# REPORT OF AN ARCHAEOLOGICAL AND ETHNOGRAPHIC SITE AVOIDANCE HERITAGE ASSESSMENT OF 10 PROPOSED DEVELOPMENT AREAS WITHIN THE MINJAR GOLD PROJECT, CONDUCTED BY THE BADIMIA TRADITIONAL OWNERS AND TERRA ROSA CULTURAL RESOURCE MANAGEMENT PTY LTD, AND PREPARED FOR MINJAR GOLD PTY LTD.

Report of the Archaeological and Ethnographic Site Avoidance Heritage Survey of 10 PDAs for Minjar Gold, conducted with the Badimia Traditional Owners

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## COORDINATE CAPTURE

The authors advise that all coordinates quoted in this document were initially obtained with a Garmin hand held GPS, using the MGA 94 datum. All grid references provided are located within MGA Zone 50, unless otherwise stated.

## ACKNOWLEDGEMENTS

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- The Badimia Traditional Owners who participated in the field work;
- Francis Wedin of Minjar Gold Pty Ltd.; and
- Patricia Edwards of Heritage Link.

# FIELD WORK PARTICIPANTS

The heritage team consisted of four representatives of the Badimia Traditional Owners and three heritage consultants from Terra Rosa Cultural Resource Management.

Field work was conducted with the assistance and involvement of the following people:

**Trip 1 Field Work dates: 9 July to 13 July 2013**

| BADIMIA TRADITIONAL OWNERS | |
|---|---|
| Frank Walsh, Jnr. | Glynn Fogarty |
| Warren Walsh | Brett Little |

| TERRA ROSA CULTURAL RESOURCE MANAGEMENT | |
|---|---|
| Vanessa Macri (archaeologist) | Zsuzsa Gonda (anthropologist) |
| Coral Montero-Lopez (archaeologist) | |

# LIST OF TERMS AND ACRONYMS

The following terms and acronyms are utilised throughout the report. Definitions are provided below for reference.

| TERM / ABBREVIATION | DEFINITION |
|---|---|
| **ACMC** | Aboriginal Cultural Materials Committee |
| **AHIS** | Aboriginal Heritage Inquiry System |
| **ATSIHPA** | *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth) |
| **BLAC** | Badimia Land Aboriginal Corporation |
| **BOM** | Australian Government Bureau of Meteorology |
| **CHMP** | Cultural Heritage Management Plan |
| **DAA** | Department of Indigenous Affairs |
| **GIS** | Geographic Information System |
| **GPS** | Global Positioning System |
| **Heritage object** | An object to which the Act applies under s6 |
| **Heritage place** | Any place to which there is evidence that s5 of the Act applies |
| **MGA** | Map Grid of Australia |
| **MJG** | Minjar Gold Pty Ltd. |
| **NNTT** | National Native Title Tribunal |
| **OHP** | Other heritage place catalogued by the DAA but not included on the Register of Aboriginal Sites for one of the following reasons:<br>1. Information about the OHP has been lodged with the DAA but is pending assessment by the ACMC (status L - lodged);<br>2. Insufficient information has been provided to the DAA for the ACMC to accurately assess whether the OHP constitutes a heritage place under the Act (status I - insufficient information); or<br>3. The ACMC assessed the OHP and considered it not to meet the evaluation criteria for inclusion on the Register of Sites (ie not a registered Aboriginal site) (status S - stored). |

| TERM / ABBREVIATION | DEFINITION |
|---|---|
| **PDA** | Proposed Development Area |
| **Registered Aboriginal site** | A heritage place which has been registered by the Registrar of Aboriginal Sites (DAA status R - registered) |
| **Terra Rosa CRM** | Terra Rosa Cultural Resource Management Pty Ltd |
| **Traditional Owners** | Badimia Native Title Claimants (NNTT no WC96/98) |
| **The Act** | *Aboriginal Heritage Act 1972* (WA) |

