithic materials were of basalt (74% - See Graph 4), the same high grade basalt as was found at EH-RHAS-01. A geologist from EHPL confirmed that the basalt rock found at both sites had been originally sourced from an outcrop on the western side of Mt Gibson Range (at approximately 515170mE / 6725020mN, 100m wide and several hundred metres long north-south). This material would have been deliberately brought to the area surrounding EH 03 by Aboriginal groups moving through the area. If we are to follow the same line of thought that Fordyce was taking in his 2008 report, then it would stand that EH 03 is more closely linked to EH-RHAS-01 than it is to DIA Site 24394, based on both close proximity and a high proportion of similar lithic material.

The higher proportion of lithic debitage and core reduction suggests that artefact manufacture was taking place at the EH 03 Rockshelter, though given the evidence from EH-RHAS-01 was probably not the primary location of artefact manufacture. The most likely explanation is that the EH 03 Rockshelter was used mostly as a shelter where some artefact production occurred, but it is an extension of the larger artefact manufacturing and resource rich (water and food) area of EH-RHAS-01.

The artefactual material salvaged from EH 03 is currently being stored at the Yamatji Communications Offices in Bassendean, Western Australia with permission from the *Badimia* Claimants. When EHPL construct their Proposed Heritage Centre as part of the Project Developments, these artefacts will be relocated there for safe keeping on country.

8.4 - Extension Hill Rock Hole and Artefact Scatter (EH-RHAS-01)

DIA site: Not Registered

Location: See Table 8.21 Below.

Site Description

(Tehnas 2009b: 36)

The Extension Hill Rock Hole and Artefact Scatter (EH-RHAS-01) was located during the Reconnaissance Survey of the area surrounding the EH 03 Rockshelter. The co-ordinates for the Site are presented below:

Point	Easting	Northing
1	515531	6729135
2	515568	6729166
3	515576	6729173
4	515596	6729190
5	515601	6729185
6	515626	6729185
7	515645	6729187
8	515668	6729175
9	515636	6729143
10	515633	6729133
11	515568	6729141

Table 8.21 – *Co-ordinates of the polygon for EH-RHAS-01. No further buffer around the polygon is required.*

The site itself is comprised of a Rockhole located on a granite stone outcrop with an adjacent artefact scatter located approximately 20m to its south-east. The Rock Hole is also situated approximately 224m North East of DIA site 21624, Extension Hill 03 (EH 03) Rock Shelter.

Plate 8.28 – *Rock Hole Outcrop at EH-RHAS-01.*

Plate 8.29 – *EH-RHAS-01 Rock Hole*. 515538mE 6729164mN.

The Rock Hole is located at **515538mE / 6729164mN.**

The Rock Hole is situated on a stone outcrop on Extension Hill North, and extends northwards into and under the outcrop surface. Some significant damage to the overhang is visible and is likely to have been caused by human interference given that it appears to have been knocked with a heavy force. For the most part, the Hole is well sheltered by its own overhang and was filled with water during the time of the survey (it must be noted that a nearby creek bed was dry at the time of survey).

A number of animal tracks and burrows were noted surrounding the Rock Hole belonging to *Bungaras* (lizards), goats and kangaroos. Kangaroo faecal matter was also highly visible in the immediate vicinity of the hole. Additionally, during the recording of the adjacent artefact scatter two emus were spotted walking towards the Rock Hole, but quickly left when they spotted the Survey Team.

Measurements of the Rock Hole itself as presented in Table 8.22 below:

	Measurement (cm)
Length	158
Width A	121
Width B	188
Depth A – Front of the rock hole	3
Depth B – To the back of the rock hole	23

Table 8.22 – *Dimensions of the Rock Hole at EH-RHAS-01.*

The Artefact Scatter comprises the second part of the EH-RHAS-01 Site. It is located approximately 20m south-east of the Rock Hole in a clear, flat wash area. A small ephemeral creek runs along the southern edge of the site and is visible at the following co-ordinates:

Point	Easting	Northing
1	515663	6729170
2	515652	6729165
3	515642	6729159
4	515619	6729156

Table 8.23 – *Location of the ephemeral creek adjacent to the Artefact Scatter component of EH-RHAS-01.*

The Artefact scatter is a sparse but ubiquitous scatter of predominantly basalt lithic tools and debris, with typologies consistent with a manufacturing site. Artefact typology consists of flakes, core reduction and debitage and a single blade.

The site is approximately 100 m by 50 m in size (WE x NS). Mean artefact density across 5000m^2 is estimated to be < 1 /m^2, however artefacts appear to be mostly concentrated in 4 or 5 areas with there being up to 6 artefacts / m^2. Across the entire extent of the artefact scatter there are no fewer than 15 artefacts and estimated to be no more than 100.

Two sample squares were recorded by the archaeologists (See Tables 8.24 and 8.25). It is estimated that between 15% and 20% of the overall artefactual material was recorded.

Art. #	Mat.	Type	L (mm)	W (mm)	T (mm)	% Cortex	Term.	Comments
1	B	Fl	21	25.5	7	30	S	
2	B	Fl / C	28	45	7	0	F	2 flakes removed from ventral side. Flakes not found.
Flake Scar 2.1			31	13				Flake scars from Artefact **#2.** Flakes not found.
Flake Scar 2.2			27	10				
3	B	Fl	12.5	19	4	0	F	
4	B	CDb	58	36	20	7	-	Core preparation
5	B	CDb	39	41	19	25	-	4 flakes removed.
Flake Scar 5.1			33	26				Flake scars from Artefact #5. Flakes not found.
Flake Scar 5.2			31	13				
Flake Scar 5.3			18	23				
Flake Scar 5.4			15	16				
6	B	C / MPT	60	53	21	20	-	Appears to have been used for grinding/pounding purposes prior to its secondary use as a core. One side has striations consistent with grinding implements found elsewhere in the Badimia area. Other side has pressure marks that appear to be the result of continual force placed on the object. One flake removed.
Flake Scar 6.1			17	26				Flake scar from Artefact #6**.** Flake not found.

Table 8.24 – *EH-RHAS-01 Sample Square #1 – 515587mE 6729160mN.*

Art. #	Mat.	Type	L (mm)	W (mm)	T (mm)	% Cortex	Term.	Comments
7	B	Bl	36	21	10	0	F	Unhafted blade tool showing light use wear on ventral edge of blade. Retouch to form blade. Striations/fine abrasion along blade indicates use. Further use wear and residue analysis would help to determine cause of abrasion, though speculatively formed by vegetal matter.
8	B	FF	12.5	21	6	10	F	

Table 8.25– *EH-RHAS-01 Sample Square #2 – 515578mE 6729163mN.*

Plate 8.30 – *EH-RHAS-01 Sample Square #1 – 515587mE 6729160mN.*

Plate 8.31 - *EH-RHAS-01 Sample Square #2 – 515578mE 6729163mN.*

8.4.1 - Evaluation of the Extension Hill Rock Hole and Artefact Scatter.

This site was located as a result of the reconnaissance survey conducted as part of the investigations of the Extension Hill 03 Rockshelter (EH 03) (See Chapter 8.3), and as such changes the interpretation of the Rockshelter as it was previously understood. The presence of such a valuable water source in the area would certainly not have been unknown to Indigenous groups who moved through the area, and this is only confirmed by the cultural materials located nearby. The ephemeral creeks that bordered the artefact scatter might in themselves have been an attractive feature in such an arid landscape, but the Rock Hole being essentially permanent (or at the very least semi-permanent) would almost certainly have made the immediate area one of some importance.

In addition to being a place to obtain water, the area would have almost certainly been utilised as one for hunting. The water would have drawn faunal life to the area where they could have been easily captured in the nearby flat. Stone tool manufacture also occurred within the immediate area, given the high proportion of cores and reduction debitage found on the flat. What is interesting to note is that the basalt that was predominantly found was originally sourced from an outcrop on the western side of Mt Gibson Range (approximately 515170mE 6725020mN, 100m wide and several hundred metres long north-south). This is perhaps indicative of a camping area that people knew about and returned to. The flat wash area in which the artefacts were located is well sheltered and would not have been an unattractive place in which to camp.

EH-RHAS-01 can be classified as a site of moderate significance. While it in itself is a good example of occupation in the region, it is not the only example. At least two other habitation sites are known to exist within a 5km of the site, both of which are larger and feature a wider range of evidence to support long term occupation in the Extension Hill Area.

8.5 – Iron Hill 1 (IH-1)

DIA Site: 21626

Location:

MGA mE	MGA mN
517514	6724433
517522	6724431
517515	6724410
517509	6724410

Table 8.26 – *Location of IH-1*

Site Description

(Eureka: 10)

The Iron Hill 1 artefact scatter is located approximately 3 kms to the east of the Great Northern Highway immediately to the south east of Iron Hill, within the area nominated for disturbance as part of the Iron Hill Magnetite Waste Dump.

The Iron Hill 1 artefact scatter is a very small artefact scatter extending over an area 25 m north-south by 10 m east-west. The entire identified assemblage consists of only seven artefacts, of which five were recorded within a single sample square.

Eighteen five by five metre squares were placed across and around the site to sample the assemblage and identify site boundaries. The density of artefacts recorded in the sample squares varied from 0.2 artefacts/m^2 to 0.08 artefacts/m^2, with an average density of 0.14 artefact/m^2. As all artefacts at the site were recorded it can be stated that the artefact density at the site was 0.02 artefacts/m^2.

Of the seven artefacts present, 86% (n=6) are complete flakes with a single transversely broken flake also present (14%, n=1). The only two raw materials present were siliceous sandstone (86%, n=6) and quartzite (14%, n=1). No grinding material or formal implements were recorded or noted anywhere within the recorded boundary of the artefact scatter.

Plate 8.32 – *Iron Hill 1, Looking south from the centre of the site.*

8.5.1 – Evaluation of Iron Hill 1

The Iron Hill 1 artefact scatter is a very small and discrete site and probably represents a single activity event. In other contexts it might be viewed as part of a background scatter of stone artefacts. However, in view of the scarcity of artefacts in the area, this small scatter has been recorded as a site and is interpreted as representing a place where stone material has been flaked and discarded during a rare visit to the Mount Gibson area by Aboriginal people sometime in the late Holocene. Site Iron Hill 1 is, therefore, regarded as having a low degree of archaeological significance. It has been adequately recorded and has limited potential to contribute to regional research questions *(Eureka 2004: 11)*

8.6 – Mt Gibson Rockhole (MG-GH4)

DIA Site: 24389

Location: 514881mE / 6729551mN

Site Description

The Mt Gibson Rockhole is also known as Mt Gibson Gnamma Hole 4 or 'Ashley's Wagu'.

Site field name:	Mt Gibson Gnamma Hole 4
Location:	Thick bush behind layaway area east of Great Northern Highway
Coordinates:	514881E 6729551N
Extent:	40 centimetres diameter
Vegetation:	Dense tall and low shrubs- thicket
Geology:	Ironstone, laterite, shale
Visibility:	<10%
Disturbance:	Minimal. Shiny, smooth rim around hole demonstrates deliberate alteration by people.

Table 8.27 - *Mt Gibson Gnamma Hole 4. Source: (AIC 2006a: 31).*

(Tehnas 2009b: 67)

The Mt Gibson Gnamma Hole is located on a small outcrop approximately 50m north of a small ephemeral creek. There were no archaeological materials associated with the Gnamma Hole in the immediate area. The dimensions of the hole are as follows:

Length	25 cm
Width	18cm
Depth	58cm
Depth of Water	22cm

Table 8.28 *- Dimensions of Mt Gibson Gnamma Hole 04.*

Gnamma Hole 04 is considered to be of moderate ethnographic significance for its role as a water source in an arid environment.

Plate 8.33 – *Mt Gibson Gnamma Hole 04*

Plate 8.34 – *Outlook facing east from Gnamma Hole 04. 514885mE 6729553mN*

8.7 – Mt Gibson Spring (MG-S)

DIA Site: 24394

Location: 514881mE / 6729551mN

Site Description

The *Widi* Mob identified Mt Gibson Spring, a new site of ethnographic and archaeological interest. The site lies six hundred (600) metres from the northern limb of the proposed realignment of the Great Northern Highway. The group discussed ideas for managing the site, such as fencing the area, but that would prevent animals from using it, and putting in an access track, which would allow older people, unable to walk in, to visit it, but would also draw undue attention to the place. Errol Martin Snr. said "Just leave it as it is", which it was agreed would be best. Joan Martin later thought a commemorative plaque there would be appropriate (AIC 2006c: 13).

Archaeologically, the site is composed of an extensive artefact scatter of variable densities and lithics spread over an area of approximately 300 metres x 600 metres, atop a granite outcrop. This site is focused around this outcrop which contains what appears to be a permanent spring and ephemeral water way. According to initial estimates, approximately 2000 artefacts are scattered over the site (AIC 2006c: 17).

Plate 8.35 – *Mt Gibson Spring.*

Plate 8.36 – *Mt Gibson Spring.*

Plate 8.37 – *A crystal quartz flake found at Mt Gibson Spring.*

Plate 8.38 – *Several dolerite flakes found at Mt Gibson Spring.*

8.8 - Extension Hill (EH-00)

DIA Site: 25293

Location: See Table 8.29 Below.

Site Description

Identified by the *Widi* Mob in 2004 (AIC 2004a), Extension Hill is described as being a Dunnart Increase Site. Inspection of the area identified a profusion of tracks that were identified as being those of the small marsupial. Whilst travelling through the hills Joan Martin told of the story that was represented in the landscape. The story included the claypan, or lake, to the southern end of the hills, and the *Widi* people said that the whole area represented an important Dreaming story to them (AIC 2004a: 9).

Extension Hill, Iron Hill and the Claypan to the south are described as a highly significant Dreamtime Story of the Dunnart and the Parenti (goanna). Places on the hills were used in the Dreamtime for ceremonies. The Dunnart was known as a talented painter and the Parenti asked the Dunnart to paint him up. Joan Martin provided this detail of the story to Ron Parker as recorded in his transcript:

> *"...and the Dunnart said year right, [Dunnart began carefully and painted from the tail up] but he's only a little fella and he was doing these big stripes and circles and he got to his tail and it was too long so he just did some stripes along there and the Parenti was laying back in the sun [he fell asleep and the Dunnart got a big sloppy] and when he looked over his shoulder and he saw the different shapes and things of he said, 'you made me ugly now', and he elbowed the Dunnart in the chest, and from that day to this the Dunnart has got a breastbone like an emu, you know bone sticking out, that's how the Dunnart got that bone, because the old Parenti elbowed him in the chest and he fell back on his back and he couldn't get up and he was sick the poor little fella, but he survived, he's still got the chest though, the breast bone".*

The Parenti has these stripes – neat around the tail and less distinct on the body. Other features across the hill range are reported components of this story: The Claypan is the palate used by the Dunnart to mix paints to paint the Parenti. Rockholes were made by the Dunnart for ceremonial purposes. Ironstone formations are two male onlookers or law

givers who attend the ceremony and painted participants. Isolated artefacts were also located across the ridges and a Dunnart increase site on the west near the gate (Site Recording Form).

The importance of the Dunnart increase area to the *Widi* Mob cannot be understated. Its existence is consistent with, and supports, the Dreaming story told about the area (AIC 2004a: 11).

The *Badimia* Elders were asked about the Extension Hill Mythological site in December 2009 and they were adamant that no such mythology exists in *Badimia* Lore. The *Badimia* Elders have agreed that a Section 18 can take place over the hills.

EH-00 and the surrounding area were subject to a Section 18 Application in November 2004 (Hames 2004). Consent was given by Clive Brown MLA, Acting Minister for Indigenous Affairs on the 4th of January 2005 (See Appendix 6 for the documents relating to this case).

Point	Easting	Northing
1	515145	6728721
2	515990	6726855
3	515889	6726275
4	516204	6725317
5	516633	6724838
6	517667	6723791
7	517629	6722934
8	518259	6722253
9	519823	6723287
10	518890	6724472
11	517932	6725140
12	518146	6725468
13	519533	6725380
14	518423	6726590
15	517289	6727158
16	515359	6728860
17	515145	6728721

Table 8.29 – *Location of DIA Site 25293 Extension Hill.*

8.9 – Mt Gibson Artefact Scatter 1 (MG-AS-01)

DIA Site: Not Registered

Location: 517428mE / 6729796mN

Site Description

Site field name:	Mt Gibson Artefact Scatter 1	
Location:	Rocky outcrop at the base of Mt Gibson, 50m west of Vermin Road	
Coordinates:	517428mE	6729796mN
	517472mE	6729848mN
	517473mE	6729745mN
	517335mE	6729817mN
Extent:	c. 50m by 50m (1500m²)	
Soil:	Red clay with laterite gravel	
Vegetation:	Sparse eucalypts 4-6 metres high- Open low woodland.	
Geology:	Ironstone and laterite; no natural quartz noted	
Visibility:	90%- in clearing	
Disturbance:	Minimal- water movement only	
Artefact Types:	Cores, flakes, flake fragments	
Artefact Stone:	Quartz, dolerite, chalcedony	
Average Density:	1/m²	
No. Artefacts:	Minimum 1500	

Table 8.30 - *Mt Gibson Artefact Scatter 1. Source: (AIC 2006a: 28).*

The focused centre of the artefact scatter has been recorded as the site in this instance due to the consistency of material it contains compared to the lower density margins of the rest of the site. The artefacts are manufactured from imported stone, as no sources of dolerite, quartz or chalcedony were noted in the immediate area. Further study under section 16 of the Aboriginal Heritage Act will be required to determine the specific attributes of the artefacts and to hypothesise about the site formation processes. The presence of cores, flakes, and flake fragments, however, provides initial evidence that the site was likely a habitation area. The quantity of artefacts suggests use of the site over a long period of time (AIC 2006a: 28).

8.10 – Mt Gibson Artefact Scatter 2 (MG-AS-02)

DIA Site: Not Registered

Location: 516976mE / 6730555mN

Site Description

Site field name:	Mt Gibson Artefact Scatter 2	
Location:	Flat plain at the base of a mild slope, 100m south of the Vermin Road	
Coordinates:	516976mE	6730555mN
Extent:	40m E-W, 20m N-S (800m²)	
Soil:	Red clay with laterite gravel	
Vegetation:	Tall shrub, sparse trees, wildflowers- scrub/ low woodland	
Geology:	Ironstone, quartz, granite	
Visibility:	40%	
Disturbance:	Natural processes only; some old 4WD tracks nearby	
Artefact Types:	Flakes, flake fragments	
Artefact Stone:	Quartz, dolerite	
Average Density:	1/32m²	
No. Artefacts:	25	

Table 8.31- *Mt Gibson Artefact Scatter 2. Source: (AIC 2006a: 30).*

This site is reported to be a small low density artefact scatter of quartz and dolerite flakes. Three artefacts were identified in the given site boundaries. This site is considered to have very low archaeological significance (Yamatji Communications 2008a: 20).

Plate 8.39 – *Mt Gibson Artefact Scatter 2 (Yamatji Communications 2008a: 21).*

8.11 – Mt Gibson Rockshelter 1 (MG-R01)

DIA Site: Not Registered

Location: 517584mE / 6729877mN

Site Description

Site field name:	Mt Gibson Rockshelter 1	
Location:	Rocky outcrop at the base of Mt Gibson, 50m west of Vermin Road	
Coordinates:	517584mE	6729877mN
Extent:	10m NS, 3m EW	
Soil:	Red clay with laterite gravel	
Vegetation:	Tall and low shrubs- Scrub	
Geology:	Ironstone and laterite	
Visibility:	90%	
Disturbance:	Shelter has collapsed	

Table 8.32 - *Mt Gibson Rockshelter 1. Source: (AIC 2006a: 28).*

The rockshelter has collapsed at some point, leaving only a 2 metre deep overhang with about 1 metre clearance inside. Fallen rock and sediment comprise the inner floor of the rockshelter. No artefacts or art were located inside. The top of the rockshelter is approximately 15 metres higher than the creek-bed below, with the entry some 15 metres from the low point. This demonstrates the possible original size of the rockshelter, as a large quantity of fallen rock is present *(AIC 2006a: 28).*

8.12 – Mt Gibson Gnamma Hole 1 (MG-GN1)

DIA Site: Not Registered

Location: 517581mE / 6729882mN

Site Description

Site field name:	Mt Gibson Gnamma Hole 1	
Location:	Rocky outcrop at the base of Mt Gibson, 50m west of Vermin Road	
Coordinates:	517581mE	6729882mN
Extent:	10 centimetres diameter	
Soil:	Red clay with laterite gravel	
Vegetation:	Tall and low shrubs- Scrub	
Geology:	Ironstone and laterite	
Visibility:	90%	
Disturbance:	Minimal. Shiny, smooth rim around hole demonstrates deliberate alteration by people.	

Table 8.33 - *Mt Gibson Gnamma Hole 1. Source: (AIC 2006a: 29).*

The Gnamma Hole contained water despite a lack of recent rain, and was relatively clear of debris.

8.13 – Mt Gibson Gnamma Hole 2 (MG-GH2)

DIA Site: Not Registered

Location: 517581mE / 6729882mN

Site Description

Site field name:	Mt Gibson Gnamma Hole 2	
Location:	Rocky outcrop at the base of Mt Gibson, 50m west of Vermin Road	
Coordinates:	517581mE	6729882mN
Extent:	20 centimetres diameter	
Vegetation:	Tall and low shrubs- Scrub	
Geology:	Ironstone and laterite	
Visibility:	90%	
Disturbance:	Minimal. Shiny, smooth.	

Table 8.34 - *Mt Gibson Gnamma Hole 2. Source: (AIC 2006a: 29).*

The Gnamma Hole contained water despite a lack of recent rain, and was relatively clear of debris.

8.14 – Mt Gibson Gnamma Hole 3 (MG-GH3)

DIA Site: Not Registered

Location: 517649mE / 6729903mN

Site Description

Site field name:	Mt Gibson Gnamma Hole 3	
Location:	Rocky outcrop at the base of Mt Gibson, 50m west of Vermin Road	
Coordinates:	517649mE	6729903mN
Extent:	40 centimetres diameter	
Vegetation:	Tall and low shrubs- Scrub	
Geology:	Ironstone and laterite	
Visibility:	90%	
Disturbance:	Minimal. Shiny, smooth rim around hole demonstrates deliberate alteration by people.	

Table 8.35 - *Mt Gibson Gnamma Hole 3. Source: (AIC 2006a: 29).*

The Gnamma Hole contained water despite a lack of recent rain, and was relatively clear of debris.

9 – Significance Assessment

Field Code	Significance Assessment (AIC)	Significance Assessment (Eureka)	Significance Assessment (YC)
AS-ISO 01	- [3]	-	Low
AS-ISO 02	-	-	Low
AS-SF 01	-	-	Moderate - High
MG-ISO-01	-	-	Low
MG-ISO-02	-	-	Low
MG-ISO-03	-	-	Low
EH 01	High	-	Moderate - High
EH 02	High	-	Low
EH 03	High	-	High
EH-RHAS-01	-	-	High
IH-1	-	Low	-
MG-GH4	Moderate	-	Low
MG-S	High	-	-
EH-00	High	-	-
MG-AS-01	High	-	-
MG-AS-02	Low / Not a site	-	Low / Not a site
MG-R01	Low	-	-
MG-GH1	Moderate	-	-
MG-GH2	Moderate	-	-
MG-GH3	Moderate	-	-

Table 9.1 – *Significance Assessments made for each identified Heritage Site / Feature within EHPL's PPA by AIC, Eureka and YC.*

[3] ' - ' refers to a site which has not been assessed.

10 - Potential Effects of EHPL's PPA on Identified Heritage Sites

Field Code	Type of effect on Site / Feature	Degree of effect on Site / feature	Badimia Comments	Widi Mob Comments
AS-ISO 01	Some Impact Anticipated	Some Impact Anticipated	If these artefacts are to be salvaged, *Badimia* representatives must be present.	-[1]
AS-ISO 02				-
AS-SF 01				-
MG-ISO-01	Some Impact Anticipated	Some Impact Anticipated	To be left *in situ* on country and avoided by EHPL in future developments. To be further consulted if EHPL plans to disturb / salvage.	-
MG-ISO-02				-
MG-ISO-03				-
EH 01	Some Impact Anticipated	Some Impact Anticipated	Do not wish for Extension Hill 01 to be damaged or destroyed by any future mining operations	Regret will be destroyed
EH 02	Some Impact Anticipated	Some Impact Anticipated	No Comments Made	Avoid and preserve site
EH 03	Direct	Total	The *Badimia* People are satisfied with the salvage of cultural materials from EH 03 and are content with EHPL to proceed with their	Regret will be destroyed

[1] ' - ' indicates a site / feature which has not been inspected by the Native Title Claimant Group.

			proposed developments	
EH-RHAS-01	Direct	Total	The *Badimia* People have agreed that EHPL may disturb the Artefact Scatter (as part of EH-RHAS-01) for their proposed developments provided that a salvage of the heritage materials occurs prior to the commencement of land clearing. However, there is concern and hesitation at the destruction of the Rock Hole, citing the importance water sources have in *Badimia* mythology and the ecology. EHPL have plans to discuss options agreeable to both parties.	-
IH-1	Some Impact Anticipated	Some Impact Anticipated	To be informed about plans to disturb. Otherwise give their consent to disturb site if necessary.	Avoid and preserve site
MG-GH4	Direct	Total	The *Badimia* People have expressed some concern and hesitation at the destruction of Gnamma Hole 04, citing the importance water sources have in *Badimia* mythology and the ecology. EHPL have plans to discuss options agreeable to both parties.	Avoid and preserve site

MG-S	Some Impact Anticipated	Some Impact Anticipated	-	Avoid and preserve site
EH-00	Direct	Total	*Badimia* Elders state that there is no important ongoing mythology attached to EH-00.	Important Dreaming Story Attached to EH-00. Regret will be destroyed
MG-AS-01	Direct	Total	-	No Comments Made
MG-AS-02	Direct	Total	No Comments Made	No Comments Made
MG-R01	Direct	Total	-	No Comments Made
MG-GH1	Direct	Total	-	No Comments Made
MG-GH2	Direct	Total	-	No Comments Made
MG-GH3	Direct	Total	-	No Comments Made

Table 10.1 - *Table of the potential effects EHPL's Proposed Magnetite Project will have on the Archaeological Sites and Features detailed in Chapter 8.*

11 – Discussion and Conclusions

See Appendix 7 for all Discussions made in previous reports.