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# 1 PROJECT BRIEF

## 1.1 Overview

Minjar Gold Pty Ltd. (MJG) proposes to undertake prospecting for gold, base metals, nickel, tungsten molybdenum and iron ore within their current exploration and mining leases. The Minjar Project Area is located approximately 400 km north-northeast of Perth and approximately 55 km south-southeast of Yalgoo in the Mid West region of Western Australia. The project tenements cover a total area of approximately 1,400 km$^2$. A number of the project tenements have been mined by preceding operators including Gindalbie Metals, Monarch Resources and Golden Stallion Resources; however, mining operations in this area are currently inactive. Following the initiation of Rotary Air-Blast (RAB) drilling in September 2012, there is intent to re-commence mining and expansion within known deposit areas.

The Badimia Traditional Owners, through Heritage Link and Badimia Land Aboriginal Corporation (BLAC), commissioned Terra Rosa Cultural Resource Management (Terra Rosa CRM) to undertake an archaeological and ethnographic site avoidance heritage survey of a number of proposed development areas (PDAs) (see maps 1 to 3). The objective of the heritage survey was to identify areas within the 10 PDAs that constitute Aboriginal heritage places as defined under s5 of the Act, and record them to a site avoidance level.

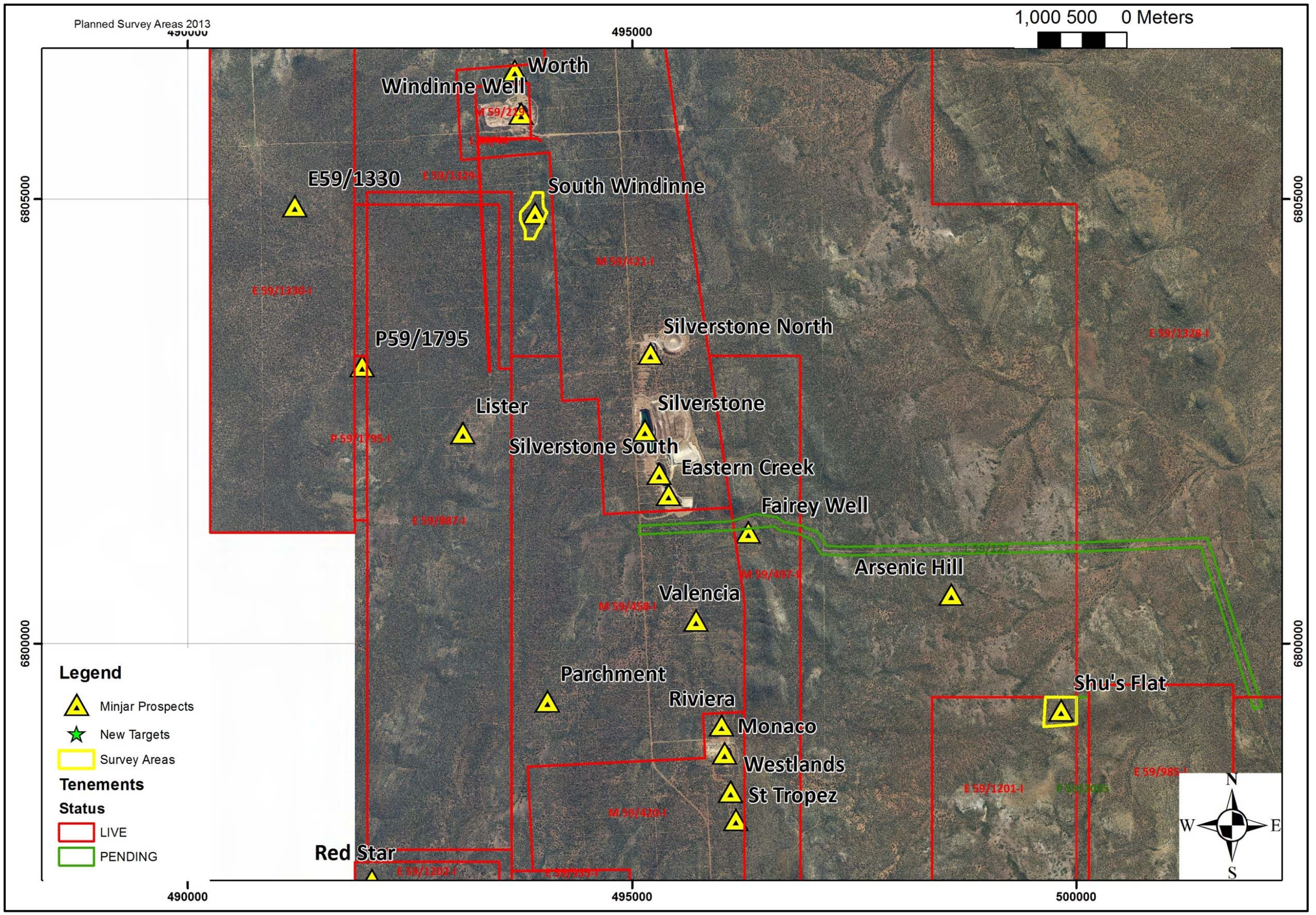
The 10 PDAs (see table 1) were subject to an archaeological and ethnographic assessment over one field trip from the 9 July to 13 July 2013. The PDAs detailed in the scope of works are wholly contained within the Native Title Claim boundaries of the Badimia Traditional Owners (NNTT no WC96/98).

*Table 1: MJG PDAs within the Badimia Native Title Claim area*

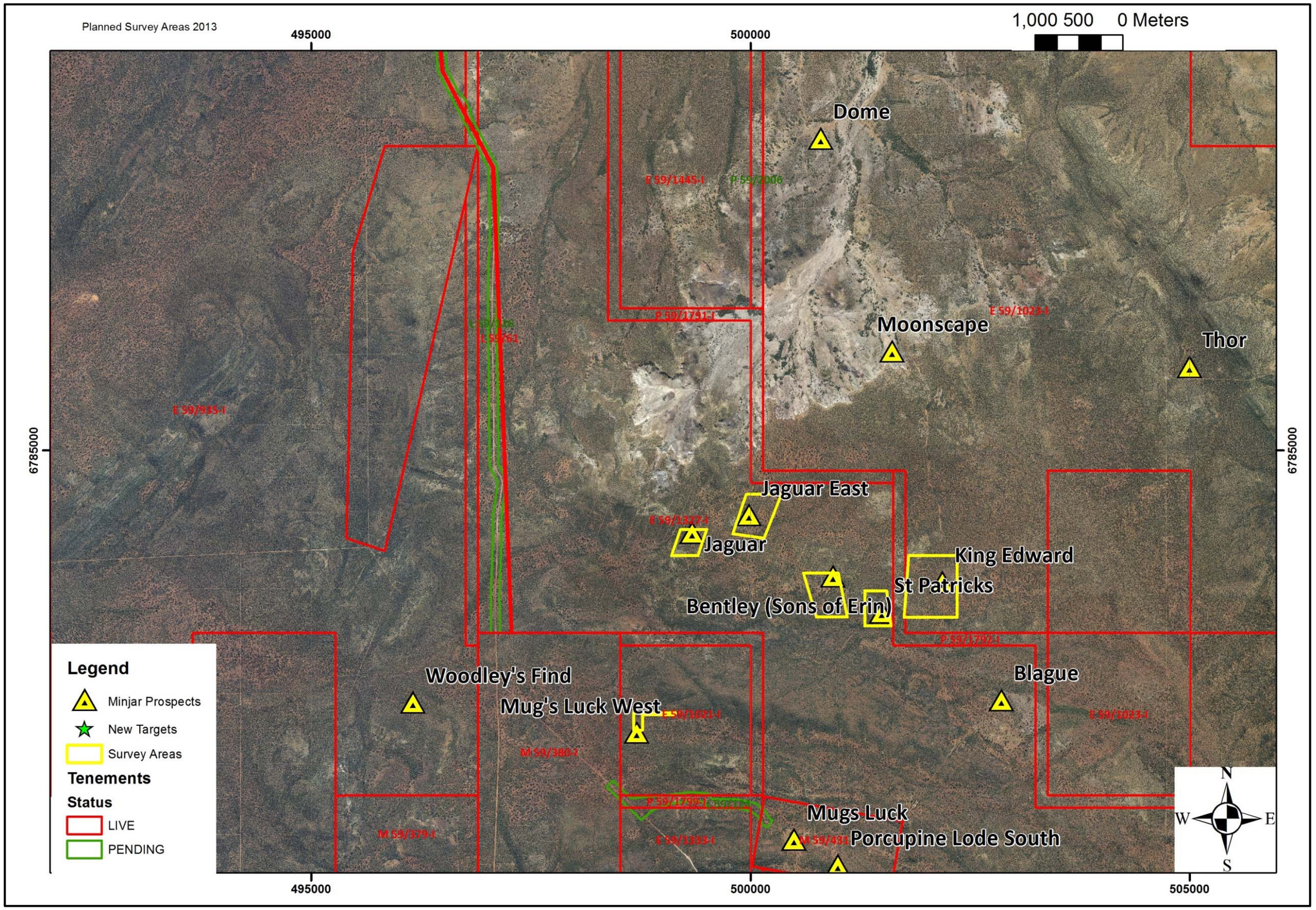
| Tenement(s) | PDA | Survey Area (km$^2$) |
|---|---|---|
| E59 / 1201 | Shu's Flat | 0.1 |
| E59 / 1327 | Jaguar East | 0.2 |
| E59 / 1327 | Jaguar | 0.09 |
| E59 / 1021 | Mug's Luck West | 0.03 |
| E59 / 1023 | King Edward | 0.4 |
| E59 / 1327 | St Patrick | 0.1 |
| E59 / 1327 | Bentley (Sons of Erin) | 0.2 |
| M59 / 460<br>M59 / 425 | New Target 5 | 0.2 |