Ethnographically, the area within EHPL's PPA appears to carry greater mythological significance to the *Widi* Mob in that the only recorded Dreaming Story attached to the Area is *Widi* Mob's Dunnart and Parenti Dreaming at EH-00 (DIA Site 25293: Extension Hill), which is considered by the *Widi* Mob to be of very high significance. This Ethnographic Site covers Extension Hill in its entirety and is considered to be highly significant to the *Widi* Mob. On previous occasions when the *Badimia* Elders and other Survey Team members have been asked about the Mythology of the area, they have asserted that to their knowledge, no such Dreaming exists in *Badimia* Lore (YC 2009b: 31).

However, that is not to say that Extension Hill and Mount Gibson Ranges carry little or no other ethnographic significance to either the *Widi* Mob or to the *Badimia* People. The immediate Project Area contains a number of site and natural features whose importance is derived from their contributing role in human survival in an arid landscape. Both groups assert the importance of plant and animal resources found in the area – both of which are found in abundance. Bush foods such as *Bimba* (the sweet gum that comes from Sugar Brother Bushes), native flaxes, *Guiols* (goannas), *Bungaras* (lizards), emus (and *Wallah*, their eggs) and kangaroos are all highly visible in the immediate area and considered to be delicacies by the *Badimia* People, and are still eaten regularly.

Rock Holes, Gnamma Holes and creek lines also carry great significance to the *Badimia* People and *Widi* Mob. The *Badimia* Elders have stated on previous occasions that though Stories and Song Lines, now lost, would have once existed for these water sources, and traditional knowledge of water sources and shelters (such as MG-GH4 (DIA Site 24389), EH 03 (DIA Site 21624) and Lake Moore to the East) still exist.

Both the *Badimia* and *Widi* Mob Survey groups noted that there was some potential for burials to be disturbed if the PPA is to proceed, though no positive identification of any burial sites have been made as yet (AIC 2005b: 30; YC 2007: 5).

Archaeologically, the area within and surrounding EHPL's PPA is rich in evidence for human habitation and resource exploitation. With no fewer than five known habitation sites (EH 01, EH 02, EH 03, MG-R01, and "*Ngangan Wagu*"/ Mt Gibson Rockshelter Complex (the latter falls outside of the PPA)), and a number of associated (and isolated) artefact scatters, it is perhaps logical to interpret the archaeology of the area as being of ongoing occupation. Though the radiocarbon dates obtained from excavations in EH 01 and EH 03 provided little to further understand the antiquity of the area (Fordyce 2008: 38-39), it can be at least confirmed that humans were utilising the shelters in the recent past.

Mineral exploitation of materials such as quartz and basalt was common, and artefact manufacture has been frequently evidenced within the PPA. Most of the cultural material located was manufacture debitage, with formal tools making up only a small percentage of overall assemblages. While most of the artefacts located within the PPA fell in close proximity to water sources (for example, EH 03 and EH-RHAS-01; MG-S; EH 03) some isolated finds were located in areas described by both groups as "walk through" country. Though no significant features occur in these areas (such as at the foot of Mt Gibson, or in the area where the proposed accommodation camp and airstrip is to be placed), it indicates that people were moving through the landscape, perhaps to hunt, or perhaps to move from one shelter / camp to the next. The small row of standing stones (AS-SF 01) located approximately 600m east of the south-western corner of the proposed airstrip can be, at best with no supporting ethnographic information, interpreted as being a marker for groups travelling through the area. One similar stone feature has been previously located near Weelhamby Lakes, which falls within the Native Title Claim Area of both the *Widi* Mob and West *Badimia*.

The Extension Hill and the Mt Gibson Ranges can be considered to be of great heritage significance to local Indigenous people. The sites discussed within this report can considered to be part of a greater cultural landscape, one which was used extensively for camping, to access water and as a hunting ground. Efforts have been and will be made by EHPL, The *Badimia* People, The *Widi* Mob, AIC, Eureka and YC to record, salvage and preserve as much of the archaeological and ethnographic heritage material as possible prior to the commencement of works for the Proposed Magnetite operations.

12 – Recommendations

See Appendix 8 for all Recommendations made in previous reports.

Site / Area	Recommendation
DIA Site 21622: Extension Hill 01 (EH 01)	• To be avoided (AIC 2004b: 32). • The *Badimia* People have expressed that they do not wish for Extension Hill 01 to be damaged or destroyed by any future mining operations (YC 2008b: 3-4; Tehnas 2009d: 53). o It is therefore recommended that should EHPL wish to do so, they must consult further with the *Badimia* Working Group so that an arrangement can be reached.
DIA Site 21623: Extension Hill 02 (EH 02)	• To be avoided (AIC 2004b: 32). • The *Badimia* representatives stated that they had no objections to Extension Hill 02 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project (YC 2008b: 3-4).
DIA Site 21624: Extension Hill 03 (EH 03)	• To be avoided (AIC 2004b: 32). • The *Badimia* representatives stated that they had no objections to Extension Hill 03 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project (YC 2008b: 3-4). • The *Badimia* People are satisfied with the salvage of cultural materials from EH 03 (DIA Site 21624), and are content with EHPL to proceed with their proposed developments (Tehnas 2009b: 72).
DIA Site 21626: Iron Hill 1 (IH-1)	• *Badimia* people and their representatives are consulted about the plans to disturb the Iron Hill 1 site and subsequently grant their consent for a Section 18 Application to Commence (Eureka 2004: 13). • It is not anticipated that EHPL will disturb IH-1 in their proposed developments.

DIA Site 24389: Mt Gibson Rockhole (MG-GH4)	• *Badimia* request that the proponent adjust the proposed works area to avoid the ethnographic site identified (AIC 2005b: 32). • The *Badimia* representatives stated that they had no objections to Gnamma Hole 4 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project (YC 2008b: 3-4). • The *Badimia* People have expressed some concern and hesitation at the destruction of Gnamma Hole 04, citing the importance water sources have in *Badimia* mythology and the ecology. o It is therefore recommended that EHPL consult further with the *Badimia* Working Group in regards to Gnamma Hole 04 so that an agreeable arrangement can be reached.
DIA Site 24394: Mt Gibson Spring (MG-S)	• The Proponent avoids and preserves the site (AIC 2006c: 22). • The Proponent erects plaques as requested by the *Widi* Mob (AIC 2006c: 22). • It is not anticipated that EHPL will disturb MG-S in their proposed developments.
DIA Site 25293: Extension Hill (EH-00)	• Extension Hill is considered to be a Significant Mythological Site by the *Widi* Mob (AIC 2004a: 11-12). o A Section 18 Application was submitted by Asia Iron Pty Ltd and Mount Gibson Mining Limited to the ACMC in November 2004 (Hames 2004). Consent was given by Clive Brown MLA, Acting Minister for Indigenous Affairs on the 4th of January 2005, however one of the conditions of consent was that any subsequent 'owner' of the land within the meaning of the AHA must make its own application under the Act. • Extension Hill is <u>not</u> considered to be a Ceremonial or Mythological site by the *Badimia* People. The *Badimia*

	recommend that EHPL are free to continue with their PPA at Mt Gibson provided two monitors are employed for the entire duration of land clearing/moving (YC 2009b: 32). o It is recommended that EHPL follow appropriate measures to apply for a Section 18 on DIA Site 25293: Extension Hill.
Extension Hill Rock Hole and Artefact Scatter 01 (EH-RHAS-01)	• The *Badimia* People have agreed that EHPL may disturb the Artefact Scatter (as part of EH-RHAS-01) for their proposed developments provided that a salvage of the heritage materials occurs prior to the commencement of land clearing. • The *Badimia* People have expressed some concern and hesitation at the destruction of the Rock Hole (as part of EH-RHAS-01), citing the importance water sources have in *Badimia* mythology and the ecology. o It is therefore recommended that EHPL consult further with the *Badimia* Working Group in regards to the Rock Hole at EH-RHAS-01 so that an agreeable arrangement can be reached.
MG-AS-01	• The Proponent engages Aboriginal monitors during ground disturbance activity (AIC 2005b: 31). • The Proponent should be prepared to call on an archaeological opinion should Indigenous monitors find any material of cultural interest (AIC 2005b: 31).
MG-AS-02	• The *Badimia* representatives stated that they had no objections to Artefact Scatter 02 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project (YC 2008b: 3-4).
MG-R01	• The Proponent engages Aboriginal monitors during ground disturbance activity (AIC 2005b: 31). • The Proponent should be prepared to call on an archaeological opinion should Indigenous monitors find any material of cultural interest (AIC 2005b: 31).
MG-GH1	• The Proponent engages Aboriginal monitors during ground disturbance activity (AIC 2005b: 31). • The Proponent should be prepared to call on an archaeological opinion should Indigenous monitors find any material of cultural interest (AIC 2005b: 31).

MG-GH2	• The Proponent engages Aboriginal monitors during ground disturbance activity (AIC 2005b: 31). • The Proponent should be prepared to call on an archaeological opinion should Indigenous monitors find any material of cultural interest (AIC 2005b: 31).
MG-GH3	• The Proponent engages Aboriginal monitors during ground disturbance activity (AIC 2005b: 31). • The Proponent should be prepared to call on an archaeological opinion should Indigenous monitors find any material of cultural interest (AIC 2005b: 31).
Proposed Accommodation Village and Airstrip Area	• No archaeological or ethnographic sites were located during the September 2009 Heritage Survey. It is recommended that EHPL are free to continue with their proposed Air Strip and Accommodation Village in this area, provided the conditions below are met (Tehnas 2009a: 30): • The *Badimia* Survey Team have requested that due to the dense vegetation of the survey area and the extremely low visibility encountered that two *Badimia* monitors be employed for the entire duration of the land clearing stage of the proposed developments. Names of these two monitors will be provided to EHPL by the *Badimia* Working Group. o Should any artefacts or archaeological features be inadvertently discovered during the timeframe of the proposed developments, a qualified Archaeologist and representatives of *Badimia* (WC 96/98) are to return to the site to conduct further investigations.
AS-ISO 01 AS-ISO 02 AS-SF 01	• These Features fall outside the polygon of EHPL's proposed accommodation and airstrip area, and it was not anticipated that they would be affected by the PPA. o If the design layout of the proposed infrastructure is to change in such a way that will affect the artefacts, they are to be salvaged by a qualified Archaeologist. *Badimia* representatives must be present (Tehnas 2009a).

Mount Gibson and Foothills on Vacant Crown Land Commons.	• No archaeological or ethnographic sites were located during the November 2009 Heritage Survey (Tehnas 2009c: 38-39; YC 2009b: 32). • Three archaeological features – MG-ISO-01, MG-ISO-02 and MG-ISO-03 - were located during the November 2009 Heritage Survey. • It is recommended that EHPL are free to continue with their Proposed Developments in this area, provided the conditions below are met: o The *Badimia* Survey Team have requested that two *Badimia* monitors be employed for the entire duration of the land clearing stage of the proposed developments. o Should any artefacts or archaeological features be inadvertently discovered during the timeframe of the proposed developments, a qualified Archaeologist and representatives of *Badimia* (WC 96/98) are to return to the site to conduct further investigations.
MG-ISO-01 MG-ISO-02 MG-ISO-03	• The *Badimia* Survey Team have requested that the three archaeological features – MG-ISO-01, MG-ISO-02 and MG-ISO-03 be left in situ on country and avoided by EHPL in future developments (EHPL do not anticipate that these artefacts will be affected by the PPA) (Tehnas 2009c: 38-39). • MG-ISO-01, MG-ISO-02 and MG-ISO-03 are to be given a 10m exclusion radius around each point (Tehnas 2009c: 38-39). • Should EHPL wish to move the three archaeological features, it is recommended that they submit a Section 18 Application over the area. Once the Application has been approved, representatives of the *Badimia* Native Title Group will accompany a qualified Archaeologist to salvage these archaeological features (Tehnas 2009c: 38-39).
Proposed Great Northern Highway Realignment	• The proposed Great Northern Highway realignment will not impact on heritage sites or objects and the work program is cleared by the *Badimia* Heritage Survey Team (YC 2007: 5).

Proposed Sewage Pond	• The proposed sewage pond area is cleared by the *Badimia* Heritage Survey Team (YC 2007: 5).
Proposed Service Corridor	• The proposed service corridor will not impact on heritage sites or objects and the work program is cleared by the *Badimia* Heritage Survey Team (YC 2007: 5).
Overall PPA	• The sites identified during the surveys be reported to the registrar and assessed by the ACMC against s5 and s39 of The Act (AIC 2004a: 12). • A Section 18 application must be lodged to the Department of Indigenous Affairs if any or all of the heritage sites or features detailed in this report are to be detrimentally impacted upon by EHPL's PPA. Efforts to salvage any archaeological material should occur prior to the commencement of land development. o It is recommended that EHPL create a Keeping Place on Country for any salvaged Heritage Materials to be stored, catalogued and appropriately managed. • In the event that human remains, or skeletal materials that may be human, or materials that may belong to a human grave are discovered during any approved work program, work must stop immediately and the materials and the area about them must be left undisturbed. The Police, DIA and the Traditional Owners, must be informed immediately (YC 2007: 5). • Should any artefacts or archaeological features be inadvertently discovered during the timeframe of the proposed developments, a qualified Archaeologist and Aboriginal representatives of the relevant Native Title Group are to return to the site to conduct further investigations. • EHPL must ensure that all employees, contractors and visitors to the Area are aware of their obligations under Section 17 of The Act.

Table 12.1 – *Consolidated Recommendations for EHPL's PPA.*

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APPENDIX 1

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Survey Participants of the Various Heritage Surveys Conducted within EHPL's Proposed Project Area.

September 2004 Ethnographic Survey

(Hames Consultancy Group, 2004; Australian Interaction Consultants 2004a).

Ron Parker – BA (Hons) Anthropology

Jeremy Maling - BA (Hons) Anthropology

James Tyers – Representative of Mt Gibson Mining

Debbie Coulthard – Representative of Mt Gibson Mining

Widi Mob **((unregistered) WAG6193/98 (WC97/072))**	
Ms Joan Martin	None others listed

October 2004 Archaeological Survey

(Australian Interaction Consultants 2004b).

Sarah Ibbitson – BA (Hons) Archaeology

Donald Lantzke - BA (Hons) Archaeology

Widi Mob **((unregistered) WAG6193/98 (WC97/072))**	
Mr Dean Martin	Mr Errol Marin
Mr Errol Martin Junior	Mr Justin Martin

August 2004 Archaeological Survey

(Eureka 2004).

Ian Ryan – Archaeologist

Monica Jimenez-Lozano – Archaeologist

Badimia **(WC68/68)**	
Mrs Gloria Fogarty	Mr Olly George
Ms Olive Gibson	Mr Victor Little

August / September 2005 Archaeological and Ethnographic Surveys

(Australian Interaction Consultants 2005a; 2005b).

Jeremy Maling – BA (Hons) Anthropology

Claire Greer – BA (Hons) Archaeology

James Tyers – Mt Gibson Iron Representative

Deborah Coulthard - Mt Gibson Iron Representative

Gavin Egan – Yamatji Land and Sea Council Representative

Vaughan Lane – Yamatji Land and Sea Council Representative

***Badimia* (WC68/68)**	
Ms Theresa Bell	Mr Edward Fogarty
Mr Fabian George	Mr Olly George
Mr Percy George	Mr Roderick Hedlam
Mr Vincent Jones	Mr Albert Little
Mr Victor Little	Ms Janice Strickland
Mr Ashley Walsh	Mr Frank Walsh

August 2005 Archaeological and Ethnographic Surveys

(Australian Interaction Consultants 2006a).

Ron Parker – BA (Hons) Anthropology

Claire Greer – BA (Hons) Archaeology

Adele Austin – BA (Hons) Anthropology

Jeremy Maling – BA (Hons) Anthropology

Bruce Shaw – PhD Anthropology, English

***Widi Mob* ((unregistered) WAG6193/98 (WC97/072))**	
Mr David Martin	Mr Errol Martin Jnr
Ms Joan Martin	Mr Justin Martin
Mr Ronald Martin	

May 2006 Archaeological and Ethnographic Surveys

(Australian Interaction Consultants 2006b; 2006c).

Ron Parker – BA (Hons) Anthropology

Adele Austin – BA (Hons) Anthropology

Ryan Coughlan – BA (Hons) Archaeology

Deborah Coulthard - Mt Gibson Iron Representative

Peter Jones – Mt Gibson Iron Representative

Widi Mob **((unregistered) WAG6193/98 (WC97/072))**	
Baymis Martin	Errol Martin Snr
Errol Martin Jnr	Joan Martin
Kieren Martin	Ronald Martin

November 2007 Section 16 Excavations

(Australian Interaction Consultants 2008).

Ben Fordyce – BA (Hons) Archaeology

Sally-Anne Smith – BA (Hons) Archaeology

Sagitte Yom-Tov – BA (Hons) Anthropology

Widi Mob **((unregistered) WAG6193/98 (WC97/072))**	
Mr Kieran Martin	Ms Yvette Little

December 2007 Archaeological Survey

(Yamatji Communications 2007).

Stephen Corsini – Consultant Archaeologist

Vaughan Lane – Heritage Officer

Badimia **(WC68/68)**	
Mrs Teresa Bell	Mr Edward Fogarty
Mrs Olive Gibson	Mr Albert Little
Mr James Little	Mr Victor J. Little

June 2008 Archaeological and Ethnographic Surveys

(Yamatji Communications 2008a; 2008b).

Dr. Tony Doulman – B.Sc, MA, PhD, Anthropologist

Scott Chisholm – BA (Hons) Archaeologist

Megan Tehnas – BA (Hons) Archaeologist

Phillip Davidson – EHPL Representative

Tim Tietjen - EHPL Representative

***Badimia* (WC68/68)**	
Mr Edward Fogarty	Mr Glynn Fogarty
Mr Ollie George	Mr Percy George
Mr Roderick Hedlam	Mr Ashley Walsh

September 2009 Archaeological Survey and Salvage

(Tehnas 2009b).

Megan Tehnas – B.A. (Hons) Archaeologist

Phillip Shiner – Assistant Student Archaeologist

***Badimia* (WC68/68)**	
Mr Edward Fogarty	Mr Glynn Fogarty
Mr Ollie George	Mr Percy George
Mr Roderick Hedlam	Mr Ashley Walsh

September 2009 Archaeological and Ethnographic Surveys

(Tehnas 2009a; Yamatji Communications 2009a).

Megan Tehnas – B.A. (Hons) Archaeologist and Anthropologist

Phillip Shiner – Assistant Student Archaeologist

***Badimia* (WC68/68)**	
Mr Edward Fogarty	Mr Glynn Fogarty
Mr Ollie George	Mr Percy George
Mr Roderick Hedlam	Mr Ashley Walsh

November 2009 Archaeological and Ethnographic Surveys

(Tehnas 2009c; 2009d; Yamatji Communications 2009b).

Megan Tehnas – B.A. (Hons) Archaeologist and Anthropologist

Phillip Shiner – Assistant Student Archaeologist

***Badimia* (WC68/68)**	
Mr Edward Fogarty	Mr Glynn Fogarty
Mr Graham Fogarty	Mr Ollie George
Mr Percy George	Mr Chris Hedlam

APPENDIX 2

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Maps of EHPL's PPA and the Aboriginal Heritage Sites that fall within it.

1 DIA AHIS Search Polygon for the Extension Hill Proposed Magnetite Project Area.

2 Ninghan Station, Charles Darwin Reserve & Mount Gibson Station.

3 Map of EHPL's Proposed Project Area with Aboriginal Heritage Sites.

4 EH01 Location in Project.

5 Extension Hill Rockshelter 01 (EH01).

6 Extension Hill's Proposed Magnetite Project Heritage Site EH-02.

7 Extension Hill Magnetite Project Archaeological Report – EH 03.

8 Location of Archaeological Sites Extension Hill 03 (EH03) and Extension Hill Rock Hole and Artefact Scatter 01 (EH-RHAS-01).

9 Extension Hill's Proposed Magnetite Project Heritage Site EH-00.

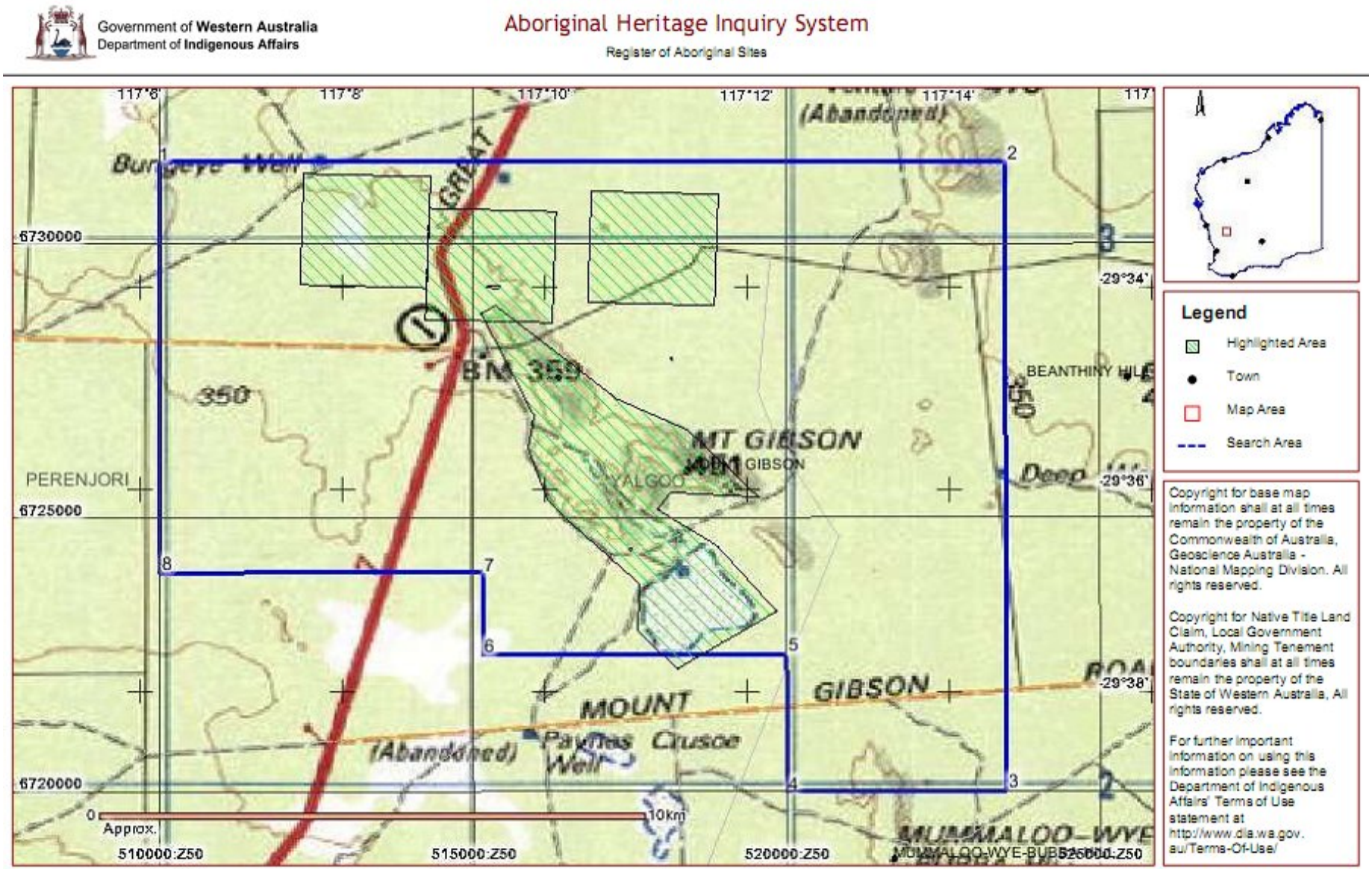
10 Extension Hill's Proposed Magnetite Project Heritage Site IH-1.

11 Extension Hill's Proposed Magnetite Project Heritage Sites MG-S and MG-GH4.

12 Extension Hill's Proposed Magnetite Project Heritage Sites MG-AS-01, MG-AS-02, MG-GH1, MG-GH2, MG-GH3, MG-R01 & Rockshelter Complex.

13 Survey polygon of Extension Hill Pty Ltd's Proposed Air Strip and Accommodation Village Showing the Location of Identified Isolated Artefacts.

14 Extension Hill Pty Ltd Heritage Clearance 2009 (Showing Isolated Artefacts).



DIA AHIS Search Polygon for the Extension Hill Proposed Magnetite Project Area. The 'Highlighted Area' indicated in the key outlines Registered Heritage Sites.

N

0 2 4 6 8 10km

SCALE 1 : 275 000 at A3 (MGA)

NINGHAN STATION

CHARLES DARWIN RESERVE

MOUNT GIBSON STATION

CARLYARN NATURE RESERVE

GOODLANDS NATURE RESERVE

Reids Ridge Mine

Government Well

Kings Well

Warriedar

bore

training track

Garden Pool Well

Lady Soak Well

Herlies Well

Mount Mulga Mine

Oliver Well

Corner Bore

ruins

Mingewanah Well (aband)

Rothsay Well

Lucky Crossing

Beergoona Well

Bowshed Well

Good Friday Well

numerous claypans

Dowdsfolly Well

Pine Well

Finlayson Well

Julie Mine

Robb Well

Quondong Well

Easter Monday Well

Seven Mile Well

Monger Well

White Wells

Breakaway Well

Brown Well

St Joseph Well

Mingewan Well

Noondoon Well

Bulgatharra Well

Underginnie Well

Paddys Well

Weedagabby Well

Warro Well

Red Well

Roys Well

Taylor Well

Yandhanoo Well

Bungeye Well

Monger Well

quarry

Paynes Crusoe Mining Centre

Paynes Crusoe Well (abandoned)

Highway Mine

Mount Gibson Well (abandoned)

Yarla Claypan

Pedan Rocks

Mount Gibson Mines

Peedhal

Yandoon Well

Granite Well (abandoned)

Karpa Spring

Seventeen Mile Well

Ero Well

Delaneys Well

Mates Well

Yidby

Six Mile Well

Ten Mile Well

Deep Well

Kiaby Well

Bonnie Adventure Mining Centre (abandoned)

Meemering Well

Mulla Mulla Well

E-Jeelong Well

Pinyalling Well

Nangajetty Well

Paynes Find Well

Corner Well

Kapool Well

Middle Well

Deep Well

Narracarra Well

Pretty Boy Well

waterhole

Main Bore

Kararabudda Well

Four Corner Well

Mingarby Well

Pedan Ck

Mount Harry Well

New Chum Well

Gindelmilla Well

Pinyabby Well

Billgaburna Bore

Billgaburna Well

Grey Night Bore

Ninghan

Coonigal Well

Gabito Spring

Back Well

Boundary Well

Mount Gibson

Narloo Well

Kurrajong Well

Woolgarong Rocks

Condamme Well

Marda Barda Well

Coolagarra Well

Conderoo Well

North Well

Native Bore

Geranium Rock

Six Mile Well

Roads: COPPERMINE ROAD; WARRIEDAR ROAD; NORTHERN HIGHWAY; GREAT EASTERN HIGHWAY; WANARRA EAST ROAD; MOUNT GIBSON ROAD; PAYNES FIND YALGOO ROAD; GOODLANDS RD; BOREFIELDS ROAD

Hills: WARRIEDAR HILL; PINYALLING HILL; YEOH HILLS; NYOUNDA HILL; WYLACOOPIN HILL; WATHERAGABBING HILL; YANDHANOO HILL; MT SINGLETON; BEANTHINY HILL; MT GIBSON; KUCKAMANYOU HILL; MUMMALOO-WYE-BUBBA HILL; MT HARRY; WARRDAGGA HILL

Lakes: MONGERS LAKE; LAKE MOORE

Fences: vermin proof fence; emu proof fence; follows track

6 775 000mN; 6 750 000mN; 6 725 000mN; 6 700 000mN; 525 000mE; 550 000mE

BM338

claypans; rocky outcrops

Legend

- Station/Reserve Boundary
- Mine
- Road - Principal
- Road - Secondary
- Road - Minor/Track
- Fence
- Bore/Windmill
- Watercourse
- Lake
- Native Vegetation

ehm-01-065.dgn

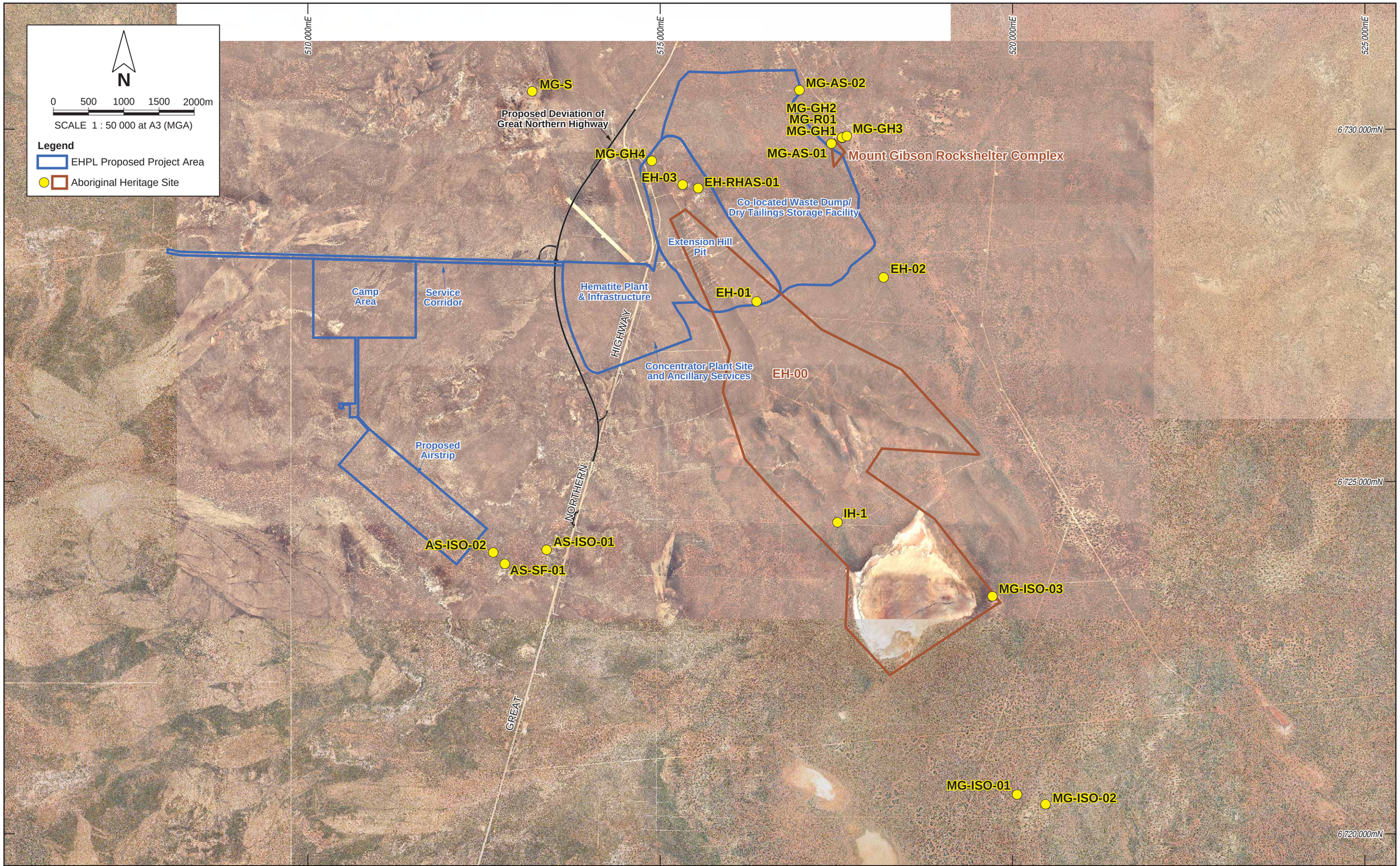
PINPOINT CARTOGRAPHICS (08) 9277 7763

Extension Hill Pty Ltd

NINGHAN STATION, CHARLES DARWIN RESERVE & MOUNT GIBSON STATION

Drawn: H. Goff	Date: 17-06-09
Revised: --	Date: --
Dwg No.: **ehm-01-065.dgn**	

10-800-EN-DWG-0085_0



		A	29-03-10	HG	DRAFT	HG	-
DWG No	TITLE	REV	DATE	BY	DESCRIPTION	CHKD	APPR
REFERENCE DRAWINGS		DRAWING REVISION					

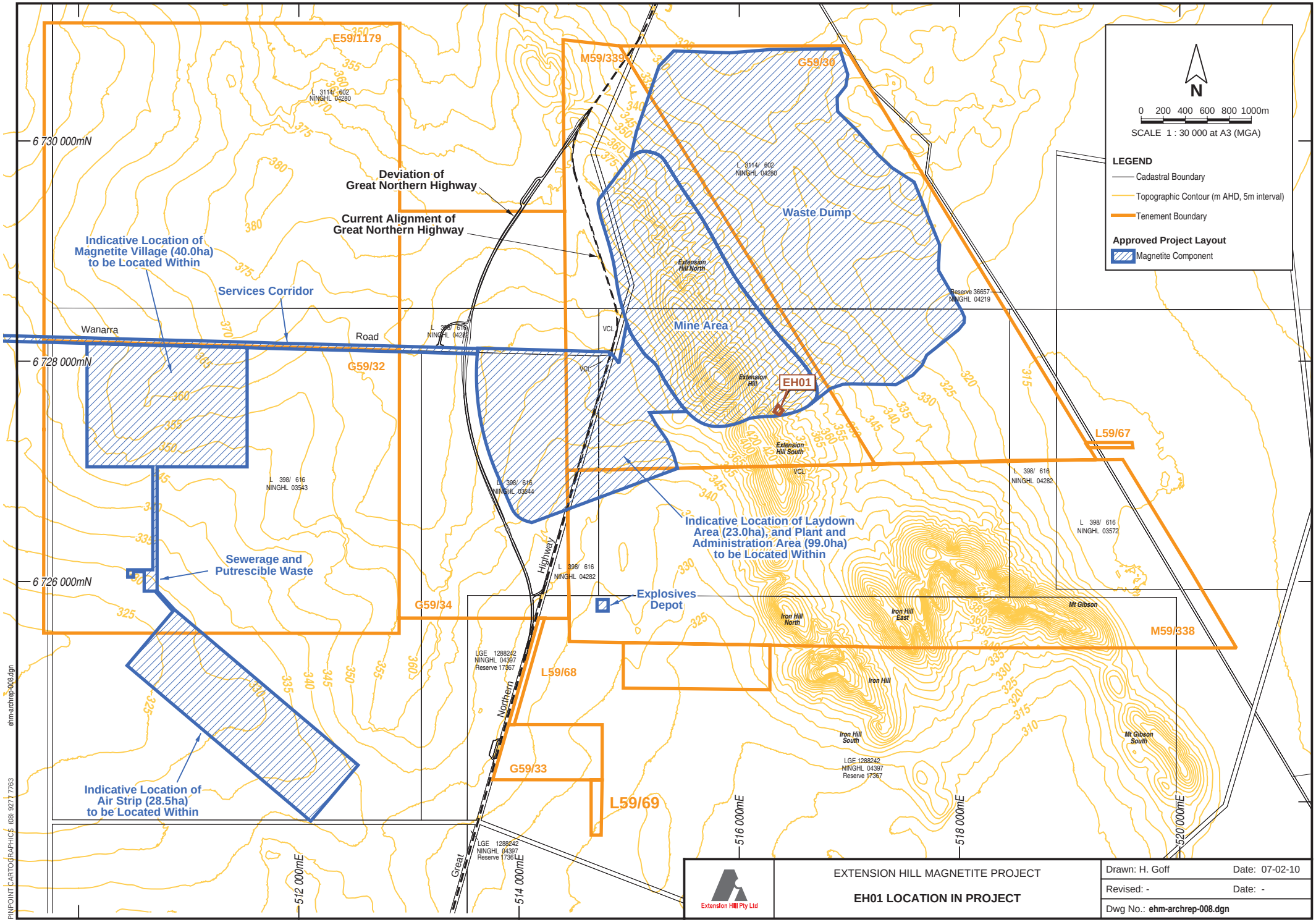
DRAWN BY	H. GOFF	09-03-10	
CHECKED BY	-	-	
APPROVED BY	-	-	

SCALE: 1 : 50 000

Extension Hill Pty Ltd

MAP OF EHPLs PROPOSED PROJECT AREA WITH ABORIGINAL HERITAGE SITES

A3	DWG No. : ehm-01-080	REV A


E59/1179
M59/339
G59/30
Deviation of
Great Northern Highway
Current Alignment of
Great Northern Highway
Waste Dump
Indicative Location of
Magnetite Village (40.0ha)
to be Located Within
Services Corridor
Wanarra
Road
G59/32
Mine Area
EH01
Extension Hill North
Extension Hill
Extension Hill South
L59/67
Indicative Location of Laydown
Area (23.0ha), and Plant and
Administration Area (99.0ha)
to be Located Within
Sewerage and
Putrescible Waste
Explosives
Depot
G59/34
Northern Highway
L59/68
G59/33
L59/69
M59/338
Iron Hill North
Iron Hill East
Iron Hill
Iron Hill South
Mt Gibson
Mt Gibson South
Indicative Location of
Air Strip (28.5ha)
to be Located Within
Great
6 730 000mN
6 728 000mN
6 726 000mN
512 000mE
514 000mE
516 000mE
518 000mE
520 000mE
L 3114/ 602
NINGHL 04280
L 398/ 616
NINGHL 03543
L 398/ 616
NINGHL 03544
L 398/ 616
NINGHL 04282
L 398/ 616
NINGHL 03572
Reserve 36657
NINGHL 04219
LGE 1288242
NINGHL 04397
Reserve 17367
LGE 1288242
NINGHL 04397
Reserve 17736
VCL
N
0 200 400 600 800 1000m
SCALE 1 : 30 000 at A3 (MGA)
LEGEND
Cadastral Boundary
Topographic Contour (m AHD, 5m interval)
Tenement Boundary
Approved Project Layout
Magnetite Component
Extension Hill Pty Ltd
EXTENSION HILL MAGNETITE PROJECT
EH01 LOCATION IN PROJECT
Drawn: H. Goff Date: 07-02-10
Revised: - Date: -
Dwg No.: ehm-archrep-008.dgn
PINPOINT CARTOGRAPHICS (08) 9277 7763
ehm-archrep-008.dgn

516 200mE

516 400mE

6 727 800mN

6 727 600mN

6 727 400mN

N

0 10 20 30 40 50m

SCALE 1 : 1 500 at A3 (MGA)

Legend

- Extension Hill Rock Shelter 01 (EH01)
- Archaeological Site
- Archaelogical Site - Water Feature

Extension Hill Pit

Rock Holes

Ephemeral Creek

* Cave1
* Overhang1
* Overhang2
* Cave2

ehm-archrep-007.dgn

PINPOINT CARTOGRAPHICS (08) 9277 7763

Extension Hill Pty Ltd

EXTENSION HILL MAGNETITE PROJECT
ARCHAEOLOGICAL REPORT - EH01

EXTENSION HILL ROCKSHELTER 01 (EH01)

Drawn: H. Goff	Date: 20-01-10
Revised: --	Date: --
Dwg No.: **ehm-archrep-007.dgn**	

		A	09-03-10	HG	DRAFT	HG	-
DWG No	TITLE	REV	DATE	BY	DESCRIPTION	CHKD	APPR
REFERENCE DRAWINGS		DRAWING REVISION					

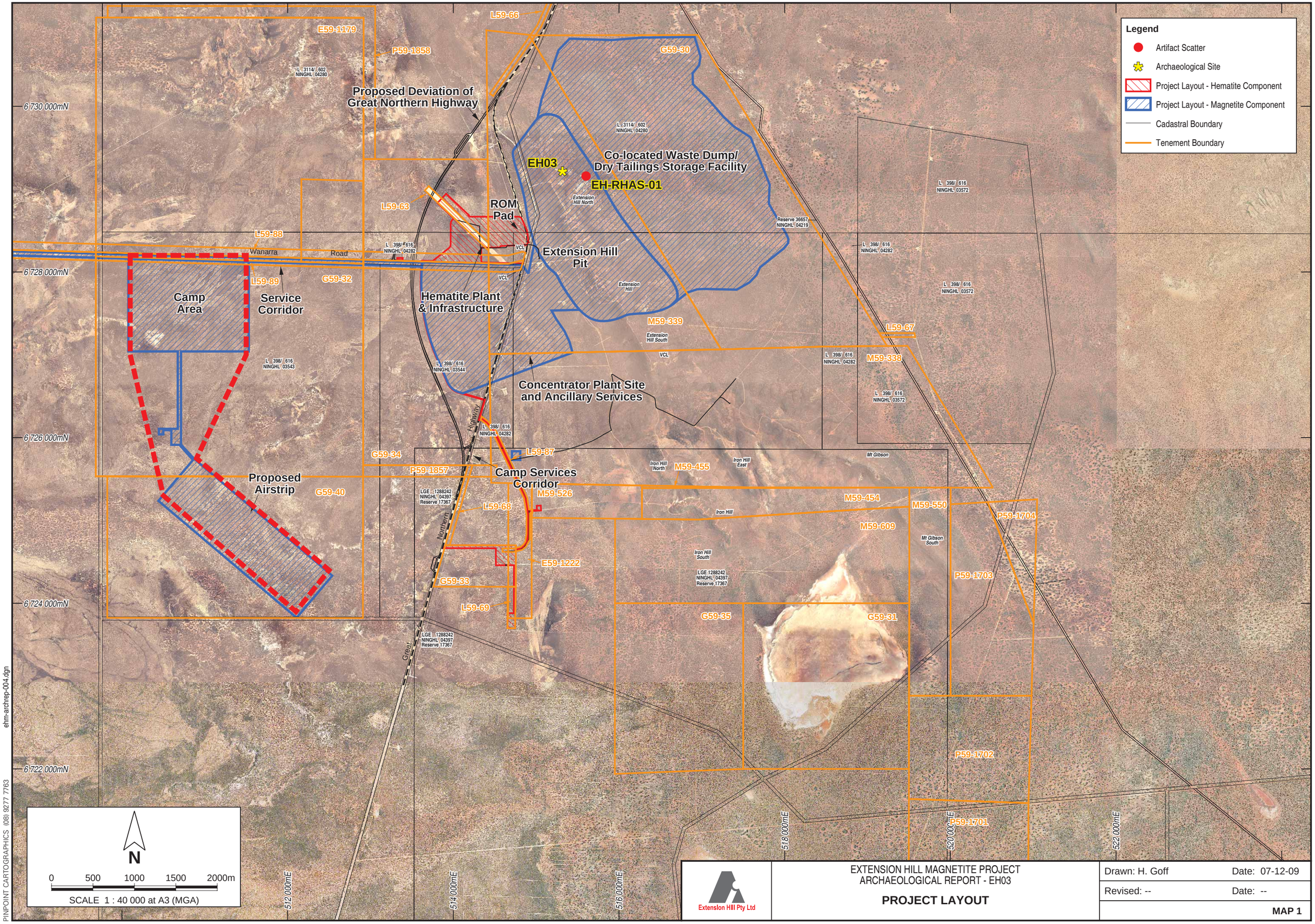
DRAWN BY	H. GOFF	09-03-10	
CHECKED BY	-	-	
APPROVED BY	-	-	

SCALE: 1 : 5 000

Extension Hill Pty Ltd

EXTENSION HILL'S PROPOSED MAGNETITE PROJECT HERITAGE SITE EH-02

A3	DWG No. : 10-800-NT-DWG-0032.dgn	REV A



PINPOINT CARTOGRAPHICS (08) 9277 7763 ehm-archrep-004.dgn

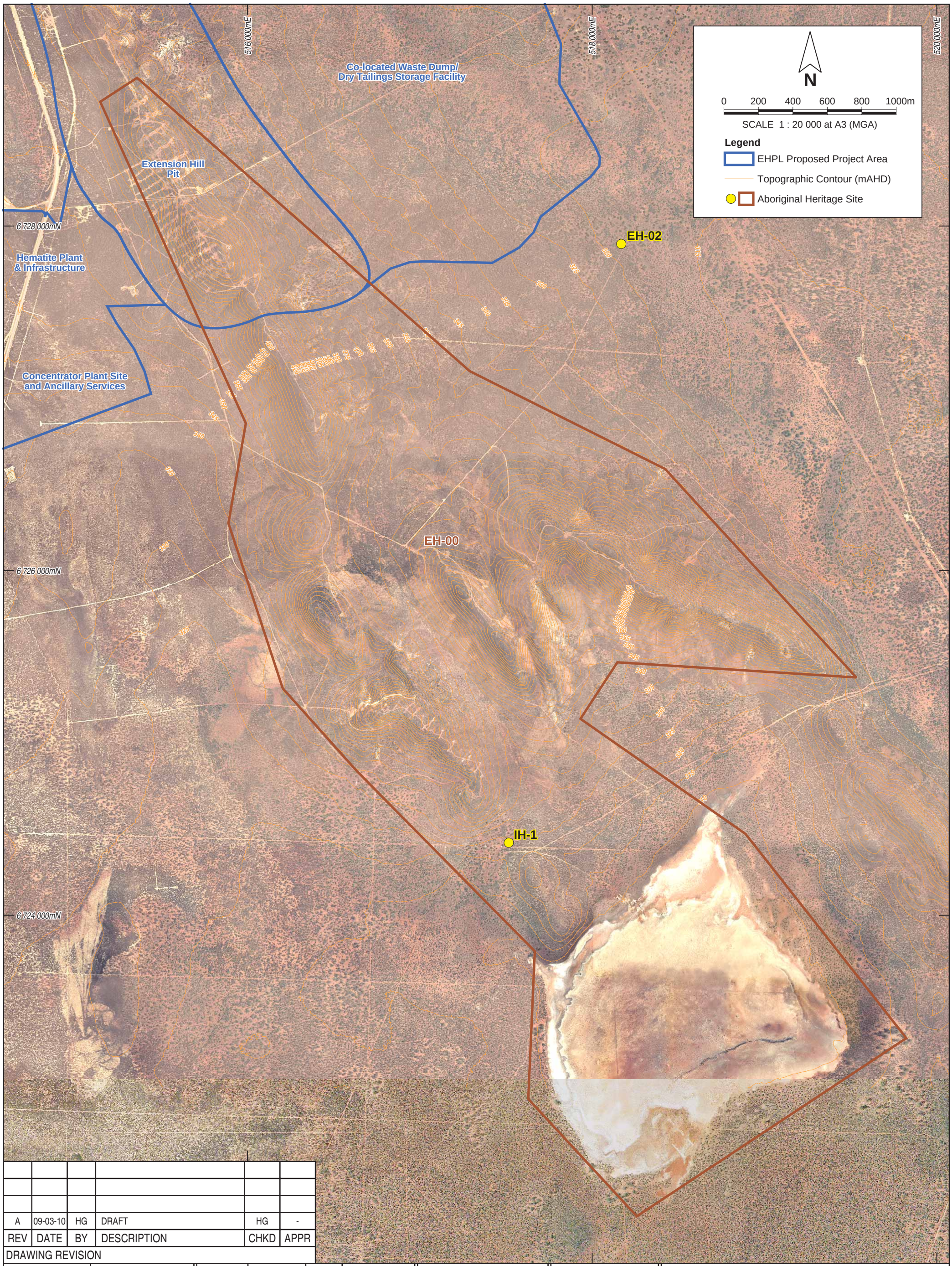
Extension Hill Pty Ltd

EXTENSION HILL MAGNETITE PROJECT
ARCHAEOLOGICAL REPORT - EH03

PROJECT LAYOUT

Drawn: H. Goff	Date: 07-12-09
Revised: --	Date: --
	MAP 1

515 000mE
515 200mE
515 400mE
515 600mE
6 729 600mN
6 729 400mN
6 729 200mN
6 729 000mN
Gnamma Hole 04
EH03
Rock Hole
EH-RHAS-01
N
0 25 50 75 100m
SCALE 1 : 2 500 at A3 (MGA)
Legend
Artifact Scatter
Cadastral Boundary
Archaeological Site
ehm-archrep-005.dgn
PINPOINT CARTOGRAPHICS (08) 9277 7763
Extension Hill Pty Ltd
EXTENSION HILL MAGNETITE PROJECT
ARCHAEOLOGICAL REPORT - EH03
LOCATION OF ARCHAEOLOGICAL SITES EXTENSION HILL 03 (EH03) AND EXTENSION HILL ROCK HOLE AND ARTEFACT SCATTER 01 (EH-RHAS-01).
Drawn: H. Goff Date: 07-12-09
Revised: -- Date: --
MAP 2



REV	DATE	BY	DESCRIPTION	CHKD	APPR
A	09-03-10	HG	DRAFT	HG	-

DRAWING REVISION

DRAWN BY	H. GOFF	09-03-10		SCALE: 1 : 20 000	
CHECKED BY	-	-		This drawing is and shall remain the property of Extension Hill & Company. The drawing will remain confidential at all times. Unauthorised use of this drawing in any way is prohibited.	
APPROVED BY	-	-			