| Tenement(s) | PDA | Survey Area ($km^2$) |
|---|---|---|
| M59 / 425<br>M59 / 387 | Wolf /<br>New Target 8 | 1.0 |
| M59 / 387 | New Target 15 | 0.6 |

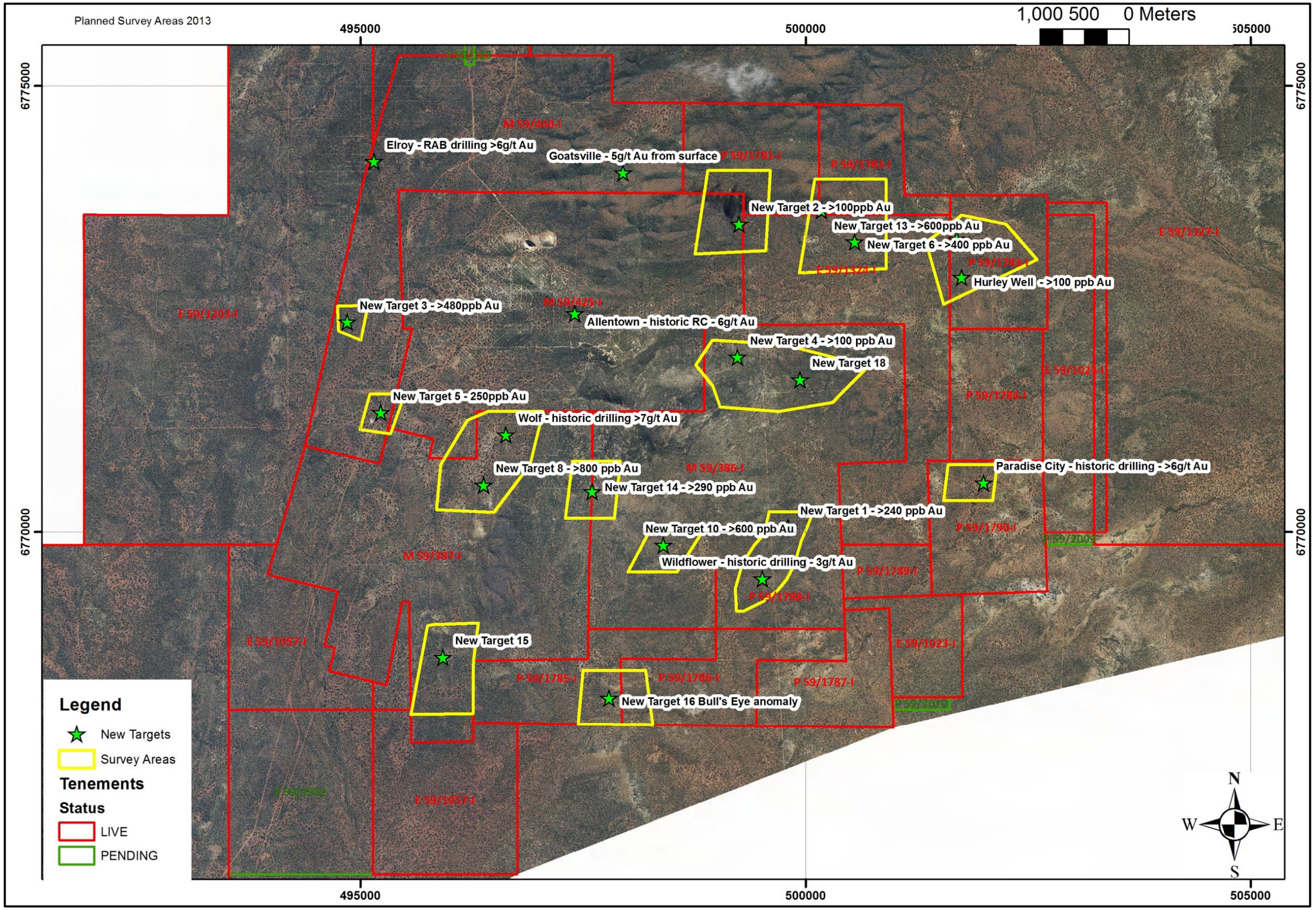
*Map 1: MJG project area overview*



*Map 2: MJG project area overview*



*Map 3: MJG project area overview*



## 1.2 Participation of the Traditional Owners

Four representatives of the Badimia Traditional Owner group participated in the heritage assessment of the 10 PDAs. The Traditional Owners directed the heritage assessment process in conjunction with the heritage consultants and actively participated in the pedestrian transects and site recording.

*Plate 1: Heritage team (L-R) Vanessa Macri, Brett Little, Coral Montero-Lopez, Frank Walsh Jr, Glynn Fogarty, Zsuzsanna Gonda and Warren Walsh*

## 1.3 Limitations to the Heritage Assessment

There were no limitations to the heritage assessment of the 10 PDAs detailed in the original scope of works.

# 2 METHODOLOGY

The heritage assessment was conducted as per relevant statutory requirements and guidelines pertaining to the protection of heritage places and objects within Western Australia.

Prior to field work, a preliminary desktop assessment was undertaken to provide an overview of heritage research undertaken to date within the area. Additionally, a biogeographical overview was determined so as to forecast likely patterns for the distribution of heritage places and objects.

Field work was conducted by the Badimia Traditional Owners and three heritage consultants from Terra Rosa CRM from 9 July to 13 July 2013. A site avoidance methodology was employed for the archaeological and ethnographic heritage assessment of the PDA. As such, all heritage places identified by the heritage team were recorded to a site avoidance level. GPS locations were recorded using hand-held Garmin GPS units, affording a spatial accuracy of ± 5 m.

A formal debrief meeting upon conclusion of the field trip afforded representatives of the Badimia Traditional Owner group the opportunity to discuss and comment upon the heritage assessment methodology and the heritage places identified, including mitigation strategies and recommendations for heritage management within the area.

The methodology utilised during field work was approved and endorsed by the Traditional Owners that participated in the field work.

## 2.1 Legislation and Heritage Agreements

Aboriginal heritage is protected, at a State level, under the *Aboriginal Heritage Act 1972 (WA)* (the Act). The Act applies to both places and objects. Any place to which the Act applies is protected, including places that have not been formally identified or registered with the Department of Aboriginal Affairs (DAA). Violations of the Act may result in prosecution, regardless of the registration status of the heritage place.