DWG No | TITLE

REFERENCE DRAWINGS

Extension Hill Pty Ltd

EXTENSION HILL'S PROPOSED MAGNETITE PROJECT HERITAGE SITE EH-00

A3	DWG No. : 10-800-NT-DWG-0034.dgn	REV A

517 000mE
517 500mE
518 000mE
518 500mE
6 725 000mN
6 724 500mN
6 724 000mN
EH-00
IH-1
N
0 50 100 150 200m
SCALE 1 : 5 000 at A3 (MGA)

Legend

- EHPL Proposed Project Area
- Topographic Contour (mAHD)
- Aboriginal Heritage Site

		A	09-03-10	HG	DRAFT	HG	-
DWG No	TITLE	REV	DATE	BY	DESCRIPTION	CHKD	APPR
REFERENCE DRAWINGS		DRAWING REVISION					

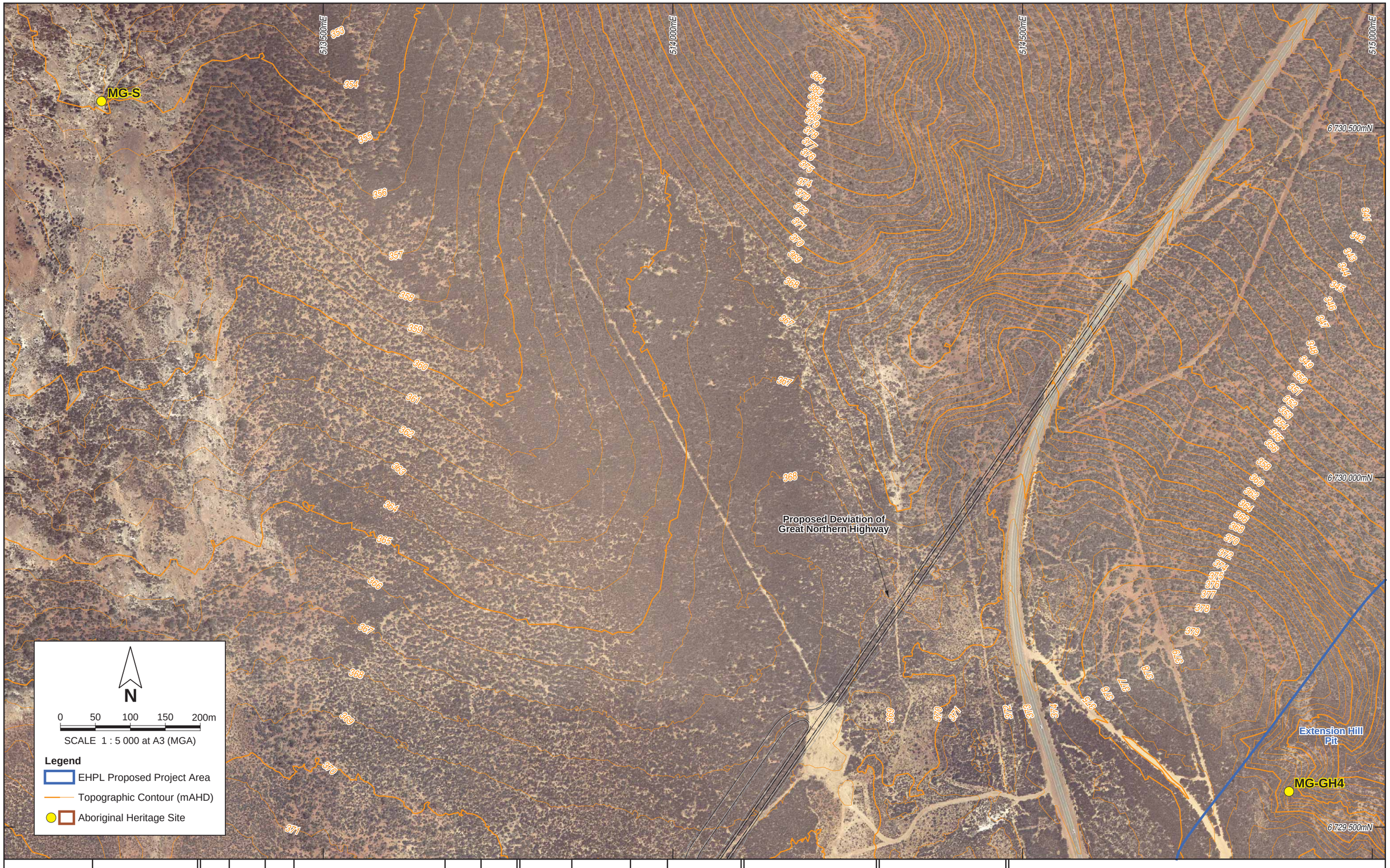
DRAWN BY	H. GOFF	09-03-10	
CHECKED BY	-	-	
APPROVED BY	-	-	

SCALE: 1 : 5 000

Extension Hill Pty Ltd

EXTENSION HILL'S PROPOSED MAGNETITE PROJECT HERITAGE SITE IH-1

A3	DWG No. : 10-800-NT-DWG-0033.dgn	REV A



		A	09-03-10	HG	DRAFT	HG	-
DWG No	TITLE	REV	DATE	BY	DESCRIPTION	CHKD	APPR
REFERENCE DRAWINGS		DRAWING REVISION					

DRAWN BY	H. GOFF	09-03-10	
CHECKED BY	-	-	
APPROVED BY	-	-	

SCALE: 1 : 5 000

Extension Hill Pty Ltd

EXTENSION HILL'S PROPOSED MAGENETITE PROJECT HERITAGE SITES MG-S & MG-GH4

A3	DWG No. : 10-800-NT-DWG-0030.dgn	REV A

		A	09-03-10	HG	DRAFT	HG	-
DWG No	TITLE	REV	DATE	BY	DESCRIPTION	CHKD	APPR
REFERENCE DRAWINGS		DRAWING REVISION					

DRAWN BY	H. GOFF	09-03-10	
CHECKED BY	-	-	
APPROVED BY	-	-	

SCALE: 1 : 5 000

Extension Hill Pty Ltd

EXTENSION HILL'S PROPOSED MAGNETITE PROJECT - HERITAGE SITES MG-AS-01, MG-AS-02, MG-GH1, MG-GH2, MG-GH3, MG-R01 & ROCKSHELTER COMPLEX

A3	DWG No. : 10-800-NT-DWG-0031.dgn	REV A

510 000mE
511 000mE
512 000mE

N
0 100 200 300 400 500m
SCALE 1 : 15 000 at A3 (MGA)

L59-88
Wanarra Road
L59-89
G59-32
Service Corridor
6 728 000mN
Camp Area
6 727 000mN
6 726 000mN
G59-34
G59-40
6 725 000mN
Proposed Airstrip
AS-ISO 02
AS-ISO 01
AS-SF 01
6 724 000mN

Legend
- Survey Area
- Project Layout - Hematite Component
- Project Layout - Magnetite Component
- Cadastral Boundary
- Tenement Boundary
- Identified Isolated Artefact

Extension Hill Pty Ltd

EXTENSION HILL MAGNETITE PROJECT
ARCHAEOLOGICAL REPORT - ACCOMMODATION VILLAGE AND AIRSTRIP

SURVEY POLYGON OF EXTENSION HILL PTY LTD'S PROPOSED AIR STRIP AND ACCOMMODATION VILLAGE SHOWING THE LOCATION OF IDENTIFIED ISOLATED ARTEFACTS

Drawn: H. Goff	Date: 07-12-09
Revised: --	Date: --
	MAP 3

Clearance Area
Line
Region
Tracks
Line
Mining Lease Boundary
Region

518,000 mE
520,000 mE
6,726,000 mN
6,724,000 mN
6,722,000 mN
6,720,000 mN

M 59/338
M 59/454
M 59/550
MG
ISO-03
MG
ISO-01
MG
ISO-02

Extension Hill Pty Ltd	
	Heritage Clearance 2009
Date:16/12/2009	
Author: C. Smart	
Office:	
Drawing:	
Scale: 1:25000	Projection: MGA Zone 50 (GDA 94)

APPENDIX 3

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Heritage Surveys Previously Conducted within EHPL's PPA.

Detailing the following:

1 Date of Survey
2 Consultant
3 Native Title Claimants
4 Survey Area
5 Previously Registered Sites in the Survey Area
6 Sites / Features recorded during the Field Survey
7 Report Reference

Date of Survey	Consultant	NT Claimants	Survey Area	DIA Registered Sites in Survey Area	Sites / Features Recorded	Reference
3rd Sept 2004	AIC	*Widi Mob*	Mt Gibson	None within EHPL's PPA	Mt Gibson Dunnart Dreaming (25293: Extension Hill?) - no co-ordinates given.	*AIC 2004a; Hames Consultancy Group, 2004*
29 – 31st Sept 2004	AIC	*Widi Mob*	Extension Hill, Iron Hill	None within EHPL's PPA	1. Extension Hill 01 (516367mE / 6727556mN). 2. Extension Hill 02 (518169mE / 6727896mN). 3. Extension Hill 03 (514891mE / 6728421mN).	*AIC 2004b*
10 – 13th Aug 2004	Eureka	*Badimia*	Mt Gibson (up to 2km NW and SW, and area immediately east).	None within EHPL's PPA	Iron Hill 1 517514mE / 6724433mN 517522mE / 6724431mN 517515mE / 6724410mN 517509mE / 6724410mN	*Ryan, I & Morse, K. 2004*
20-23rd Aug and 28-30th Sept 2005	AIC	*Badimia*	Extension Hill	21622: Extension Hill 01 21623: Extension Hill 02 21624: Extension Hill 03 21626: Iron Hill 1	1. "*Ngangan Wagu*" / Mount Gibson Rockshelter Complex (517584mE / 6729877mN). 2. Mt Gibson Artefact Scatter 1 (517428mE 6729796mN). 3. Mt Gibson Rockshelter 1 (517584mE 6729877mN). 4. Mt Gibson Gnamma Hole 1 (517581mE 6729882mN). 5. Mt Gibson Gnamma Hole 2 (517581mE 6729882mN).	*AIC 2005a; AIC 2005b*

					6. Mt Gibson Gnamma Hole 3 (517649mE 6729903mN). 7. Mt Gibson Artefact Scatter 2 (516976mE 6730555mN). 8. Mt Gibson Gnamma Hole 4 (514881mE 6729551mN). 9. Possible Burial (516624mE 6747120mN). 10. Possible Hearth (516670mE 6747003mN). 11. Plus others not within PPA.	
2-4th Nov 2005	AIC	*Widi Mob*	Extension Hill PPA	21622: Extension Hill 01 21623: Extension Hill 02 21624: Extension Hill 03 21626: Iron Hill 1	1. "*Ngangan Wagu*" / Mount Gibson Rockshelter Complex (517584mE / 6729877mN). 2. Mt Gibson Artefact Scatter 1 (517428mE 6729796mN). 3. Mt Gibson Rockshelter 1 (517584mE 6729877mN). 4. Mt Gibson Gnamma Hole 1 (517581mE 6729882mN). 5. Mt Gibson Gnamma Hole 2 (517581mE 6729882mN). 6. Mt Gibson Gnamma Hole 3 (517649mE 6729903mN). 7. Mt Gibson Artefact Scatter 2 (516976mE 6730555mN). 8. Mt Gibson Gnamma Hole 4 (514881mE	*AIC 2006a*

					6729551mN). 9. Plus others not within PPA.	
27-29th May 2006	AIC	*Widi Mob*	Extended Infrastructure Areas	21622: Extension Hill 01 21623: Extension Hill 02 21624: Extension Hill 03	Mt Gibson Spring	*AIC 2006b; AIC 2006c.*
Nov 2007	AIC	*Widi Mob*	Extension Hill 01 Extension Hill 03	21622: Extension Hill 01 21624: Extension Hill 03	Section 16 Excavation of Extension Hill 01 and Extension Hill 03.	*Fordyce 2008*
Dec 2007	YC	*Badimia*	Extended Infrastructure Areas	24389: Mt Gibson Rockhole 21624: Extension Hill 03 24394: Mt Gibson Spring	None identified	*YC 2007*
16-17th June 2008	YC	*Badimia*	Extension Hill	21622: Extension Hill 01 21623: Extension Hill 02 21624: Extension Hill 03	1. Extension Hill 01 (516367mE / 6727556mN). 2. Extension Hill 02 (518169mE / 6727896mN). 3. Extension Hill 03 (514891mE / 6728421mN). 4. Mt Gibson Artefact Scatter 1 (517428mE 6729796mN). 5. Mt Gibson Gnamma Hole 4 (514881mE 6729551mN). 6. Mount Gibson Rockshelter Complex (517584mE / 6729877mN).	*YC 2008a; 2008b*
25-28th Sept 2009	YC	*Badimia*	Proposed Airstrip and Accommodation	None	1. Airstrip Isolated Artefact 01 (513389mE / 6724032mN). 2. Airstrip Isolated Artefact 02 (512631mE /	*Tehnas 2009a; YC 2009a*

			Areas		6723993mN). 3. Airstrip Stone Formation 01 (512794mE / 6723833mN).	
25-28th Sept 2009	YC	*Badimia*	Extension Hill 03	21624: Extension Hill 03	Artefact Salvage of Extension Hill 03 Extension Hill 03 Rock Hole and Artefact Scatter Identified.	*Tehnas 2009b*
23rd Nov 2009	YC	*Badimia*	EH 01	25293: Extension Hill 21622: Extension Hill 01	Section 18 Recording of Extension Hill 01	*Tehnas 2009d;*
24-26th Nov 2009	YC	*Badimia*	Mt Gibson	25293: Extension Hill	1. Mt Gibson Isolated Artefact 01 (520063mE / 520063 6720558mN). 2. Mt Gibson Isolated Artefact 02 (520468mE / 520468 6720419mN). 3. Mt Gibson Isolated Artefact 03 (519714mE / 6723372mN).	*Tehnas 2009c; YC 2009b*

Table A3 - *Heritage Surveys Previously Conducted within EHPL's PPA.*

APPENDIX 4

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Ethnohistories of the *Badimia* and *Widi* People

The *Badimia* People

By Dr. Tony Doulman – March 2009.

A History of the Badimia Native Title claim (WC 96/98)

The *Badimia* Native Title Claim (WC 96/98) was first lodged by the Representative Body Yamatji Land and Sea Council (YLSC) in 1996. YLSC have been the representatives of the *Badimia* claim since this time. At one of the initial meetings conducted by YLSC and the *Badimia* people the main family groups were represented. At that stage Ollie George, Clara George, Albert Little and Percy George (of whom the latter three were still alive) were present when the boundaries for the *Badimia* claim were finalised. Research on the boundaries for the claim was undertaken by consultant anthropologists working with YLSC. The *Badimia* claim was one of the first claims lodged by YLSC. The first Connection Report for the *Badimia* people was completed in 1998 by anthropologist, Dr Jim Taylor. Since that time a final Connection Report has been submitted to the State with the view to negotiate a Native Title Determination. Since the Registration of the *Badimia* Native Title claim YLSC has undertaken extensive preservation evidence.

Ethnohistory of the Badimia People

The *Badimia* claim covers approximately 36,129 square kilometres of land in the Geraldton region. It lies in the Shires of Cue, Dalwallinu, Menzies, Mount Magnet, Mount Marshall, Perenjori, Sandstone and Yalgoo in the Gascoyne/Murchison region.

The *Badimia* Native Title Claim covers the Mt Gibson/Extension Hill Mining project area.

Ethnographic research on the *Badimia* people was undertaken by Norman Tindale in the 1940s. Extension Hill Pty Ltd's Proposed Magnetite Project is located within the area described by Tindale for the *Badimia* people. Tindale (1974) stated that the traditional estate of the *Badimia* people, the area of which he described as being:

> *At Cue, Nannine, Mount Magnet; southwest almost to Yalgoo, northwestern boundary is on Sandford River divide. They circumcise and subincise.*

Tindale also listed various alternative names by which the *Badimia* people were referred to:

> *Parimaia (valid alternative), Bardimaia, Badimaia, Badimala, Padimaia, Badimara, Patimara, Wardal, Waadal (means 'west' in Pini language), Bidungu (name given by Wadjari meaning 'users of rockhole water).*

Daisy Bates indicated that the people residing around 'Ming-enew and Yandanuka' belonged to the *Wajjari* Tribe, but referred to themselves as *Badimia* (badi = no; maia = voice/speech) (Bates 1985: 58). The '*Badi-maia*' were described as being part of the Nor'West Nation/Group, who differed from neighbouring Nations/Groups in their absence of circumcision practices and a differential system of organisation. It was also noted that as intermarriage between tribes of the Nor'West nation have always occurred, 'free passage' across tribal boundaries was acceptable (Bates 1985: 56).

Richard Kingsford in his thesis Yamadyi Law (1982) notes that "*Badimaya* territory, as I recorded it, includes a large area southwest of Tindale's (1974: 240), although Tindale does indicate 'disputed territory' here on his map. However the territory certainly includes the Lake Moore-Ninghan Station area, since a *Badimaya* man can trace ownership of sites here for three ascending generations" (1982:20). Kinsford also notes that *Badimaya* territory lies within the Salt Lake Division (*ibid*: 19).

The *Badimia* representatives themselves have stated that they know the area very well. They have asserted that they are the Traditional Owners for the area and that *Badimia* people have worked and lived permanently in the area. Located throughout *Badimia* country are numerous Breakaways and rock holes. Many rock holes had names associated with them and traditionally a *Badimia* person could claim custodianship of particular rock holes. As Tindale noted neighbouring groups often referred to *Badimia* people as "users of rock holes". Today, *Badimia* people regularly visit rock holes to maintain them. Breakaways were also considered to have significance. It is not uncommon for Breakaways to feature rock holes, and in the past *Badimia* people would camp along the Breakaways during the winter months. In summer *Badimia* people travelled from rock hole to rock hole. Many of these rock holes contain water permanently.

Cecil Fogarty, a senior *Badimia* man who was interviewed by anthropologists working with YLSC in the late 1990s, spoke of the special significance of rock holes to *Badimia* people. He said that the *Bimarra* (Water-snake) is the keeper and guardian of all *Badimia* rock holes, springs and soaks. He taught the younger generation about the *Bimarra* and told them that they must show respect for the *Bimarra*. He cautioned them to always approach rock holes, springs and soaks carefully and to inform the *Bimarra* of their presence and that they belonged to the country.

The last of the *Badimia* Law ceremonies were held on *Badimia* country in the late 1950s. Until his death at the end of 2009, Percy George was the last surviving *Badimia* man who went through the Law on *Badimia* country. Mr. George was considered a very important elder and attended Law ceremonies in many different countries. Mr. George was widely known to possess vast amounts of knowledge of *Badimia* country, including Law songs and Dreaming sites.

In contemporary society, many men go through the Law in places such as Jigalong and Wiluna, though traditionally women also conducted Law Ceremonies. Both men and women transmit knowledge of sites, bush tucker and stories of *Badimia* elders to the younger generations. According to Percy George, being *Badimia* involved knowledge of sites and descent from *Badimia* apical ancestors. While some ritual secrecy prevails, some traditional skills and practices continue to be passed on to younger generations by the extended George, Little, Fogarty, Clinch and Walsh families. The *Badimia* people still continue to practice aspects of their traditional knowledge, despite the influence of European culture. Most individuals in the group have preserved knowledge of plants for food and medicine. It is believed that a local medicine bush, if prepared properly, can cure everything from colds to cancer. Similarly, traditional foods such as *Wallah* (emu eggs), kangaroo meat, *Bimba* (gum from sugar brother bushes) *Bardi* (Bardi grubs), *Guiol* (goanna) and *Bullabullah* (lizards) are considered to be delicacies and are still eaten frequently. Many *Badimia* people have worked and continue to work on nearby station properties, which have given them a detailed knowledge of the landscape.

It must be remembered that culture is never static but rather adaptable and fluid. Although there have been external influences on *Badimia* culture there also exists cultural continuity. These laws and customs for *Badimia* people include:

- Protecting country – Caring for sites of cultural significance and maintaining rock holes;
- Visiting/camping on country;
- Transmitting knowledge of *Badimia* social life to young generations;
- Kinship ties;
- Knowledge of the boundaries of *Badimia* country;
- Individuals and families maintaining close association with certain sites/places within *Badimia* country;
- Respect for elders; and
- Respect for the Law.

Badimia language was still spoken fluently by Clara George, mother of Percy and Ollie George, who passed away a number of years ago. Linguists at the time interviewed Clara, Percy and Ollie to produce a *Badimia* Dictionary. Though Clara George was the last fluent speaker of the *Badimia* language, many other *Badimia* people still have extensive knowledge of it, of whom Frank Walsh Sr is included. YLSC took preservation evidence from Clara before her death in *Badimia* language. The first work on *Badimia* language was undertaken by the linguists Oates and O'Grady in the early 1960s. Importantly, they noted that *Badimia* language was spoken from around Mt Magnet through to the Paynes Find area. Doug Marmion, a linguist who worked with *Badimia* people in the early to mid 1990s noted that *Badimia* language was also related to the neighbouring group, the *Wadjarri* people. Doug Marmion noted that *Badimia* language was and still is to an extent a prominent feature of being *Badimia,* that is, language is prominent in the social and cultural life of *Badimia* people.

In the years during European settlement in the region (contact between Europeans and Aboriginals in the Murchison region was not intensive until the 1860s), the *Badimia* people, along with other tribal groups of the area settled in the fringe camps around the new stations and townships of the area such as Mt Magnet and Cue. Those that survived the several epidemics and diseases that affected the community during this time went to settle

on regional farms and stations and in the towns. From there they endeavoured to continue contact with their traditional lands. Today *Badimia* families associate with certain pastoral stations on *Badimia* country. It could be argued that the families who associate with particular stations are the descendants of the traditional custodians for sites located on those particular stations.

Many *Badimia* families associate strongly with certain areas and/or pastoral leases in *Badimia* country. *Badimia* people also regard pastoral Stations where many of them, born, raised, initiated, worked and where family members died and/or are buried on as a place they belong, the land (*barna*).

As an example, presented below is a table outlining some members of the *Badimia* Native Title Claim and their attachment to particular pastoral stations:

Person	Associated Pastoral Station
Edith Clinch (Dec.)	Goodingnow and Ninghan
Cecil Fogarty (Dec.)	Pullagaroo, Yoweragabbie and Ninghan
Edward Fogarty	Wanara, Oudabunna, Pindabunna, Wanarie and Maranalgo
Clara George (Dec.)	Wynyangoo and Wydgee
Ollie George	Wydgee, Thunddelarra, Kirkalocka, Yoweragabbie, Pindabunna and Austin Downs
Percy George (Dec.)	Boogardie, Yowergabbie, Kirkalocka, Wydgee, Narndee, Meeline, Windimurra and Windsor
Peter Green	Goodingnow, Mouroubra, Pindabunna and Oudabunna
May Lawson (Dec.)	Ninghan
Albert Little (Dec.)	Wydgee, Meeline and Iowna
Richard Little	Wydgee
Victor Little (Dec.)	Wydgee, Kirkalocka and Murrum
Frank Walsh Sr	Wandarrie, Wydgee, Kirkalocka, Mouroubra, Ninghan, Maranalgo, Narndee, Thundelarra and Nalbarra

Many of the stations in *Badimia* country have *Badimia* language names. To give a few examples:

Station Name	*Badimia* Language Name
Windimurra	"to hold a stick in the hand" or "stretch out the hand to grasp a stick"
Kirkalocka	Major Mitchell Cockatoo
Pullagaroo	connected to a nearby soak called Pilagroo
Maranalgo (east of Lake Moore)	"to eat with the hands"
Bimbijy (east of Lake Moore)	a lot of *Bimba* (sap of a Sugar Brother tree)
Goodingnow	Mallee Hen egg
Warriedar	Wedge Tailed Eagle
Murrum	"to grab"
Yoweragabbie	"running water"

In the initial research for the *Badimia* Connection Report Dr Jim Taylor made the comment that southeast of the Paynes Find area of *Badimia* country a number of family groups had particular attachment to the areas. The families included the Fogarty and Clinch families. Peter Green, a *Badimia* elder, was born around Paynes Find as was his *Badimia* mother Edith Green (nee Clinch). Another *Badimia* woman, Valerie Clinch (closely related to the Fogarty family through her father), was born around Paynes Find approximately 70 years ago. Her father Arthur Clinch was also born around Paynes Find in 1911. Her grandmother Uwanda (a *Badimia* woman) was born at Paynes Find sometime in the 1880s. Uwanda lived all her life around Paynes Find and is buried at Paynes Find.

Badimia people along with other groups often express the desire to be buried on country, especially in places that they have a strong sense of attachment with. Another *Badimia* woman, May Lawson (who has since passed away) was born south of Ningham Station in 1938. Her father Joe Lawson and mother Eva Stack (born in 1906) were also born around Ninghan Station. Eva Stack's father was a *Badimia* man born in 1880. Joe Lawson's father was known as Ninghan Billy. Ninghan Billy was born and is buried on Ninghan Station. Glynn Fogarty who is now 60 years old also recalls travelling with his grandparents Arthur Fogarty and Topsy Little throughout the Paynes find area as a young person (pers. Comm.). He recalls that although he was a young person, his grandparents camped throughout the

area and would teach him about bush tucker, how to track animals, and how to maintain and protect rock holes. He was also taught that Paynes Find and the areas to the southeast and southwest of Paynes Find (which includes Mt Gibson) are part of *Badimia* country.

Ethnohistory of the Mt Gibson/Extension Hill area

The DIA registered site that claims Extension Hill as a mythological site is not recognised by *Badimia* people as a site (The Extension Hill Ethnographic Site was registered by the *Widi* Claimants in 2004 - *Widi* has since been de-registered). The late Percy George (the last *Badimia* Man who went through the Law on *Badimia* territory) stated that the Extension Hill /Mt Gibson area was part of *Badimia* country, and that the closest cultural /mythological site to the area is Lake Moore for which the *Badimia* people are Traditional Custodians.

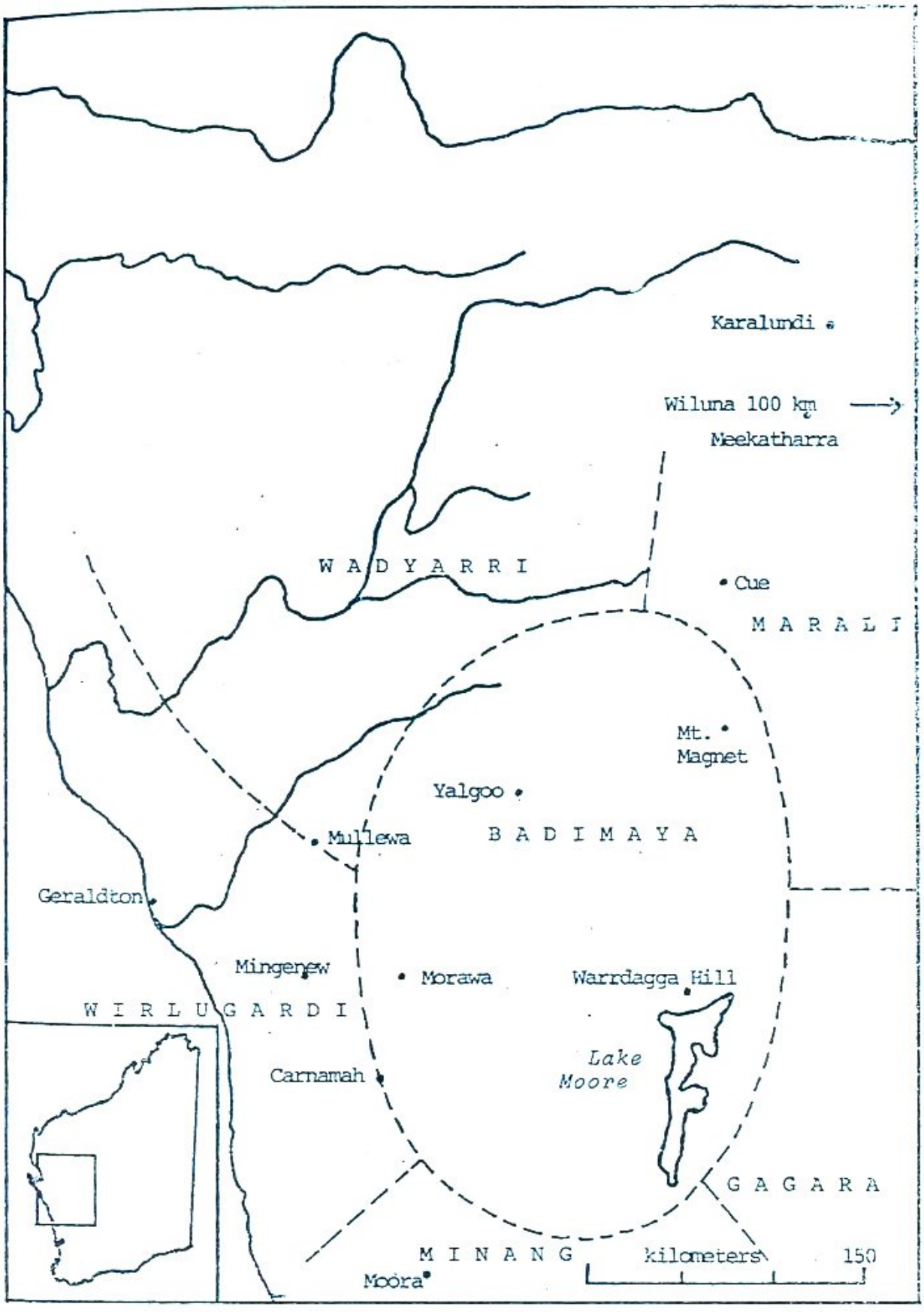
Long before the Native Title Act 1993, Richard Kingsford undertook many years of research with *Badimia* people. His informants were *Badimia* Lawmen, all of whom were at that stage very elderly. He was critical of the research that Norman Tindale conducted on the boundaries of *Badimia* country. Kingsford's *Badimia* informants were asked the extent of *Badimia* country and from this information a map of *Badimia* country was produced (See below for map). This map clearly shows that Mt Gibson <u>is</u> within *Badimia* country, situated west of Lake Moore. During his discussions with *Badimia* Elders Kingsford also recorded the neighbouring groups around *Badimia* country. Until the end of 2009 there was an overlapping claim on *Badimia* country that included the Lake Moore-Mt Gibson area. This claim, which did not pass the registration test at the end of 2009, was known as the *Widi* Native Title Claim. The *Badimia* elders who Kingsford spoke to regarding boundaries in the Murchison region make no mention of people known as *Widi*. The *Badimia* dictionary documents the meaning of *Widi* (spelt *Wirdi*) as meaning "no, negative, not".

Kingsford documented *Badimia* knowledge of country in great detail. One story that Kingsford recorded from a number of his informants concerns Lake Moore and is especially relevant to research concerning the Mt Gibson area. Kingsford notes that

> *A* Badimaya *story concerns a Water-snake which once lived a Garanggabi Spring (sunny water), in the south of Ninghan Station. The spring failed, caused by the*

> *Water-snake becoming 'too cheeky…mean with his water …' he'd push all the water back in his hole and lay across it. Two Mabarn men therefore drove the Water-snake out of the spring and south along Lake Moore: 'You could hear him going like a train, right down the lake.' The Water-snake became a stone arrangement on the lake bed, hear Kunturu. R and E Gould (1968:8) mention finding traces of four smaller stone alignments near a major stone alignment at Kunturu. The Water-snake also entered a nearby spring, now virtually a permanent water source, also called Carringgabby Waterhole. The Water-snake can leave the spring and travel through the air, forming the rainbow and rain clouds. Near the spring is a mushroom-shaped rock which is the focus of a renewal ritual for gudadu (meat mushroom). Men associated with the cult groupwhich owned Garanggabi used to meet and ritually 'sweep around' the rock, to the accompaniment of relevant songs and dances, in order to regenerate mushrooms and rain (caused by the Water-snake leaving the spring). Garanggabi is linked to Warrdagga, since men are mentioned as belonging to both sites. In the renewal ritual, dancers are painted with 'green ochre', which is likened to green grass, a result (along with mushrooms) of 'good winter rains'. One mabarn man who belonged to Garanggabi is remembered as the 'boss of the mushrooms', a magayagu (big head). This man was required to 'start off' the renewal songs, and others would follow him* (1982: 127).

Dr Jim Taylor in his *Badimia* connection report of 1998 also documents this story. The story that Dr Jim Taylor documented almost 20 years after Kingsford's research had been transmitted through to younger generations.



Kingsford's **Badimia** *Tribal Boundary (1982: 3)*

Family Histories

1. Graham and Glynn Fogarty

Graham (47 years old) and Glynn Fogarty (58 years old) are brothers, both born at Mt Magnet. Their father was Cecil Fogarty, a *Badimia* man (born in 1920 at Wydgee Station, south of Mt Magnet). Their mother was May Clinch, a *Badimia* woman (born in 1917 near Paynes Find). Cecil's parents were Arthur Fogarty and Topsy Little. Topsy Little's mother was a *Badimia* women by the name of Polly Little who is an apical ancestor for the *Badimia* Native Title Claim. May Clinch's mother, also a *Badimia* woman, was known as Lena (Also known as Galena). Lena's parents were both *Badimia* people - Albert Nebrong and Dinah. Both Albert and Dinah spent their lives travelling around the southern areas of *Badimia* country. Albert is buried at Paynes Find. Both Graham and Glynn travelled extensively through the southern areas of *Badimia* country and spent many years around Paynes Find.

2. Edward Fogarty

Edward was born at Dallwalinu in 1933. His father was Arthur Fogarty who was born on Murrin Station in *Badimia* country in approximately 1901. His mother was Topsy Little, a *Badimia* woman who was born on Wydgee Station in approximately 1889. Topsy's mother was Polly Little, a *Badimia* woman. As a young man Edward travelled extensively and worked with his parents on over 10 stations throughout *Badimia* country.

3. Ashley Walsh and Frank Walsh Sr

Ashley is the son of Frank Walsh Sr. Frank Walsh Sr was born on Wydgee Station south of Mt Magnet. His mother was Cauley George who was born on Kirkalocka Station in 1928. She was a *Badimia* woman and the sister of Ollie and Percy George. Frank and Ashley live in Mt Magnet and regularly visit all areas of *Badimia* country. Cauley George was the daughter of Clara George. Clara George lived for many years around Paynes Find.

4. Percy and Ollie George

Percy (Dec.) and Ollie are the sons of Clara George. Clara George's *Badimia* name was *Bilygwi*, and was named after her grandmother. *Bilygawi* is the *Badimia* name for the pink and grey galah. Clara was born in approximately 1908. Clara's mother was named Rosie

who born around 1880 and is buried on Hy-Brazil Station approximately 10kms east of Mt Magnet. Her father was known as George. Clara's grandparents on the maternal side were *Yilayajambin* born near the present day pastoral station, Wydgee. His name meant (according to Clara George) "to walk quickly". He is also buried at Wydgee Station.

5. **Roderick Hedlam and Chris Hedlam**

Chris is the son of Roderick. Roderick Hedlam was born in 1933 at Paynes Find. His mother was Daisy Little, a *Badimia* woman born on Wydgee Station. Daisy's mother was Polly Little who was born on Wogarno, in *Badimia* country. Roderick lives in Mt Magnet.

6. **James and Albert Little**

James Little is the son of Albert Little (Dec.). Albert was born in 1949 at Mt Magnet.

7. **Victor Little**

Victor Little was born at Mt Magnet. His father was Thomas Little who lived most of his life at Wydgee Station.

8. **Janice Strickland (nee Taylor)**

Janice is the descendant of Topsy Wheelock, a *Badimia* apical ancestor.

The *Widi* People

(AIC 2006a: p. 14-19)

Introduction: Place, Antiquity, People

The region to which the *Widi* belong lies in the northernmost extent of the South West Division or Swanland and the transition eastwards into the Saltlake Division or Salinaland (Jutson, 1950:32). According to Jutson, Swanland includes the Perth coastal plain extending from the country north of Gingin southwards to Cape Leeuwin, and the escarpment country further inland as far as the Bremer Bay locality on the south coast. The Saltlake Division, which is part of the desert region but in the margins of the arid zone, is characterised by strings of lakes and interconnecting streambeds and waterholes that have continuing sacred significance for the Indigenous people. Salinaland is, 'A region of low rainfall and rivers that may contain water after rain but only briefly' (Horton, 1994: 275).

The *Widi* people have a shared history with their neighbours the *Amangu*. Tindale locates them traditionally:

> *From between Lakes Monger and Moore north to Yuin, Talleringa Peak, and Nalbarra; west to Mullewa and Morawa (Morowa); east to Paynes Find and Wogarno, south of Mount Magnet; at Yalgoo and upper Greenough River … Northern hordes around Pingrove pushed southwest to Geraldton down the Irwin and Greenough rivers in early contact times … They practiced both circumcision and subincision* (Tindale, 1974: 260).

Oates and Oates include them in the *Kardu* subgroup of the Southwest Group of the *Pama-Nyunga* language family (Oates & Oates, 1970: xiii, 59).

The *Widi* are not discussed by that name in *The Encyclopaedia of Aboriginal Australia* (Horton, 1994) but appear subsumed circumstantially under the broader term of *Watjarri*, 'People of the Northwest region on the Murchison River, neighbours of the … Amangu' (Howie-Willis, 1994b: 1162). The shaded area on Horton's map appears to include *Widi* territory. However, in a conversation between Tindale and a Wadjari man the latter made a distinction between his people and those of the *Widi*: 'He suggested that his people had an advantage over those people whom he had met

on the coast and the *Widi* of the country southeast of Mullewa' (Tindale, 1974: 102; cited in Keeffe, 1995: 27). Tindale maps the '*Wadjari*' as the immediate northern neighbours to the *Widi*.

> *North to the hills overlooking the head of the Lyons River, Teano Range, Mount Isabella, Waldburg Range; on upper Gascoyne River west of Three Rivers; at Erivilla and Milgun; south the Cheangwa and the Roderick and upper Sanford rivers … The Wadjari western boundary, in the Byro and Dalgety Downs area, reflects a late expansion from the Murchison valley* (Tindale, 1974: 257-258).

Amangu people were found by Tindale:

> *At Champion Bay; from the Chapman River and the southern vicinity of Geraldton south to Hill River; inland to near Mullewa, Morawa, and Carnamah; Southeastern boundary not well defined, somewhere north of Moora … Attempts were made in postcontact times to introduce circumcision but with little success* (Tindale, 1974: 239).

Howie-Willis (1994c: 1011) describes the *Amangu* language group as: 'People of the Southwest region, on the coast between Geraldton and Jurien Bay, neighbours of the *Nhanta,* ***Watjarri****, Badimaya* and *Yuat* peoples' (Howie-Willis, 1994a: 45; author's emphasis). They are not included as Noongar, however but, like the *Widi*, are placed by Oates and Oates in the *Kardu* subgroup of the Southwest Group of the *Pama-Nyunga* language family and not to the '*Nyunga* Subgroup' (Oates & Oates, 1970: xiii, 58).

The Archaeological evidence for extensive Indigenous occupation from antiquity in this region has to be inferred from what is known of adjoining regions because little published material is available for the Mullewa area. In the Burrup Peninsula approximately 600 kilometres north in the Pilbara - identified by Flood as one of the 'major rock art regions' of Australia (Flood, 1995: 148) - are scattered old campsites and rock overhangs, many of the latter containing a rich suite of engravings (Flood, 1995: 278). In *Widi* country: 'At a few inland locations where suitable rock shelters of laterite or granite are known, rock paintings can be found,' and grinding stones, horse hoof cores, stone arrangements at Canna, and yellow and white ochre deposits 'in the Greenough, Irwin and Wooderarrung rivers' as well (Keeffe, 1995: 33-35). Pleistocene dates for the Silver Dollar site at Shark Bay about 200

kilometres from *Widi* country range from 18, 730 +/- 600 years BP (Before the Present) to 25,230 +/- 480 BP (Flood, 1995: 285).

The 'advantage' that the *Wadjari* had over the *Widi* and other people to their south was in terms of more efficient food preparation. The *Wadjari*, 'placed great reliance on grass seed food whereas the other people lived only on the hammered seeds of shrubs, did not use the process of wet milling of grass-seed [as the *Wadjari* by implication did], and … often went hungry' (Tindale, 1974: 102). However, Keeffe gives considerable space to an overview of *Widi* food resources, drawing extensively on the memoirs of Frank Wittenoom, who in 1874 when he was a young man took up with his brother Edward a ten-year lease on Yuin Station from their uncle Thomas Burges. These resources included a variety of kangaroo species, emu eggs, snakes, mallee fowl nests, wild grapes, yams, frogs, bardies, and seeds from several species of acacia, the Quondong and the Sandalwood tree (Keeffe, 1995; 28-31).

Contact and Settlement

The area of the Western Australian wheat belt between Perth and Geraldton was entered by A.C. Gregory who saw deposits of coal on the Irwin River, a watercourse that reaches the coast between Port Denison and Dongara south of Geraldton. He also found deposits of lead ore in 1848 on the banks of the Murchison (Bignell, 1987: 462). Settlers moved to the Geraldton area following Gregory's favourable reports on the country: 'a scattering of settlement grew, unofficially, north of Toodyay, in the Champion Bay area …' (Bignell, 1987: 462). Geraldton began as 'Gerald's Town,' taking its name from the Governor of the time, Charles Fitzgerald. The town was surveyed in 1849 after the discovery of lead deposits at Northhampton. In 1853, a convict depot was established there. In the same year was established an overland mail service to Perth. In 1879 the railway to Northampton was opened. By 1852 copper had been found at White Peak. After 1874, when the jetty was built, the town became a port for the district. In the 1960s a fishing industry (crayfish) was established, exporting to the USA. (Aplin, 1987: 464).

Mullewa (from the Aboriginal for 'swan') was declared as a township in the 1890s. Before that, the district was opened for settlement through the 1887 Land Act. The Calvert expedition of 1896 started at Mullewa. In 1915 the railway to Perth was opened and in 1961-1962 Western Mining built a private railway for the shipping of iron ore and pyrites from

Tallering Peak forty kilometres to the northwest where it was exported through Geraldton. (Aplin, 1987: 466-467). In the profile for this town, 'Racial unrest between Europeans and Aborigines' is noted for 1985 (Aplin, 1987: 467).

The Aboriginal history of the area is only hinted at in Aplin:

> *Champion Bay named after first British ship to anchor there in 1840. In 1846 Gregory brothers led settler-sponsored expedition to open up vast areas in district and probably led to a decade of determined Aboriginal resistance. Moonyoonooka run east of Geraldton leased in 1850. First Tibradden homestead of mud and straw built in 1852: John Forrest spent first night of overland trip there in 1874* (Aplin, 1987: 464).

Concerning the Amangu, Howie-Willis notes that:

> *Their country was taken by pastoralists in the 1850s, and Amangu were 'dispersed', worked on stations or moved to New Norcia. Little is known of their ancient history and there is little evidence remaining on the surface except 'various farmers have picked up … grinding or pounding stones or hunting weapons'. Shields, spears and throwing sticks have also been found. Recently the community, led by Leedham Cameron, was able to have Utakarra Spring, Geraldton, registered with the WA government as a significant site … Geraldton Aboriginal people are developing a community centre, Bundo-Yarra, nearby* (Howie-Willis, 1994a: 45-46).

The nature of 'Aboriginal resistance,' European punitive expeditions and the 'dispersal' of Aboriginal people in the region is reported in Keeffe (1995: 1-12). Keeffe points out that: 'The people responsible for extending and holding these new frontiers were the shepherds and hutmen, who were predominantly Ticket-of-leave men and Expirees from the convict system' (Keeffe, 1995: 12). Violence towards Aboriginal people appears to have begun with them (Ibid. p. 2):

1. An Aboriginal was shot at John Sydney Davis' camp on the Upper Irwin in March 1859. Richard Bibby, a ticket of leave convict, was arrested for the crime and was convicted and hung on Monday 17th October 1859: 'the first European to be hung in the Swan River Colony for the killing of an Aboriginal.'

2. George Coates killed two Aboriginal men but claimed self-defence and was not convicted.
3. Edward Cornelly shot an Aboriginal man named Noon-garie in the Champion Bay district.

Aboriginal people retaliated by ambushing and spearing shepherds in their application of traditional law. The events involved principally an 'eastward tribe,' the *Widi* people, but 'the natives of the vicinity then join in' (cited in Keffe, 1995: 3).

Hostilities and skirmishes between settlers and *Widi* and *Amangu* people took place in the Kockatea Spring area south of Mullewa and culminated with a public execution of five Aboriginal prisoners taken for the killing of Thomas Bott, a Ticket-of-leave convict, at Butterabby four miles to the west of Kockatea. The hangings took place in January 1865 at Butterabby before an audience of Aboriginal people. The police punitive expedition searched this area and travelled northwards as well as to the Greenough River area. Mullewa, Kockatea and other towns in a line south past Perenjori lie directly on the circumcision-non circumcision boundary mapped by Tindale, which is also the territorial boundary between the *Widi* to the east and the *Amangu* on the west. Keefe (1995: 9-10) cites a newspaper account of the hanging:

> *At half past seven on the 27th leaving Illenew, the party arrived at Butterabby about noon, and for more than an hour the pensioners were engaged in clearing out the well before the horses could drink the water. In the course of the afternoon the Sheriff and sub- Inspector were occupied in making and superintending arrangements for the execution on the following morning. The tree was fixed on, the ropes bent, and the graves dug, within 150 yards of Rudd's house. During all this time the five prisoners were in the camp, crying and lamenting in the usual and noisy native fashion, and at nine at night sentries were told off, with orders to keep a sharp look out, and challenge every person seen to be moving about the camp. At midnight constables Watson, Farmer and Goodwin brought in about twelve natives to witness the spectacle, and this caused considerable confusion for about an hour.*
>
> *On Saturday, the 28th, at daylight, everyone in the camp was astir, preparing for the solemn duty about to be performed, and at six the police and pensioners being under arms, the executioner pinioned native No. 1, who was then escorted in the cart by the police to the place of execution. The culprit stood up, one rope was put round his neck, and a second round his*

waist, by which he was hoisted about nine feet from the bottom of the dray: the Sheriff then gave the word to "let go", and at 13 minutes past six the first native murderer that was executed in this district hung by the neck until he was dead. In about a quarter of an hour he was cut down and laid in the grave, when the police and pensioners retraced their steps with the cart for the next man, when the same thing was gone through. Thus five of them were executed one after the other; each culprit, as he was pinioned, screamed and continued to lament until the fatal drop was given; and it was a sad sight to witness how each of them gave the last despairing look at his chained companions, as the white cap was pulled over his face, excluding alike friends and foe from sight.

During this time a dozen natives sat within 30 yards of the place of execution, no sound was uttered by them, and after looking at the five bodies as they lay in the grave, with the white cap over their faces and irons on their legs, hurried away, apparently horrified and frightened at all they had witnessed. About 20 more natives made their appearance after the execution was over and it was supposed they had concealed themselves in the surrounding bush for the purpose of viewing the proceedings.

The Sheriff then having expressed his thanks to the police for their active assistance in the performance of their duty, the whole party left Butterabby, and arrived at Geraldton on the evening of Sunday 29th. (Inquirer & Commercial News 15th February 1865).

The Resident Magistrate of Champion Bay, William Burges, had pressed the Colonial Secretary for this public hanging at Butterabby. This event, and other punitive expeditions and isolated killings by settlers, led to the weakening of *Widi* (and *Amangu*) resistance. Howie-Willis sums up this period for the *Watjarrie*, equally pertinent for the *Widi*:

Pastoralists came with sheep after about 1860, and the practice of moving them to follow rain helped to change the environment, reducing Watjarri food resources. The Watjarri resisted and clashes followed, but reaction was brutal – 'we had 35 on the chain at Beringarra where they had created great havoc among the sheep' … Watjarri people refer to the period from 1860 to about 1940 as 'convict days' … the stations had also become the only viable source of resources … Watjarri people quickly became essential to station work … Watjarri were

> *sent to places such as New Norcia and the Moore River Native Settlement* (Howie-Willis, 1994b: 1162).

Not many years later, epidemics of influenza, measles and smallpox broke out in the Victoria District. In 1869 measles devastated Indigenous people inland and, according to Wittenoom, on the Murchison further north (Keeffe, 1995: 32, citing Wittenoom, ND: 36). Keeffe observes that:

> *The combination of these deaths, from introduced diseases, the removal of their leaders for crimes committed, and the enforced displacement from their traditional homelands by the incoming settlers, led to the 'Widi' tribe's early demise … No one in the present Aboriginal community remembers the 'Widi' name, but they acknowledge a tribe did reside in the area prior to their own residence* (Keeffe, 1995: 32).

In the Mullewa area, present-day Indigenous people consulted on Heritage matters for that country are involved in two registered Native Title Claims: the Mullewa *Wadjari* Claim and the *Naaguja* Peoples Claim. The *Amangu* and *Widi* Mob have unregistered Native Title Claims over the area.

Continuities of the Sacred

In *Amangu* and *Widi* country, the lakes and river systems are connected to the adjoining *Yued* country and its rivers and lakes that extent from Three Springs to Carnamah south to the Moore River. They are sacred to the Rainbow Serpent and are arguably part of a more extensive Dreaming Track from the Desert regions in the east.

Belief in the Rainbow Snake as a major creative Dreamtime being is widespread in Aboriginal Australia. Sylvia Hallam points to the rich complex of associations between the *Wagyl* (which is the name of the Rainbow Serpent in the *Noongar* South West) and the chief physical elements of nature - fire, water, the sky, the earth - saying that, 'the connection of the serpent with water and also with dark caverns, are themes seen as recurring within and without the South-west of Australia' (Hallam, 1975:82). In the Desert regions (including the Saltlake Division) it is not only the Rainbow Serpent that is associated with the strings of

lakes and waterways but also other creative Dreamtime beings. Hence an important site may have several sacred associations.

> *These shape-changing, human-animal creatures of the Dreaming threw up the high hills and the breakaways, they burrowed below the ground, they fought and hunted, and then they passed on, leaving caves and water-holes, gums and grasses, and the petrified remains of blood and body parts. The names of places on the overlapping tracks throughout the vast desert area are memory ticklers for the recall and re-enacting of mythic events of a great creation drama. Young initiates learn these place names in the form of songs; then, later, the elders reveal to them the escapades of the Great heroes at each of the sacred sites* (Douglas, 1979: 108).

The Rainbow Snake with its exemplars is depicted as a large Water Snake that dwells in pools and watercourses. Descriptions of the Rainbow Serpent have a common core of beliefs about its qualities. Dwelling deep within waterholes, rivers and rock pools, this being maintains the quantity and the quality of the drinking water. If a site closely associated with the Rainbow Snake is desecrated in any manner - and that includes virtually all places where there is water in significant quantities or, in the Western Desert, water courses albeit dry for most of the year - the persons responsible are in literal physical danger and the land itself is depleted, for the Rainbow Snake will go away.

Daisy Bates reports hearing tales from Aboriginal people about what she called a 'jealous god' or *tehooroo* (a word she picked up in the Kimberley) that was a large flattened stone snake: 'in the Nullagine district, and along the head waters of the Fortescue, Murchison, Ashburton and Gascoyne Rivers the same devil-deity held sway' (Bates 2004: 87-88).

APPENDIX 5

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Methodologies used for each Heritage Survey conducted within EHPL's PPA.

(AIC 2004a: 6)

- Search the DIA sites database for known and recorded sites and the reports of previous surveys completed in, or near, the project area.
- Analyse the results of the above.
- Conduct an archaeological inspection of the project area.
- Identify people and groups that have a connection with the project area.
- Discuss the project with the indigenous people ascertained to have knowledge of the area.
- Conduct a field inspection of the project area with those people who wish to participate.
- Prepare a draft report of the proceedings of the research and consultation.
- Submit the draft report to all participating groups.
- Edit the report where necessary.
- Submit the final report to all groups including the Perth offices of the DIA.
- If necessary, further consultations with the groups in relation to s18 applications to disturb sites unavoidably affected by development.

(AIC 2004b: 16-18)

The archaeological survey was conducted by Donald Lantzke and Sarah Ibbitson on the 29th, 30th and 31st of October, 2004.

At the commencement of the archaeological survey, the survey team undertook an orientation inspection of the area in order to consider how best to undertake the survey. Areas considered more likely to possess a positive archaeological signature, such as breakaways and water courses, were identified for purposive survey. Owing to the thick vegetation cover over much of the area, it was considered that systematic sampling strategies were not going to be an effective strategy for completing the survey. After the high potential areas had been identified, the survey team undertook inspections of these areas. The team then radiated out with pedestrian transects from these nodal points. Other geophysical features identified in the course of these radiating transects were then examined and used as a nodal point for further radiating transects.

During the survey a description of the type and amount of vegetation, the archaeological visibility, the sediment type, and the surrounding lithic varieties were recorded. It is important to record the type and amount of vegetation during a survey as the vegetation can greatly influence the archaeological potential and visibility of the area. If the vegetation is sparse and scattered, with little undergrowth and leaf litter, then the archaeological visibility would be high and allow more archaeological material to be seen. However, if the vegetation is thick with heavy leaf litter, then the ground surface visibility would be low and little cultural material could be seen.

The archaeological visibility is used interchangeably with surface visibility. Surface visibility is an approximate measure of the bare ground surface present at the time of the survey. Therefore if there is 10% surface visibility, then 10% of the ground surface is visible and 90% is obscured. The higher the

surface visibility, then the higher the occurrence of seeing archaeological material and this is why the surface visibility is at times called archaeological visibility.

The vegetation type and amount can also indicate climate and environment which are important as archaeologically this indicates how people may have adapted to and manipulated a particular environment. The sediment type and ground surface is recorded as this indicates what natural disturbances have occurred in an area and how great the disturbance has been. For example, water rolled pebbles at a survey area would indicate previous water action and if the pebbles are only of a large size, this would indicate the disturbance has been heavy enough to remove smaller pebbles. The sediment type can also indicate what human activities have occurred that could disturb an area, such as introduced material used as road base for development of a road. Any changes in the sediments were inspected as these could be associated with human influences such as charcoal from hearths, burials or sediment build up from occupation areas.

The surrounding lithic material is recorded as this relates to the resources available for artefact manufacture in the immediate area. If a rock type is different generally from the characteristic lithology of the area, then this could possible indicate the rock has been brought into the area. If there are no raw materials visible that are suitable for artefact manufacture in the immediate area being surveyed, then generally it can be said that there will be a low potential for locating stone artefacts of local material. Thus, it is important to consider the surrounding physical environment as this can greatly influence the visibility, amount and potential of archaeological material.

Recording Archaeological Sites

Archaeological sites can be defined as places where there is evidence of cultural remains associated with Aboriginal activity and occupation in the past. An Aboriginal site is defined by the *Act* (1972) in Section 5 and 6 as any place or object that is important and/or significant to Aboriginal people. The method of defining archaeological sites used by the Department of Indigenous Affairs (DIA) is followed in this report to maintain continuity. The archaeological sites defined include repository/caches, human-made structures, modified trees, engravings, artefacts/scatter, historical, skeletal remains/burials, fish traps, paintings, quarries, midden/scatter, grinding patches and grooves.

During this survey artefact scatters were defined as archaeological sites if they conformed to the following criteria:

- there were more than five artefacts;
- artefacts covered 5m2 or more in area;
- the average artefact density was greater than 5x the average density of background scatter;
- there was average density of >1 artefact / 3m2 (Hiscock 1986)

Single engravings or grinding surfaces are considered to comprise an archaeological site. Generally the reasoning is that the creation of an engraving or the act of grinding is a focus of continued

activity, whereas a few isolated stone artefacts could possibly have been discarded in passing and may not necessarily have been a place where a particular activity was carried out. Other site types listed above (such as repository/cache, structure; quarry, historical sites, fish traps, paintings etc) are also defined as archaeological sites.

Isolated finds are archaeological artefacts located in an isolated context. Isolated finds are not normally documented as archaeological sites except when particular artefact types, most notably grindstones and manuports (objects that do not occur naturally in an area and are likely have been brought to the area with an unknown function) or particularly significant artefacts are located. All isolated finds identified during the survey are documented when they are identified.

(AIC 2005b: 7-9)

Archaeological Survey Methodology

An archaeological survey of various proposed works by Mt Gibson Iron around the Extension Hill area at Mt. Gibson was undertaken by Claire Greer from Saturday 20th August to Tuesday 23rd August with representatives of the Badimia people. Survey cover in most areas was at least 80%, with transects walked by 13 people simultaneously.

Parts of the areas surveyed had previously been subject to archaeological survey by Claire Greer, Sarah Ibbitson, Moss Wilson and Donald Lantzke for AIC over the past two years. However previous surveys had generally been limited to 40% cover due to time and resource limitations. The ability to conduct a survey with over 80% coverage by a large number of competent people demonstrably improved the chances of finding archaeological sites, as demonstrated by the discovery of several sites in areas previously surveyed.

The survey was divided into areas as follows:

1. Eastern and northern parts of Extension Hill expanded areas
2. Borefield
3. Deviation of Great Northern Highway
4. Laydown areas on Wanarra Road East
5. Slurry pipeline (25 km)
6. Southern parts of Extension Hill expanded areas
7. Mt. Gibson Gold borefield

Only the first three survey areas were viewed during the four day survey. Three of the remaining four were surveyed over three days from Wednesday 28th September to Friday 30th September.

Ethnographic Survey Methodology

Preconsultation

The Badimia Native Title Claim (WAG6123/98 WC96/098) covers the Mount Gibson Iron proposed works area. Yamatji Land and Sea Council engaged AIC to conduct an ethnographic survey of the proposed works area with Badimia representatives. Yamatji Land and Sea Council, in conjunction with the Badimia Working Group, arranged a survey team for the duration of the survey.

Survey Methodology

AIC heritage consultants Jeremy Maling and Claire Greer surveyed the proposed works area with the Badimia Survey Team over seven (7) days: the 20th, 21st, 22nd, and 23rd of August and the 28th, 29th, and 30th of September, 2005. Yamatji Land and Sea Council Heritage Clerk Vaughan Lane was present on the first three days of the survey and Yamatji Land and Sea Council Heritage Liaison Officer Gavin Egan was present on the remaining days of the survey (excluding the 28th of September). Mt Gibson Iron Project Manager James Tyers was present on last five days of the survey and Mt Gibson Iron's Deborah Coulthard was present on the third and fourth days of the survey.

On each day of the survey, the survey party drove in convoy to the project area. Maps and plans of the proposed works were discussed and a method for the day's survey agreed upon. According to the wishes of the Badimia Survey Team, the party surveyed the proposed works area by walking transects where possible. In places that were impenetrable due to dense vegetation, specifically to the south of Extension Hill, the party inspected the proposed works area by driving to vantage points. During the survey, James Tyers detailed the relevant elements of the proposed works and the concerns and queries of the Badimia Survey team were discussed.

Three specific areas of the proposed works were not surveyed: (1) a section surveyed previously by Badimia representatives; (2) a proposed water pipeline route to the south east of Extension Hill (see Figure 2) and; (3) the proposed lay-down areas and new airstrip to the north and south of Wanarra Road. Further details are provided below.

> (1) The Badimia Survey Team stated that a section of the proposed works area on the eastern side of Extension Hill (northeast from 518545E and 6728253N for approximately one kilometre to a dirt track running east-west) had been surveyed previously (see de Gand 2004) and thus it was agreed not to survey it again.

> (2) The Badimia Survey Team decided not to inspect the proposed water pipeline route on the basis that this aspect of the proposed works had not been tabled with the Badimia Working Group. James Tyers indicated that Mount Gibson Iron would be willing to have a Badimia representative inspect the water pipeline route as part of the monitoring program for the proposed slurry pipeline. The Badimia Survey Team resolved to discuss the survey of the proposed water pipeline route at a meeting of the Badimia Working Group.

(3) In the case of the proposed lay-down areas and new airstrip to the north and south of Wanarra Road, the density of vegetation inhibited a thorough survey and the Badimia Survey Team requested that Aboriginal monitors be engaged during any ground disturbance in these areas. The Badimia Survey Team resolved to discuss the possibility of monitoring these areas at a meeting of the Badimia Working Group.

(AIC 2006a: 20)

AIC heritage consultants Ron Parker, Jeremy Malling, Claire Greer and Adele Austin undertook an ethnographic survey with representatives of the Widi Mob NTC from the 2nd to the 4th of November, 2005. The Widi Mob NTC representatives were Joan, Ronald, Errol Jnr, Justin and David Martin.

On each day of the survey, the party drove in convoy to the project area. Maps and plans of the proposed works were discussed and a method for the day's survey agreed. According to the wishes of the Widi Mob, the party surveyed the proposed works area by foot where possible. In places that were impenetrable due to dense vegetation, the party inspected the proposed works area by driving to vantage points.

Two specific areas of the proposed works were not surveyed: the service corridor to the proposed mine camp; and the proposed lay down areas and new airstrip along Wannara Road. In both cases the density of vegetation inhibited a thorough survey.

(AIC 2006c: 13)

AIC heritage consultants Ron Parker and Adele Austin undertook an ethnographic survey with representatives of the Widi Mob NTC from 27 to 29 May 2006. The Widi Mob NTC representatives were Joan Martin, Errol Martin Snr, Errol Martin Jnr, Ronald Martin, Baymis Martin and Kieren Martin.

The amended survey areas for the Section 18 application were explained by Peter Jones, development manager for Mt Gibson. The Section 18 application referred to here will be to disturb the hills, named as site *Extension Hill*, on which the mining operation proper is planned. Mt Gibson Iron had hoped to avoid two caves, recorded as sites Extension Hill 03 (ID 21624) and Extension Hill 01 (ID 21622), however, it is now clear that these sites will be destroyed by the mining operations. These two caves were located and assessed.

Additional survey areas for proposed infrastructure were also indicated on the map and explained by Peter Jones. These areas include:

- realignment of the Great Northern Highway, comprised of a northern and southern limb (divided by the existing airstrip),
- a new airstrip south of Wanarra East Road,
- a storage area north of Wanarra East Road,
- the widening of Wanarra East Road,
- a plant east of the Great Northern Highway and
- a larger area for the proposed village camp.

The above locations were visited in turn by the survey group. When dense vegetation restricted access, the areas were assessed either by limited pedestrian transects or viewed from vantage points.

(Eureka 2004: 7)

Where possible, a series of parallel transects placed 50 m apart was walked be the archaeological team in blocks 350 m wide and 500 m long throughout the Survey Areas. Transects were extended in length to 750 m where appropriate...Locations and features often associated with archaeological sites in the region, such as rocky outcrops, were also inspected through all survey areas. It is estimated that the archaeological survey sampled at least 35% of accessible sections of all survey areas.

(Fordyce 2008: 11-14)

In completing the brief, AIC undertook the following steps:

1. An **Archaeological Reconnaissance** of the excavation area, which involved:

- The identification of potential test pit locations
- Devising an excavation strategy
- The creation of a management strategy to deal with logistic constraints

2. An **Archaeological Excavation** of the DIA sites 21622 and 21624, which involved:

- The engagement of Widi NTC representatives to participate in the excavation process
- The establishment of a site datum and drawing of site plans
- The excavation of three test pits using the methodology devised during the reconnaissance phase of the project

3. **Analysis of data,** including:

- The analysis of samples taken from the excavation pits
- Sending charcoal samples to lab for radiometric dating

- The analysis of cultural material recovered during the excavation

4. **Reporting the results**, including:

- The preparation of a preliminary advice and draft report;
- The distribution of the preliminary advice and draft report to all participating groups for their comment;
- And, the submission a final report to all groups, including DIA's Perth office

An initial reconnaissance of the rockshelter sites was carried out by Ben Fordyce and Sagitte Yom-Tov of AIC in October 2007. The reconnaissance was undertaken to ascertain the integrity of the two rockshelters and to identify any logistic restraints on the planned excavation. A thin metal probe approximately 50cm in length was used to estimate the depth of sedimentation within the rockshelters and identify the best possible location for the placement of sample squares.

The initial excavation of a single 50cm x 50cm test pit (TP1) in Cave 03 of Extension Hill 03 (DIA site 21624) was undertaken between the 5th and 9th of November 2007 by AIC archaeologists Ben Fordyce and Sally-Anne Smith. Also present were Kieran Martin and Yvette Little of the Widi NTC.

Further excavation of two 50cm x 50cm test pits (TP2 and TP3) was undertaken in Cave 01 of Extension Hill 01 (DIA site 21622) by AIC archaeologists Ben Fordyce and Sally- Anne Smith between the 19th and 23rd of November 2007. Baymis Ugle and Errol Martin Junior of the Widi NTC were present during the second field trip.

A temporary site datum was placed at each of the rockshelter sites and spatially mapped using a Garmin Rino 520 GPS unit. The GPS unit was left at the site datum over the course of the excavations and average location readings taken at the end of each day. This allowed for a spatial accuracy of less than 50cm for Cave 01 (average of 45,000 readings) and less than 60cm for Cave 03 (average of 38,000 readings).

Baselines were established at the two sites and tape line measurements were taken to record cave features and map the locations of test pits in relation to the site datum. Site profiles were created using a theodolite. TP1 was placed at the centre of Cave 03 (DIA site 21624) in a location judged from visual clues and probing to contain the greatest depth of sedimentation. TP2 was placed approximately 5m into Cave 01 (DIA site 21622) where probing indicated the greatest depth of sedimentation. TP3 was placed just within the dripline of Cave 01 (DIA site 21622).

Excavation involved the removal of the initial 1cm to 2cm of unstratified material from the surface of proposed test pit locations using a brush and trowel. Excavation was conducted in spits of 5cm following the stratigraphy and continuing until bedrock was reached. Any cultural material was plotted in three dimensions before removal and several large pieces of charcoal were similarly

recorded then wrapped in metal foil and bagged separately. All excavated sediment was passed through 5mm and 3mm wire mesh and samples of each sieving taken and double bagged for further analysis. Section drawings were undertaken at the end of each excavation and the pits in-filled using locally sourced stone and soil.

Access to the sites was a severely limiting factor, as equipment had to be carried through thick mulga scrub and down a cliff face littered with lateritic gravels. The nearest vehicular access was approximately 400m away, which equated to an approximate 20 minute walk under trying conditions. Excavations had to be conducted under natural light as the obvious difficulties in transporting bulky equipment to the site required a somewhat minimalist approach. Heat and flies added to the discomfort level of the excavation, with daytime temperatures reaching the mid 30s.

Tweezers were used in the handling of all charcoal and bone samples during the excavation process, however some accidental contamination may have occurred from handling or environmental factors, causing discrepancies in the eventual results of C14 dating.

Post analysis, all soil samples were returned to country and redeposited within their respective sites.

(Hames 2004: 5)

The methodology employed on this project included:

- Search and analysis of the DIA database for known and recorded sites and the reports of previous surveys completed in,, or near, the project area;
- Discussion or pre-consultation with the representatives of the Widi Mob and Mt Gibson;
- Completion of a field inspection of the project area and preparation of a draft report of the proceedings of the research and consultation undertaken;
- Submission of the final reports to all relevant groups.

(YC 2007: 2)

Pedestrian transects were walked across the work areas and/or corridors to provide a representative sample survey of the terrain and the heritage profile of the areas.

A Garmin GPSMap76Cx hand held GPS receiver was used during the field survey to locate positions, to navigate and to record any finds. The datum for the GPS was WGS84/GDA94 and coordinates are UTM metric eastings and northings. The GPS records position to the nearest whole metre. The

manufacturer's published specifications state that the hand held GPS unit is accurate to three metres (3m). This should be taken into account for coordinates recorded for archaeological finds or features.

The coordinates for the boundaries of the survey areas were provided by the client and are assumed to be accurate: when entered into the hand held GPS the positions indicated in the field matched the positions on aerial photomaps of the project area.

(YC 2008a: 11)

The archaeological survey was undertaken on the 16th and 17th of June 2008.

Initial inspection and assessment of the survey area ascertained that the area had been subject to a high level of previous disturbance, due primarily to weathering and erosion and the impact of mining and exploration activities and in the past, pastoral activities. The vegetation ranged from thick mulga scrub to open areas around drainage lines.

Yamatji Communications Pty Ltd archaeologists Scott Chisholm and Megan Tehnas conducted the survey.

The Section 18 survey and site assessment was conducted to focus site by site on the six previously recorded sites.

Areas considered to be of high archaeological potential within the area (given the established understanding of the regional background) were targeted by purposive pedestrian inspection in addition to the site assessment.

Site visibility was generally high in the breakaway areas around the rockshelters, with visilibilty along the creek lines also high. However, once away from these eroded areas, scrub quickly became extremely thick, particularly along ridge lines, reducing visibility to less than 10%.

The six previously recorded sites were assessed and recorded by the heritage survey team.

(YC 2008b: 7)

The heritage survey began with consultation with the *Badimia* heritage survey team. The consultation followed the following methodology:

- Outline of the proponent's proposed project to the heritage survey team by Phillip Davidson and Tim Tietjen;
- Inspection of the six Indigenous sites; and
- Debrief and consultation following the heritage survey.

The *Badimia* heritage survey team then inspected the six Indigenous sites that may be impacted by the proposed Extension Hill mine operations expansion

Project.

(Tehnas 2009a: 19-20)

The Archaeological Survey involved the use of the following methods:

1. Archival research;
2. A formal field survey of the Survey Areas for Site Identification and a Work Area Clearance; and
3. Consultation with the *Badimia* Consultants.

The fieldwork was conducted as non-invasive, pedestrian surveys, where seven participants walked the Survey Area polygon. Two of the *Badimia* Elders did not walk as the terrain was deemed to be too rough for them to safely walk through it.

Coordinates for the polygon were provided by EHPL.

The survey was planned to take two days. It had been intended that transects were to be used in order to well cover the entire polygon, but the density of vegetation greatly hindered the survey team from walking in transects at all. Instead, the survey methodology had to change. The Survey Team identified and defined the Survey polygon, using the GPS co-ordinates provided. The Team then, as best as they could, walked through the polygon (without defined transects), covering approximately 50% of the total area. Due to the extremely low visibility, Team Members were instructed to stay close together for safety reasons.

Members of the Survey Team were instructed to report any archaeological material located. The site or feature would then be recorded for Site Avoidance Strategy. The nature of the site/feature and its GPS location would be recorded, together with any other pertinent information.

The Consulting Archaeologist undertook regular briefings with the *Badimia* Consultants during the course of the Survey.

When the Survey of the Polygon was complete, the Consulting Archaeologist engaged with the Survey Team as to the significance, integrity and their feelings on the future impact of the Survey Area.

(YC 2009a: 19-20)

The Ethnographic Survey involved the use of the following methods:

4. Archival research;
5. A formal field survey of the Survey Areas; and
6. Consultation with the *Badimia* Consultants.

The field survey followed the following methodology:

- An outline of the EHPL's proposed project was presented to the survey team by Harry Goff;
- Pedestrian inspection of the proposed Accommodation and Airstrip Areas;
- A discussion of the ethnographic values of the survey area with the *Badimia* consultants; and
- A debrief, where recommendations for the proposed development area were discussed by the *Badimia* consultants.

The fieldwork was conducted as non-invasive, pedestrian surveys, where seven participants walked the Survey Area polygon. Two of the *Badimia* Elders did not walk as the terrain was deemed to be too rough for them to safely walk through it.

Coordinates for the polygon were provided by EHPL.

The survey was planned to take two days concurrent with the archaeological survey. It had been intended that archaeological transects were to be used in order to well cover the entire polygon, but the density of vegetation greatly hindered the survey team from walking in transects at all. Instead, the survey methodology had to change. The Survey Team identified and defined the Survey polygon, using the GPS co-ordinates provided. The Team then, as best as they could, walked through the polygon (without defined transects), covering approximately 50% of the total area. Due to the extremely low visibility, Team Members were instructed to stay close together for safety reasons.

Members of the Survey Team were asked to report any areas of ethnographic or mythological concern. The site or feature would then be recorded for Site Avoidance Strategy. The nature of the site/feature and its GPS location would be recorded, together with any other pertinent information.

The Consulting Anthropologist undertook regular briefings with the *Badimia* Consultants during the course of the Survey.

When the Survey of the Polygon was complete, the Consulting Anthropologist engaged with the Survey Team as to the significance, integrity and their feelings on the future impact of the Survey Area.

(Tehnas 2009b: 28-30)

The artefact salvage from DIA Site 21624: Extension Hill 03 (EH 03) comprised of the following steps:

1. **Archival Research**
    - Developing an understanding of the nature of the site from previous archaeological and ethnographic investigations;
    - Examining the results of the Section 16 test pit that had been completed by Australian Interaction Consultants in 2007.

2. An **Archaeological Reconnaissance** of the area surrounding the Rockshelter to identify:
    - The physical extent of EH 03;
    - Any other archaeological materials that might be related to the Rockshelter or of heritage concern;
    - Logistics related to the undertaking of the artefact salvage.

3. The **Archaeological Salvage** of heritage materials in and surrounding EH 03:
    - A baseline and datum was established running from a east-west direction into the Rockshelter;
    - The EH 03 was mapped using a baseline-offset methodology both on a horizontal and vertical axis;
    - A physical extent of the EH 03 site was determined;
    - Metre squares were laid out using tape measures. Shallow bedrock meant that using peg-and-string squares would have not been an adequate option. The squares are as follows:
        - Square A – 2 m x 1 m
        - Square B – 1 m x 1m
        - Square C – 2 m x 1 m
        - Square D – 1 m x 1m
        - Square E – 1 m x 1m
        - Square F - 1 m x 1m

- Archaeological materials were collected from the ground surface within these metre squares to a depth of approximately 5cm;
- All artefacts salvaged were stored individually in plastic sample bags, given an identifying number and recorded based on their physical attributes.

The Reconnaissance Survey revealed two new heritage features (one site) located 223 m north east from EH 03. The following methodology was used to record this site:

7. A formal field survey of the Survey Areas for a Site Identification and Section 18 clearance; and
8. Consultation with the *Badimia* Consultants.

The fieldwork was conducted by seven participants as non-invasive, pedestrian surveys, where six participants walked through the area.

For the identified site (EH-RHAS-01), the Survey Team identified the site boundary but walking the outer edges of the site until artefacts or archaeological features were no longer visible. GPS co-ordinates were taken at several points around each boundary.

The second step taken was to record a sample of the archaeological material present within the site. One by one metre sample squares were taken of artefact scatters, and two Archaeologists recorded artefacts and features using *Sontax* digital calipers and measuring tapes.

A representative sampling strategy was employed by the Survey Team at the site. This means that samples were selected for how well they represented the site's assemblage by recording the most informative examples. The Consulting Archaeologists attempted to record a large enough sample with which an assessment of the extent and significance of the site could be made. The size of the sample taken is detailed in the Survey Results.

The Consulting Archaeologist undertook regular briefings with the *Badimia* Consultants during the course of both the Reconnaissance Survey and Archaeological Salvage of EH 03.

When the Survey of each site was complete, the Consulting Archaeologist engaged with the Survey Team as to the significance, integrity and their feelings on the future impact of the Survey Area.

(Tehnas 2009c: 23-24)

The Archaeological Survey involved the use of the following methods:

1. Archival research;
2. A formal field survey of the Survey Areas for Site Identification and a Work Area Clearance; and
3. Consultation with the *Badimia* Consultants.

The fieldwork was conducted as non-invasive, pedestrian surveys, where five participants walked the Survey Area polygon. Three *Badimia* Elders accompanied the archaeological survey team to the site but did not participate in the pedestrian surveys due to their health, instead advising the Survey team on ethnographical issues.

Maps of the polygon were provided by EHPL from which the survey polygon co-ordinates were lifted.

The Surveys were completed by pedestrian transect. One member of the Survey Team walked along the polygon boundary while the remaining members walked in transect lines spaced approximately 20 m apart. Vehicular inspection combined with targeted pedestrian examination of the Survey Area was conducted across the Mt Gibson Ridge.

Members of the Survey Team were instructed to report any archaeological material located. The site or feature would then be recorded for a Section 18. The nature of the site/feature and its GPS location would be recorded, together with any other pertinent information.

The Consulting Archaeologist undertook regular briefings with the *Badimia* Consultants during the course of the Survey.

When the Survey of the Polygon was complete, the Consulting Archaeologist engaged with the Survey Team as to the significance, integrity and their feelings on the future impact of the Survey Area.

(YC 2009b: 23-24)

The Ethnographic Survey involved the use of the following methods:

1. Archival research;
2. A formal field survey of the Survey Areas; and
3. Consultation with the *Badimia* Consultants.

The field survey followed the following methodology:

- An outline of the EHPL's proposed project was presented to the survey team by Harry Goff;
- Pedestrian and vehicular inspection of the Survey Area;
- A discussion of the ethnographic values of the survey area with the *Badimia* consultants; and
- A debrief, where recommendations for the proposed development area were discussed by the *Badimia* consultants.

The fieldwork was conducted as non-invasive, pedestrian and vehicular surveys, where five participants walked the Survey Area polygon. The three *Badimia* Elders did not walk as the terrain was deemed to be too rough for them to safely walk through it.

Coordinates for the polygon were provided by EHPL.

The survey was planned to take two days concurrent with the archaeological survey. The Survey Team identified and defined the Survey polygon, using the GPS co-ordinates provided. Members of the Survey Team were asked to report any areas of ethnographic or mythological concern. The site or feature would then be recorded for a Site Avoidance Strategy. The nature of the site/feature and its GPS location would be recorded, together with any other pertinent information.

The Surveys were completed by pedestrian transect. One member of the Survey Team walked along the polygon boundary while the remaining members walked in transect lines spaced approximately 20 m apart. Vehicular inspection combined with targeted pedestrian examination of the Survey Area was conducted across the Mt Gibson Ridge.

The Consulting Anthropologist undertook regular briefings with the *Badimia* Consultants during the course of the Survey.

When the Survey of the Polygon was complete, the Consulting Anthropologist engaged with the Survey Team as to the significance, integrity and their feelings on the future impact of the Survey Area.

(Tehnas 2009d: 25-26)

The archaeological recording of Extension Hill 01 (EH 01) comprised of the following steps:

1. **Archival Research**
    - Developing an understanding of the nature of the site from previous archaeological and ethnographic investigations;
    - Examining the results of the Section 16 test pit that had been completed by Australian Interaction Consultants in 2007.

2. An **Archaeological Reconnaissance** of the area surrounding the Rockshelter to identify:
    - The physical extent of EH 01;
    - Any other archaeological materials that might be related to the Rockshelter or of heritage concern.

3. The **Archaeological Recording** of heritage materials in and surrounding EH 01:
    - Each individual sheltered overhang and cave that comprised EH 01 was recorded by size and feature;
    - The area surrounding EH 01 was surveyed by pedestrian transect with two participants walking spaced approximately 2-3 metres apart. All artefactual material spotted on the ground surface was recorded to a Section 18 Standard.

For the identified site (EH 01), the Archaeological Team identified the site boundary by walking the outer edges of the site until artefacts or archaeological features were no longer visible. GPS co-ordinates were taken at several points around the boundary.

The second step taken was to record a sample of the archaeological material present within the site. One by one metre sample squares were taken of artefact scatters, and two Archaeologists recorded artefacts and features using *Sontax* digital calipers and measuring tapes.

A representative sampling strategy was employed by the Survey Team at the site. This means that samples were selected for how well they represented the site's assemblage by recording the most informative examples. The Consulting Archaeologists attempted to record as much of the sample as possible, with which an assessment of the extent and significance of the site could be made. The size of the sample taken is detailed in the Survey Results.

The Consulting Archaeologist undertook briefings with the *Badimia* Consultants both before and after the Survey of EH 01.

When the Survey of each site was complete, the Consulting Archaeologist engaged with the *Badimia* informants as to the significance, integrity and their feelings on the future impact of the Survey Area.

APPENDIX 6

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Correspondence from Clive Brown MLA (acting Minister for Indigenous Affairs) to Ms Angela Dent (Secretary for Asia Iron Pty Ltd and Mount Gibson Mining Limited) granting consent under section 18 of *The Act* to the use of land at Extension Hill

Dated 4 January 2005.

Minister for Consumer and Employment Protection; Indigenous Affairs;
Minister Assisting the Minister for Public Sector Management;
Leader of the House in the Legislative Assembly

Our Ref: 0426304

Ms Angela Dent
Company Secretary
Asia Iron Pty Ltd and Mount Gibson Mining Limited
Level 1 7 Havelock Street
WEST PERTH WA 6005

Dear Ms Dent

I refer to the Notice of 5 November 2004 given by Asia Iron Pty Ltd and Gibson Mining Limited ("the Landowner") to the Aboriginal Cultural Material Committee ("ACMC") pursuant to section 18(2) of the *Aboriginal Heritage Act 1972* ("AHA") advising that you require to use the land described in Schedule 1 of the Notice as Extension Hill, part of Mining tenement M59/339 ("the Land"), for the purpose described in Schedule 2 of the Notice as Mining - the development of a proposed open pit mine at Extension Hill in the Mt Gibson ranges. ("the Purpose").

In accordance with my powers under section 18(3) of the AHA and following consideration of recommendations from the ACMC, I hereby grant consent to the use of the Land for the Purpose subject to the conditions set out below.

On current knowledge the Purpose will not impact upon any known Aboriginal Heritage sites within the meaning of section 5 of the AHA ("Sites") on the land but may impact upon an area that Aboriginal people have described as being associated with Aboriginal cultural activity.

Conditions of consent:

That the Landowner:

1. Immediately cease all activities related to the Purpose that involve disturbance to the surface of the Land or any part of the Land ("the Works"), if skeletal remains ("Remains") are found and report the matter to the Western Australian Police Service and local Department of Indigenous Affairs ("DIA") office. Where it is determined that the remains are Aboriginal in origin and not a police matter, they must remain *in situ* until a decision is made about how to proceed in respect of the Remains at an on-site meeting with a DIA representative, representatives of the Badimia and widi groups ("the Consultants") and any Archaeologist engaged by the proponent. The Landowner must at its expense manage the

Remains in accordance with the wishes of the Consultants and report the whereabouts of the Remains to the Western Australian Museum and DIA.

2. Ensure that all persons employed or engaged in respect of the Purpose and the Works are made aware of their obligations under the AHA, including by inserting into all and any relevant contracts, project plans, scopes of works, tenders and other similar documents a requirement that such persons be provided with a copy of a document prepared by DIA and entitled "Advice to Developers" and/or an electronic copy of a document prepared by DIA and the Department of Housing and Works and entitled "the Aboriginal Heritage Procedures Manual", both of which can be found at:

   - http://www.dia.wa.gov.au/Heritage/IntroForDevelopers.aspx ; and
   - http://www.dia.wa.gov.au/Heritage/HeritageManual/default.aspx respectively.

3. Provide to the Registrar of Aboriginal Sites ("the Registrar") annually or at the completion of the Purpose a written report advising the Registrar whether and to what extent the Purpose has impacted on all or any Sites or objects within the meaning of section 6 of the AHA ("Objects"), that may be located on the Land, including a detailed description of:

   a. whether such Sites or Objects have been partially or entirely impacted by the Purpose;

   b. the level, type and effect of any such impact (including, where possible, the provision of photographs taken during and after the impact);

   c. where Sites or Objects have been mitigatively salvaged, when and how such salvage took place, who was present at the salvage and, subject to issues of cultural confidentiality, to where the material was re-located.

   Nothing in this condition should be construed as preventing the proponent from advising the Registrar in writing of all or any of the matters outlined above at any time prior to the completion of the development. The Registrar and the ACMC welcome comprehensive and ongoing information about Sites and Objects in Western Australia.

Failure to comply with these conditions may constitute an offence under section 55 of the AHA. DIA carries out routine checks on the extent to which conditions of ministerial consents have been or are being complied with.

This consent can only be relied upon by the applicant Landowner. Any subsequent 'owner' of the land within the meaning of the AHA must make its own application under the Act.

In addition to the conditions set out herein, the ACMC has requested that the Landowner give due consideration to other requests made during consultations about the Purpose by Aboriginal people about the protection of Aboriginal heritage and the recognition of Aboriginal culture and history

If you have any queries in relation to your application, please contact Dr Madge Schwede, Senior DIA Heritage Officer on telephone 9235 8099.

Yours sincerely

CLIVE BROWN MLA
ACTING MINISTER FOR INDIGENOUS AFFAIRS

- 4 JAN 2005

APPENDIX 7

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List of Discussions made in each report pertaining to EHPL's PPA

(AIC 2004a: 10)

The terrain that is Mt Gibson and the surrounding country is typical of places elsewhere in the Midwest and the Goldfields that are imbued with Dreaming significance. The topography is consistent with the story that was told regarding the features that are represented there.

(AIC 2004b: 29-30)

It has been demonstrated that the Mount Gibson area contains a positive archaeological signature however it is not clear what the nature of this signature is. The area is densely vegetated and the terrain is rough and inaccessible in areas. This makes finding this archaeological material difficult. The archaeological sites located simply represent a fraction of potential evidence of human occupation in this area. The third area designated as a site is labelled so on the basis of its potential for recovering archaeological material, together with circumstantial evidence of occupation such as smoke staining.

The attraction of the Extension Hill area was most likely the numerous breakaways, rock shelters and isolated water sources. Informants often say that areas without shelter and water are classified as "walking through" country. People simply used these areas for travel, as they were unfavourable for camping, and as a result there is little associated archaeological material. All of the rockshelters show potential for sedimentary deposits which may contain archaeological material in a stratified context.

There has been little archaeological research conducted in the Mid-West region of
Western Australia. Archaeological activities in the area have been conducted mainly on a project-by-project basis, demonstrated by the DIA research. Consequently, the behaviour of people in this area of the northern wheatbelt, during the past, is relatively unknown. However, cultural remains are present and people certainly did inhabit the area of Mt Gibson.

The Mt Gibson sites are extremely significant archaeologically as they can contribute to the answering of a number of research questions concerning the human history of behaviour, particularly adaptation of the semi-arid zone. The Mt Gibson sites can enhance understanding of what activities people were

conducting in the recent past and artefact manufacture in the semi-arid zone. This site can contribute to our knowledge about how people occupied and exploited the semi-arid zone, through methods of adaptation and manipulation.

Any archaeological evidence from the Mt Gibson area is important as it can contribute to the many theoretical discussions on human adaptation, occupation and activity in the semi-arid zones. In this way these sites are unique in the information they can offer archaeological thought and should *not* be destroyed.

It is important to remember these sites and areas were once utilised by past Aboriginal people for a purpose. During the past, people used these areas to fulfil their domestic and ceremonial duties and needs. The area and the sites are still valued today by the Widi mob and relevant Aboriginal groups. The Extension Hill sites should be preserved as they are a continuation of the archaeological signature of the immediate area and represent the behaviour and life ways of people in the semi-arid zone.

If these sites are to be disturbed, it is recommended that an archaeological research project of Extension Hill is conducted within the areas of perceived archaeological potential to mitigate disturbance to the recorded sites and possible other sites of significance.

(AIC 2006a: 34)

The 11 sites located during the extensive survey of the Mt Gibson infrastructure areas include artefact scatters, water sources and rockshelters. As discussed in the Archaeological background, there has been little intensive study undertaken in the Midwest region, and any sites located are forming the foundation of understanding heritage in the area. Any sites, therefore, are of at least moderate significance, as they are representative of the heritage of the Midwest.

The collection of artefacts, water sources and the rockshelter designated the Mt Gibson Rockshelter Complex has been called so because of the range of different elements present, and the evident long-term use of the site. The site may prove to be highly significant in the Midwest are because of the large quantity of artefacts present, which provide an ideal opportunity for further study. Nearby rockshelters have previously been recorded (see Desktop Study), and collectively may form part of a previously unknown base of information about the region.

The scatters located along the borefield and the gnamma holes have been designated as moderately significant, due to the fact that they form part of an important archaeological record, but are not individually of the highest integrity or representativeness.

(AIC 2005b: 29-30)

Several cultural issues that may affect the proposed works were raised during the ethnographic survey, these are:

(1) The presence of two ethnographic sites within the proposed expansion areas. "Ngangan Wagu" (with a central point at 517584E and 6729877N (Zone 50) and a radius of three hundred (300) metres) is located in the proposed eastern expansion area of Extension Hill. As was reported in an Updated Preliminary Advice and according to the plans inspected and discussed during the inspection, to avoid the identified site would require a reduction in the proposed tailings pond and waste dump boundary by approximately thirty metres from where it currently intrudes upon this site. Mount Gibson Iron Project Manager James Tyers indicated during the survey that Mount Gibson Iron should be able to accommodate this in their plans and have since taken measures to ensure that it will not be impacted during preliminary ground works *(**EDITOR's NOTE:** The site "Ngangan Wagu", or DIA Site 24395: Mt Gibson Rockshelter complex, will not be affected by the EHPL's PPA, as the Proponent intends to avoid the site in their proposed developments).*

In relation to the other ethnographic site, "Ashley's Wagu" (located at 514881E and 6729551N (Zone 50))**,** James Tyers indicated during the survey that this site did not appear to be in the area of proposed ground works (although, he stated, a five hundred (500) metre radius around it may). Whether or not these sites can be avoided by the proposed works needs to be clarified by Mount Gibson Iron. As agreed during the survey by the *Badimia* Survey Team and James Tyers, any potential disturbance to these sites and the ongoing management and protection of them can be discussed at a *Badimia* Working Group meeting. Although the *Badimia* Survey Team requested that AIC report these sites to the DIA, AIC is restricted by the conditions of its contract with the Yamatji Land and Sea Council and will not report them to the DIA.

(2) An inspection of the proposed laydown areas to the north and south of Wanarra Road and the proposed water pipeline route to the southeast of Extension Hill yet to be completed. During the survey, the possibility of Aboriginal monitors being engaged during clearing activity of the proposed laydown areas and the possibility of a monitor inspecting the proposed water pipeline route were raised as ways of addressing the *Badimia* Survey Team's concerns regarding these aspects of the proposed works. Again, both the *Badimia* Survey Team and James Tyers agreed that this can be discussed at a *Badimia* Working Group meeting.

(3) The potential for burials and artefact material to be disturbed during ground disturbance activity along the proposed bore field corridor. The *Badimia* Survey Team and Mount Gibson Iron representatives James Tyers and Deb Coulthard agreed that Aboriginal monitors could be engaged during any ground disturbance activity that has the potential to disturb the identified archaeological sites along the corridor and possible burials. It was also agreed that Mount Gibson Iron would flag the corridor route in order to assist the monitors. The exact locations and times that Aboriginal monitors need to be present will need to be agreed to, prior to any ground disturbance activity along the borefield corridor, and could be addressed at a *Badimia* Working Group meeting.

(4) Additional cultural issues raised during the survey include the preservation of indigenous flora and fauna (in particular, mallee hen nests) throughout the proposed works area and the *Badimia* Survey Team's request that Yamatji Land and Sea Council and Mount Gibson Iron process an agreement reached in an earlier *Badimia* Working Group meeting. As acknowledged by the *Badimia* Survey Team, Mount Gibson Iron will have taken measures to ensure that the environmental impact of the proposed works is minimised as part of the environmental approval process. In addition, Mount Gibson Iron Project Manager James Tyers indicated that Mount Gibson Iron have recorded the locations of mallee hen nests throughout the proposed works area and will be taking these into account as part of the planned development. The *Badimia* Survey Team's request that Yamatji Land and Sea Council and Mount Gibson Iron process an agreement reached in an earlier *Badimia* Working Group meeting will not be discussed any further in this report and will need to be addressed by the Yamatji Land and Sea Council and Mount Gibson Iron.

(Fordyce 2008: 38-39)

The excavation of DIA sites 21622 (Extension Hill 01) and 21624 (Extension Hill 03) has provided little insight into the prehistoric use of the area other than to confirm that the caves were being exploited at some time in the past. No formal hearths or hearth like structures were in evidence in either of the caves and the charcoal recovered from test pits 1 and 3 are more likely the result of bushfires than of cultural origin (though the bushfires themselves may have been lit by people as part of a fire-stick farming strategy).

Too few artefacts were recovered from the test pits to perform any kind of meaningful statistical comparison and residue analysis was similarly beyond the scope of the project. Interestingly, the crystalline quartz recovered from Cave 3 represents a lithic material also found in a large artefact scatter recorded by AIC in 2006 as Mt Gibson Spring (DIA site 24394), located approximately 4km to

the north west. Through a loose application of relative dating, it could be concluded that the C14 dates obtained from the excavation units within Cave 3 containing crystalline quartz may also be applied to the deposition of similar artefacts around the Mt Gibson Spring site, providing a rough estimate of age. Unfortunately, the C14 results from the excavation units containing these artefacts returned dates within the uncertainty period of modern carbon and can only be viewed with scepticism.

The charcoal within Cave 3 returned dates almost wholly within the modern uncertainty period and even more unfortunately, the oldest dates obtained from the excavation came from the upper contexts. This indicates that a large amount of disturbance has occurred within the cave and that burrowing by animals has likely destroyed any sub surface integrity the site may once have held.

The lack of artefactual material within the excavation pits of Cave 1 was surprising, as this site was initially viewed as holding the highest potential for an intact subsurface archaeological record. Furthermore, the C14 dates obtained from charcoal within test pit 3 returned dates indicating an uninterrupted stratigraphic sequence, which would have provided valuable contexts for relative dating had any material been uncovered.

Discreet ash layers were identified within test pit 3, the deepest of which returned dates of 3280±38 BP. Due to the proximity of the test pit to the cave mouth, it is likely that this layer is the result of burning wood blowing into the cave during bushfire events, as there were no hearth-like features or artefactual material present to indicate that this was the result of cultural activity (although the bushfires themselves may have been lit by humans).

Unfortunately, time limitations prevented more than 2 test pits being placed within Cave 1 and although the sampling strategy endeavoured to target the areas within the rockshelter that represented the highest potential for uncovering artefactual material, the total area sampled represented little more than 1.25% of the available surface area. This means that it is quite possible for there to be archaeological material present within the cave, but outside of the sampled areas.

So what further information can we add to our understanding of these two DIA sites from an excavation that essentially returned no applicable results? The presence of cultural material within Cave 3 of Extension Hill 03 (DIA site 21624) confirms that the rockshelter was being exploited culturally in the recent past, perhaps even post-contact, though the lack of integrity within the stratigraphic contexts renders the C14 dates next to useless for the purposes of relative dating.

It is possible that Cave 3 was being exploited at a similar time as crystalline quartz was being deposited around Mt Gibson Spring (DIA site 24394). A comparison of the material present in both sites using X-ray spectroscopy would be needed to confirm this hypothesis and even this would only reveal whether the material had come from the same lithic source, not whether they shared a similar antiquity.

Based on the artefactual material present within Cave 3 it is possible that the site was being used as a hunting outpost or hide. An individual could wait within the cave and keep watch over the ephemeral creek line below, perhaps preparing a barb for attaching to a spear while waiting (such as artefact 2 above). It is unlikely that the site was utilised as an occupation area, as a larger range of artefactual material would be expected if this was the case, both within the cave and in the immediate surrounds.

The excavation of two test pits at Extension Hill 01 (DIA site 21622) does little to add to or dispute the interpretation of this series of rockshelters as an occupation area, likely exploited during the wetter, winter months. The siltstone present in the surrounding outcrops would have provided ample raw material for artefact manufacture and the caves themselves shelter for several individuals, or perhaps an entire family. The ephemeral creekline running past the western side of the site would have attracted animals to the area during rare instances of water flow and provide a vital resource.

The white clay or gypsum present in the outcrop containing Cave 1 would also have been a target resource, one that could be readily transportable, or perhaps used in ceremonial activities in the immediate vicinity. This offers an alternate interpretation of the site as the location for ceremonial activities, perhaps as a meeting ground or initiation area. The artefacts located in the vicinity of this site do little to refute or confirm either interpretation; the presence of a grindstone fragment nearby (though unable to be relocated during the excavation) could be seen as evidence for both ceremonial and domestic activities.

The C14 dating undertaken on the stratigraphic sequence uncovered during the excavation of Test pit 3 has potential to add to the regional understanding of depositional sequences within rockshelters of a similar geological composition. Comparative excavations within similar rockshelters would need to be undertaken before such a data set could be applied on a regional basis, but the foundations for such an analysis have now been laid.

(Eureka 2004: 11)

The Iron Hill 1 artefact scatter is a very small and discrete site and probably represents a single activity event. In other contexts it might be viewed as part of a background scatter of stone artefacts. However, in view of the scarcity of artefacts in the area, this small scatter has been recorded as a site and is interpreted as representing a place where stone material has been flaked and discarded during a rare visit to the Mount Gibson area by Aboriginal people sometime in the late Holocene. Site Iron Hill 1 is, therefore, regarded as having a **low** degree of archaeological significance. It has been adequately recorded and has limited potential to contribute to regional research questions.

(YC 2008a: 26-27)

Given the results of the archaeological assessment, the following can be stated in regards to the six previously recorded sites:

Extension Hill 01

This rockshelter represents an area of occupation within the area, with associated seasonal rock holes and a diverse artefact scatter. However, prior to the archaeological inspection of the site it was subject to a Section 16 application and subsequent excavation. As such without access to a detailed report of this process there is little information gained from this assessment of scientific value. It is considered that archaeological significance of this site must be assessed from the results of the excavation itself. It is of note that the *Badimia* Representatives present on the day were unaware of the Section 16 and associated excavation. They requested the results of any dating and/or analysis be available for their access.

Extension Hill 02

This site was found to consist of a sparse scatter (four artefacts within a wash area) with very low levels of intra site contextuality between the assemblages. It is considered that this scatter is the result of the area been utilised as "passing through" country rather than for occupation of resource exploitation. It is of low archaeological significance.

Extension Hill 03

The rockshelter and associated scatter represented by this site was subject to a Section 16 application and subsequent investigation prior to the archaeological inspection. As such without access to a detailed report of this process there is little information gained from this assessment of scientific value. It is considered that archaeological significance of this site must be assessed from the results of the excavation itself. It is of note that the *Badimia* Representatives present on the day were unaware of

the Section 16 and associated excavation. They requested the results of any dating and/or analysis be available for their access.

Gnamma Hole 4

This is a moderately sized gnamma hole on the eastern edge of a ridge line. It shows definitive signs of cultural usage in the forms of use wear on the edges of the rock. It is a seasonal water source of small capacity and as such would have been utilised as a briefly exploited resource during travels. It is not large enough of itself to support habitation or continued activities. The significance of a site such as this is considered to be low.

Artefact Scatter 02

This site is reported to be a small low density artefact scatter of quartz and dolerite flakes. Three artefacts were identified in the given site boundaries. This site is considered to have very low archaeological significance.

(YC 2008b: 3-4)

Following the visit to each of the six Indigenous sites that may be impacted by the proposed Extension Hill mine operations expansion project consultations with the *Badimia* representatives were held. The results of the consultation process are presented below.

Extension Hill 01

The *Badimia* representatives stated that they did not want the Rock Shelter located at Extension Hill 01 disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

Extension Hill 02

The *Badimia* representatives stated that they had no objections to Extension Hill 02 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

Extension Hill 03

The *Badimia* representatives stated that they had no objections to Extension Hill 03 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

Gnamma Hole 4

The *Badimia* representatives stated that they had no objections to Gnamma Hole 4 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

Artefact Scatter 02

The *Badimia* representatives stated that they had no objections to Artefact Scatter 02 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

(Tehnas 2009a: 29)

The area in which the Heritage Survey was conducted revealed no archaeological material. This, however, is not to say that it does not exist – rather, given that several isolated artefacts and a stone arrangement were found no further than 150m from the Survey Polygon, there is some potential for other artefacts or features to be uncovered when clearing commences. The extremely low ground surface visibility indicates that it is probable that if archaeological materials do exist within the Survey Area they might have been accidentally missed or overlooked, or buried beneath the ground surface.

At the completion of the Field Survey, members of the *Badimia* Survey Team were not convinced of the area being completely devoid of archaeological materials. The Stone Arrangement (AS-SF 01) and two isolated fragments of core debitage (AS-ISO 01 and AS-ISO 02) indicate that at some point Aboriginal (*Badimia*) people had passed through the area. It is well known that the country abutting Great Northern Highway and north of Dalwallinu as far as Wanarie Station has many sites of heritage interest – many of which are mythological in nature. It would therefore be unrealistic to assume that the Polygon surveyed would contain no artefacts or features whatsoever. It was agreed by the *Badimia* Survey Team that when the Accommodation Village and Air Strip are to be constructed, monitors should be present during the land clearing phase. This is to ensure that should any heritage materials become visible the appropriate measures can be taken to protect or salvage them.

(Tehnas 2009b: 70-71)

The Extension Hill and the Mt Gibson Ranges can be considered to be of great heritage significance to the *Badimia* people. The sites discussed within this report are considered to be part of a greater cultural landscape, one which was used extensively by the indigenous people as a source of water, as a camping place and a hunting ground.

As noted in Chapter 8.4.1, the location of EH-RHAS-01 is significant in the fact that it contributes to the significance of EH 03 as it was previously understood. EH 03 and EH-RHAS-01, can almost be considered to be extensions of one another – part of the same single heritage site. However, for the purposes of this report they have been recorded as two separate sites and will be continued to be considered as such.

With the two sites being located in close proximity to both a permanent and ephemeral water source, we would expect there to be archaeological sites demonstrating greater social complexity and longevity, than in places where no water is present (Veth 1989; 1993; 1995; 1996). As Veth's predictive model also suggests, we can expect to see greater lithological variability and more intense stone reduction, with large quantities of debitage from tool manufacture and rejuvenation. This archaeological behaviour is visible to some extent at both EH 03 and EH-RHAS-01, though lithological variability is not greatly diverse.

Sites such as the two detailed above would have been of great importance to the survival of the traditional local indigenous groups, providing them with ample water in an area which offers enough protection from the elements to make a good camp site. Additionally, although the C14 date obtained for EH 03 is potentially unsound, other nearby rock shelters on Extension Hill – Extension Hill 01 (DIA Site 21622) and Extension Hill 02 (DIA Site 21623) – might still be contemporaneous with occupation at EH 03. The 2007 excavations obtained a maximum date of occupation for the Extension Hill Area of 3280 $\pm$ 38 BP at Extension Hill 02 (DIA Site 21622) (Fordyce 2008: 40).

The *Badimia* representatives emphasised the social and ecological importance of the site during the duration of the survey. They stressed that should the waterways be disturbed, the environmental impact to the area would be great as a large number of animals rely on the Rock Hole for survival. The Rock Hole at EH-RHAS-01 in particular is considered by the *Badimia* Survey Team to be of high significance to the area.

They also noted that the area surrounding EH-RHAS-01 would have once been used as a hunting ground, as animals would have come to drink and could then be easily caught. Bush foods such as *Bimba* (the sweet gum that comes from Sugar Brother Bushes), native flaxes, *Guiols* (goannas), *Bungaras* (lizards), emus (and *Wallah*, their eggs) and kangaroos are all highly visible in the immediate area and considered to be delicacies by the *Badimia* People, and are still eaten regularly.

Probably the best piece of evidence found to link EH 03 and EH-RHAS-01 together is the predominance of basalt as the material used for the majority of the artefact assemblages of both sites. As previously stated, this particular grade of basalt is known to come from an outcrop on the western side of Mt Gibson Range. After quarrying, the Tribal groups would have transported the material with them as they moved across the country and made tools out of it when they camped. The significance of this is that it changes previous interpretations of the occupation of the EH 03 Rockshelter.

The effect on the sites by EHPL's proposed developments is total. As shown by Table 10.1, both sites will be wholly impacted by developments at the proposed Open Cut Magnetite Mine as they fall within the project area.

(Tehnas 2009c: 37)

The area in which the Heritage Survey was conducted revealed no archaeological sites, but three archaeological features. There is some potential for other artefacts to be uncovered when/if clearing commences, but it is not high. It is unlikely given the lack of water sources or shelter in the immediate surroundings that people camped permanently in the area.

It is far more probable that the regularly used camping grounds were at the identified sites around Extension Hill (for example, Extension Hill 01 (DIA Site 21622), EH 03 (DIA Site 21624), and the Rockshelter Complex). The area surrounding Mt Gibson which comprised the Heritage Survey Polygon would have been 'passing through' or hunting country as the lack of water and shelter does not facilitate human habitation, however temporarily.

(Tehnas 2009d: 51-52)

The Extension Hill and the Mt Gibson Ranges can be considered to be of great heritage significance to the *Badimia* people. Extension Hill 01 (EH 01 - DIA Site 21622) is considered to be part of a greater cultural landscape, one which was used by people as a camping place and a source of water.

In 2007 Australian Interaction Consultants (AIC) conducted a Section 16 investigation of EH 01 and concluded that there was little evidence to suggest anything more than that the area had been exploited at some point in the past. A Radiocarbon (C14) Date was obtained from a sample obtained from the Test Pit at EH 01 which gave a maximum age of 3280±38 BP. The author acknowledged that this date may not be representative of a genuine date of occupation as the sample was obtained from a discreet ash layer without any associated hearths or cultural materials present in the stratigraphical context. Additionally, the author suggested that as the test pit was located close to the mouth of Cave 1, it is likely that the ash could have been the result of a bush fire (Fordyce 2008: 38).

Were Veth's Permanent Water Source Theory (1989; 1993; 1995; 1996) applicable, we would expect EH 01 to have been occupied constantly through the year with a subsequent increase in the lithic variability visible. However, the two times these rock holes were visited (June 2008 and November

2009) there was no water present within them, suggesting that they may be ephemeral rather than permanent as previously thought.

An abundant raw material for artefact manufacture, good, large shelter in the form of the caves and the ephemeral creek and rock holes suggest that the area is likely to have been in use predominantly in the winter months or during periods following rainfall. At this time, the creek would have been an attractive resource for both the human community as it not only supplied them with water but it would have attracted animals to the area.

The small size of the artefact scatter suggests an area that was infrequently used, and the 2007 excavations revealed that no lithic material was present in either of the two test pits that had been placed at EH 01. Little can be interpreted from the small number and range of artefacts found to indicate whether EH 01 had any function other than one of a seasonal domestic camp. There is some small possibility that the site may have been used for ceremonial activities or as a meeting place from the quarried stone outcrop, however there is little other archaeological evidence to confirm this interpretation.

EH 01 can be classified as a site of moderate to high significance. While it may not be the best example of a habitation site, with at least two other habitation sites known to exist within a 5km of it, it is the only Rockshelter site to feature ochre quarries in the area and therefore have significance as a potentially ceremonial site. It is also a good example of what can be best interpreted as a seasonal camp in the Extension Hill Area. Though the longevity of use has not been conclusively determined, EH 01 contributes to the understanding of human use and movement through the Mt Gibson and Extension Hill Area. Additionally, the *Badimia* Elders believe Extension Hill 01 to be highly important as it represents to them "somewhere where the old fellas used to live before the Whitefellas came along. Those big caves would have been home, where they burnt their fires" (Mr. Percy George; Pers. Comm. November 2009).

The effect on EH 01 by EHPL's proposed developments is total. As shown by Table 10.1, the site will be wholly impacted by developments at the proposed Open Cut Magnetite Mine as they fall within the project area.

APPENDIX 8

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List of Recommendations made in each report pertaining to EHPL's PPA

(AIC 2004a: 12)

- Mt Gibson makes application to the Minister under s18 of the Act if their project cannot be modified to avoid disturbance to the hills and the lake within their tenement areas at Mt Gibson.

- The sites identified during the survey be reported to the registrar and assessed by the ACMC against s5 and s39 of the Act.

- Mt Gibson considers having a further archaeological inspection of the area completed.

- Mt Gibson ensures that all of its project staff and contractors are made aware of their responsibilities and obligations under the Act.

(AIC 2004b: 32)

- It is recommended that Mt Gibson Mining consider commissioning another ethnographic survey that is based of the findings of the archaeological survey, where the Informants are aware of the existing caves, rockshelters and sites. These may well be ethnographically significant.

- AIC recommends that the archaeological sites be avoided by the proposed developments.

- AIC recommends that all personnel are aware of the presence and the importance of the sites.

- If the sites are to be disturbed in any way, a Section 18 application will need to be sought and it is recommended that some form of archaeological research of these sites is conducted.

(AIC 2005b: 32)

- If necessary, Mount Gibson Iron adjusts the proposed works area to avoid the two ethnographic sites identified.

- Mt Gibson Iron avoids entirely the identified Mount Gibson Rockshelter Complex, and the possible burial and hearth along the borefield.

- Monitoring of works in the area of the newly identified site, "Ngangan Wagu", be undertaken in order to limit the potential impact on cultural material. (***EDITOR'S NOTE:*** *The*

site "Ngangan Wagu", or DIA Site 24395: Mt Gibson Rockshelter complex, will not be affected by the EHPL's PPA, as the Proponent intends to avoid the site in their proposed developments).

- Mount Gibson Iron, in conjunction with the Yamatji Land and Sea Council, negotiate with the Badimia NTC working group to address their concerns and requests in relation to the two identified sites.

- Mount Gibson Iron engages Aboriginal monitors during ground disturbance activity within the proposed laydown areas and that they discuss this possibility at a Badimia Working Group meeting.

- Mount Gibson Iron details the proposed water pipeline route to the southeast of Extension Hill at a Badimia Working Group meeting and, if necessary, arranges an inspection.

- Mount Gibson Iron engages Aboriginal monitors during ground disturbance activity along the borefield corridor and that the organising of monitors is discussed at a Badimia Working Group meeting.

- Mt Gibson Iron be prepared to call on an archaeological opinion should Indigenous monitors find any material of cultural interest.

(AIC 2006a: 38)

- That *Mt Gibson Rockhole* and *Mt Gibson Rockshelter Complex*, as requested by the Widi Mob representatives, be reported to the DIA for registration under The Act.

- Mount Gibson Iron makes application to the Minister under s18 of the Act if their project will impact on the sites *Mt Gibson Rockhole*, *Mt Gibson Rockshelter Complex* and the archaeological sites, *Mt Gibson Borefield Scatter 1, Mt Gibson Borefield Scatter 2* and *Mt Gibson Borefield Scatter3.*

- Mount Gibson Iron negotiates monitoring as requested by the Widi Mob.

- AIC also recommends that all Mount Gibson Mining staff and contracting personnel be made fully aware of their obligations under The Act.

(AIC 2006c: 22)

- Mount Gibson Iron allows for archaeological excavation of the caves at sites Extension Hill 03 and Extension Hill 01.
- Mount Gibson Iron makes application to the Minister under s18 of the Act to disturb the sites Extension Hill 03 and Extension Hill 01 on condition that excavation of the caves has been completed.
- The newly identified site, Mt Gibson Spring, will be reported to the Department of Indigenous Affairs by AIC for registration.
- Mount Gibson Iron avoids and preserves the newly identified site, Mt Gibson Spring.
- Mount Gibson Iron negotiates monitoring as requested by the Widi Mob.
- Mount Gibson Iron erects plaques as requested by the Widi Mob.
- AIC also recommends that all Mount Gibson Mining staff and contracting personnel be made fully aware of their obligations under The Act.

(Fordyce 2008: 40)

- Further Archaeological analysis of DIA sites 21622 (Extension Hill 01) and 21624 (Extension Hill 03) is not required.
- The Archaeological Excavation of DIA site 21624 (Extension Hill 03) uncovered two crystalline quartz artefacts.
- C14 dates from charcoal samples taken from Test Pit 1 of DIA site 21624 indicate a maximum age of 497±36 BP, though bioturbation has resulted in a highly disturbed stratigraphic profile.
- The additional information attained from the excavation of DIA site 21624 indicates that this site is related archaeologically to nearby DIA site 24394 (Mt Gibson Spring).
- The Archaeological Excavation of DIA site 21622 (Extension Hill 01) uncovered no cultural material.
- C14 dates from charcoal samples taken from Test Pit 3 of DIA site 21622 indicate an intact stratigraphy with a maximum age of 3280±38 BP.
- The additional information attained from the excavation of DIA site 21622 does little to add to the understanding of this site from an archaeological perspective.

- AIC will report the additional information obtained from the excavation to DIA for further assessment under The AHA.

(Eureka 2004: 13)

It is recommended that Mt Gibson Iron Ltd ensure that its employees and contractors:

1. Are advised of the existence and location of Aboriginal archaeological sites Iron Hill 1 and;
2. Are informed that these locations may constitute an Aboriginal archaeological site to which the Aboriginal Heritage Act 1972 applies and should, therefore, be avoided.

Should Mount Gibson iron Ltd plan to disturb the site, it is further recommended that an application seeking consent to disturb the site be made to the minister for Indigenous Affairs under Section 19 of the Aboriginal Heritage Act 1972, on condition that:

3. Badimia people and their representatives are consulted about the plans to disturb this site and subsequently grant their consent.

(YC 2007: 5)

- The proposed Great Northern Highway realignment will not impact on heritage sites or objects and the work program is cleared by the Badimia Heritage Survey Team.

- The proposed airstrip is cleared by the Badimia Heritage Survey Team.

- The proposed sewage pond area is cleared by the Badimia Heritage Survey Team.

- The proposed service corridor will not impact on heritage sites or objects and the work program is cleared by the Badimia Heritage Survey Team

- It is possible that isolated artefacts will be impacted by construction. Should any isolated artefacts be discovered they should be left *in situ*.

- In the event that human remains, or skeletal materials that may be human, or materials that may belong to a human grave are discovered during any approved work program, work

must stop immediately and the materials and the area about them must be left undisturbed. The Police, DIA and the Traditional Owners, must be informed immediately.

- It is recommended that Extension Hill Pty Ltd maintain discussions with the Badimia Claimant Group regarding any further matters that may arise in relation to these areas, including any further proposed work programs or access to uncleared portions of the work area.

(YC 2008a: 28)

- Sites Artefact Scatter 2 and Extension Hill 02 both represent very small, low density cultural deposits that are of little archaeological value.

- Sites Extension Hill 01 and Extension Hill 03 are potentially highly significant sites, but without knowing the extent nor the form of archaeological mitigation carried out under the Section 16 sanctioned investigation, there is little that can be conclusively drawn from the study of the materials remaining at these sites.

- Site Gnamma Hole 4 represents seasonal cultural exploitation of the resources available in the landscape, but is of little archaeological significance.

(YC 2008b: 3-4)

<u>Extension Hill 01</u>

The *Badimia* representatives stated that they did not want the Rock Shelter located at Extension Hill 01 disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

<u>Extension Hill 02</u>

The *Badimia* representatives stated that they had no objections to Extension Hill 02 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

<u>Extension Hill 03</u>

The *Badimia* representatives stated that they had no objections to Extension Hill 03 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

<u>Gnamma Hole 4</u>

The *Badimia* representatives stated that they had no objections to Gnamma Hole 4 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

Artefact Scatter 02

The *Badimia* representatives stated that they had no objections to Artefact Scatter 02 being disturbed or destroyed by the proposed Extension Hill mine operations expansion project.

(Tehnas 2009a: 30)

The *Badimia* Consultants that participated in the Survey have had the opportunity to view the Survey Areas, and have approved the recommendations set out in this document.

- No archaeological sites were located during the September 2009 Heritage Survey. It is recommended that EHPL are free to continue with their proposed Air Strip and Accommodation Village in this area, provided the conditions below are met:

- The *Badimia* Survey Team have requested that due to the dense vegetation of the survey area and the extremely low visibility encountered that two *Badimia* monitors be employed for the entire duration of the land clearing stage of the proposed developments. Names of these two monitors will be provided to EHPL by the *Badimia* Working Group.

    - Should any artefacts or archaeological features be inadvertently discovered during the timeframe of the proposed developments, a qualified Archaeologist and representatives of *Badimia (*WC 96/98) are to return to the site to conduct further investigations.

- EHPL must ensure that all employees, contractors and visitors to the Area are aware of their obligations under Section 17 of *The Act*.

(YC 2009a: 26)

The *Badimia* Consultants that participated in the Survey have had the opportunity to view the Survey Areas, and have approved the recommendations set out in this document.

- No ethnographic sites were located during the September 2009 Heritage Survey. It is recommended that EHPL are free to continue with their proposed Air Strip and Accommodation Village in this area, provided the conditions below are met:

- The *Badimia* Survey Team have requested that due to the dense vegetation of the survey area and the extremely low visibility encountered that two *Badimia* monitors be employed for the entire duration of the land clearing stage of the proposed developments. Names of these two monitors will be provided to EHPL by the *Badimia* Working Group.

- EHPL must ensure that all employees, contractors and visitors to the Area are aware of their obligations under Section 17 of *The Act*.

(Tehnas 2009b: 72)

- The *Badimia* People are satisfied with the salvage of cultural materials from EH 03 (DIA Site 21624), and are content with EHPL to proceed with their proposed developments.

- The *Badimia* People have agreed that EHPL may disturb the Artefact Scatter (as part of EH-RHAS-01) for their proposed developments provided that a salvage of the heritage materials occurs prior to the commencement of land clearing.

- The *Badimia* People have expressed some concern and hesitation at the destruction of the Rock Hole (as part of EH-RHAS-01) and Gnamma Hole 04, citing the importance water sources have in *Badimia* mythology and the ecology.
    - It is therefore recommended that EHPL consult further with the Badimia Working Group in regards to the Rock Hole at EH-RHAS-01 and Gnamma Hole 04 so that an agreeable arrangement can be reached.

- EHPL must ensure that all employees, contractors and visitors to the Area are aware of their obligations under Section 17 of *The Act*.

(Tehnas 2009c: 38-39)

- No archaeological sites were located during the November 2009 Heritage Survey.

- Three archaeological features – MG-ISO-01, MG-ISO-02 and MG-ISO-03 - were located during the November 2009 Heritage Survey.

- It is recommended that EHPL are free to continue with their Proposed Developments in this area, provided the conditions below are met:

    - The *Badimia* Survey Team have requested that the three archaeological features – MG-ISO-01, MG-ISO-02 and MG-ISO-03 be left *in situ* on country and avoided by EHPL in future developments.
    - MG-ISO-01, MG-ISO-02 and MG-ISO-03 are to be given a 10m exclusion radius around each point (see Table 9.2 for the location of each).
    - Should EHPL wish to move the three archaeological features, it is recommended that they submit a Section 18 Application over the area. Once the Application has been approved, representatives of the *Badimia* Native Title Group will accompany a Yamatji Communications Archaeologist to salvage these archaeological features.

- The *Badimia* Survey Team have requested that two *Badimia* monitors be employed for the entire duration of the land clearing stage of the proposed developments. Names of these two monitors will be provided to EHPL by the *Badimia* Working Group.

    - Should any artefacts or archaeological features be inadvertently discovered during the timeframe of the proposed developments, a qualified Archaeologist and representatives of *Badimia (*WC 96/98) are to return to the site to conduct further investigations.

- EHPL must ensure that all employees, contractors and visitors to the Area are aware of their obligations under Section 17 of *The Act*.

(Tehnas 2009d: 53)

- The *Badimia* People have expressed that they do not wish for Extension Hill 01 to be damaged or destroyed by any future mining operations.
    - It is therefore recommended that should EHPL wish to do so, they must consult further with the *Badimia* Working Group so that an arrangement can be reached.
    - It is further recommended that a Section 18 application must be lodged to the Department of Indigenous Affairs.

- EHPL must ensure that all employees, contractors and visitors to the Area are aware of their obligations under Section 17 of *The Act*.

(YC 2009b: 32)

- No new ethnographic sites were located during the November 2009 Heritage Survey.
- The section of the existing DIA registered site 25293: Extension Hill that extends onto Mt Gibson is <u>not</u> considered to be a Ceremonial or Mythological site by the *Badimia* People.
- It is recommended that EHPL are free to continue with their proposed land developments in this area, provided the conditions below are met:
    - The *Badimia* Survey Team have requested that two *Badimia* monitors be employed for the entire duration of the land clearing stage of the proposed developments. Names of these two monitors will be provided to EHPL by the *Badimia* Working Group.
    - The *Badimia* Survey Team have requested that the three Isolated Archaeological Artefacts identified during the Archaeological Survey be avoided (See Tehnas 2009 for details on these artefacts).
    - It is recommended that EHPL follow appropriate measures to apply for a Section 18 on DIA Site 25293: Extension Hill. The Site's informants will need to be consulted.
- EHPL must ensure that all employees, contractors and visitors to the Area are aware of their obligations under Section 17 of *The Act*.

APPENDIX 9

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List of Extension Hill's Magnetite Project Area Boundary Co-Ordinates.

Easting	Northing
515013.2	6729848
514951.2	6729772
514805.6	6729578
514738	6729489
514725	6729468
514722.4	6729390
514777	6729193
514829	6729016
514865.4	6728855
514896.6	6728655
514969.4	6728376
514978.6	6728347
514906.6	6727981
514833.3	6728081
514827	6728058
514823.2	6728059
514805.5	6728086
514577.1	6728092
514430.4	6728096
514426.5	6728096
514186	6728103
514061.1	6728107
513840	6728113
513625.8	6728119
513625.4	6728115
513623.5	6728115
512965	6728135
512103.8	6728157
511804.4	6728164
511349.9	6728179
510514.5	6728200
510160	6728210
509362.6	6728231
508775.9	6728247
508280.3	6728259
508214.6	6728261
508169	6728265
508034.5	6728292
508016.7	6728295
508010.3	6728295
508009.2	6728245
508012.9	6728245

508026.1	6728243
508161.7	6728216
508211.4	6728211
508278.8	6728209
508774.6	6728197
509361.3	6728181
510076.8	6728162
510076.8	6727041
510674.1	6727041
510674.1	6726106
510446.2	6726106
510446.2	6726039
510499.8	6726039
510499.8	6726090
510595.8	6726090
510595.8	6725913
510694.6	6725913
510857.6	6725730
510440.2	6725237
512108.3	6723825
512538.6	6724333
510870.5	6725745
510713.1	6725916
510713.1	6727041
511530.7	6727041
511530.7	6728123
511803	6728114
512102.5	6728107
512963.6	6728085
513620.8	6728065
513620.5	6728061
513619.8	6728052
513619.1	6728042
513618.4	6728033
513617.8	6728023
513617.2	6728014
513616.7	6728004
513616.2	6727995
513615.7	6727985
513615.3	6727976
513615	6727966
513614.6	6727957
513614.3	6727947

513614.1	6727938
513613.8	6727928
513613.7	6727919
513613.5	6727909
513613.4	6727900
513613.4	6727890
513613.3	6727880
513613.4	6727871
513613.4	6727861
513613.5	6727852
513613.7	6727842
513613.8	6727833
513614.1	6727823
513614.3	6727814
513614.5	6727809
513614.6	6727804
513615	6727795
513615.3	6727785
513615.8	6727776
513616.2	6727766
513616.7	6727757
513617.2	6727747
513617.8	6727738
513618.4	6727728
513619.1	6727719
513619.8	6727709
513620.5	6727699
513621.3	6727690
513622.1	6727680
513623	6727671
513623.9	6727662
513624.8	6727652
513625.8	6727643
513626.8	6727633
513627.8	6727624
513628.9	6727614
513630	6727605
513631.2	6727595
513632.4	6727586
513633.7	6727576
513635	6727567
513636.3	6727557
513637.6	6727548

513639	6727539
513640.5	6727529
513642	6727520
513643.5	6727510
513645.1	6727501
513646.7	6727491
513648.3	6727482
513650	6727473
513651.7	6727463
513653.5	6727454
513655.3	6727445
513657.1	6727435
513659	6727426
513660.9	6727417
513662.8	6727407
513664.8	6727398
513666.9	6727389
513668.9	6727379
513671	6727370
513673.2	6727361
513675.4	6727351
513677.6	6727342
513679.9	6727333
513682.2	6727324
513684.5	6727314
513686.9	6727305
513689.3	6727296
513691.7	6727287
513694.2	6727277
513696.8	6727268
513699.3	6727259
513701.9	6727250
513704.6	6727241
513707.3	6727232
513710	6727222
513712.8	6727213
513715.6	6727204
513718.4	6727195
513721.3	6727186
513724.2	6727177
513727.1	6727168
513730.1	6727159
513733.1	6727150

513736.2	6727141
513739.3	6727132
513742.5	6727123
513745.6	6727114
513748.8	6727105
513752.1	6727096
513755.4	6727087
513758.7	6727078
513762.1	6727069
513765.5	6727060
513768.9	6727051
513772.4	6727042
513775.9	6727033
513779.4	6727025
513783	6727016
513786.6	6727007
513790.3	6726998
513794	6726989
513797.8	6726981
513799.3	6726977
513932	6726668
514016.2	6726571
514068.2	6726549
514115.6	6726535
515439.6	6727026
515401.8	6727158
515341.7	6727287
515239.3	6727436
515185.2	6727534
515523.4	6727544
515559.5	6727508
515679.1	6727430
515819.5	6727407
515952.1	6727428
516035.3	6727456
516082.1	6727477
516167.9	6727493
516232.8	6727498
516334.2	6727503
516464.2	6727526
516641	6727604
516647.7	6727609
516649.9	6727611

516829.6	6727753
516942.8	6727791
517022.4	6727795
517420.6	6727786
517575.7	6727874
517659.5	6727962
517701.4	6728055
517990.7	6728285
518041	6728348
518045.2	6728398
518015.8	6728465
517810.4	6728822
517810.4	6728880
517818.8	6729056
517588.3	6729627
517387.1	6729756
517261.3	6729874
517064.3	6730100
516892.5	6730268
516888.3	6730398
516967.9	6730498
516984.7	6730603
516913.4	6730838
516276.3	6730829
515915.8	6730800
515404.5	6730817
515270.3	6730679
515065	6730083