At a Federal level, the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* (ATSIHPA) applies to Aboriginal heritage across Australia, and is intended to provide another level of protection in the event that State laws are considered to be ineffective. In addition, two non-legislative charters - the Australian ICOMOS Burra Charter 1999 and the Australian Natural Heritage Charter 2002 - detail best practice methodologies for the identification, protection and management of heritage places.

## 2.2 Desktop Research Methodology

Desktop research for heritage values relies largely on the Register of Sites maintained by the DAA, which provides an indication as to the presence and nature of any heritage values previously recorded and registered within the PDA.

Prior to field work, the PDA boundaries are entered into the DAA Aboriginal Heritage Inquiry System (AHIS) to ascertain whether any registered Aboriginal sites or OHPs have been recorded within the area. Registered Aboriginal sites are those areas that have been assessed by the Aboriginal Cultural Materials Committee (ACMC) as constituting sites under the Act (status R). OHPs include places for which data has been lodged with the DAA but is

pending assessment by the ACMC (status L), places for which insufficient information has been provided for accurate assessment by the ACMC (status I), and stored data pertaining to heritage places and objects that have been assessed by the ACMC as not constituting registered Aboriginal sites (status S). The status codes utilised by the DAA are provided below.

| DAA STATUS ABBREVIATIONS | | |
|---|---|---|
| **C** *Closed* | **F** *Female only* | **I** *Insufficient information* |
| **L** *Lodged* | **M** *Male only* | **MI** *Initiated males only* |
| **N** *No restriction* | **O** *Open* | **R** *Registered Aboriginal site* |
| **S** *Stored data* | **V** *Vulnerable* | |

The AHIS search is also utilised to ascertain whether any heritage assessments have previously been conducted within the PDA, and if any heritage reports containing information relevant to the PDA have been registered with the DAA.

Following the AHIS search, relevant registered Aboriginal site and OHP files and heritage reports held by the DAA are accessed and studied. Some of the information held by the DAA is not publically accessible due to cultural sensitivity (status C) or due to temporary access suspension as a result of DAA administrative processes. In such cases, the inability to access information is noted in the desktop research results within the Terra Rosa CRM heritage report.

Unpublished material (that is, heritage reports not registered with the DAA) that is available for review is also researched prior to field work and results provided in the desktop results.

In addition to research pertaining to previous heritage assessments, the climatic, environmental and geographic characteristics of the PDA are examined in order to establish a model for likely distribution of, and potential impacts upon, heritage places and objects.

## 2.3 Field Methodology

The field assessment of the PDA was conducted to a site avoidance standard and included both archaeological and ethnographic assessments.

The objective of site avoidance heritage assessments is to identify and record brief details of areas within the PDA that constitute heritage places as defined under s5 of the Act, to negotiate deviations around such places where possible, and to provide the proponent with heritage management considerations for heritage values that would otherwise be impacted by the proposed development. As such, the site avoidance method of heritage assessment is designed to document Aboriginal heritage values to a standard sufficient to provide a preliminary understanding of the characteristics of heritage places and to allow the proponent to proceed with works that will not impact those places.

According to a site avoidance standard, documentation of heritage places must include spatial extent and the establishment of boundaries, along with basic recording of principle

heritage attributes and components. This information is used to determine the status of heritage places under s5 of the Act.

The heritage team conducting the assessment included heritage consultants from Terra Rosa CRM and nominated representatives of the Badimia Traditional Owner group, who assert the right to speak for the country being assessed for heritage values.

### 2.3.1 Archaeological Methodology

In order to comprehensively assess and record any archaeological heritage values located within the PDA, a pedestrian transect methodology was utilised. Terra Rosa CRM heritage consultants walked the transect boundaries using handheld Garmin GPS units, and the Traditional Owners were spaced evenly in between. The maximum transect width was 240 m, with a 20 m to 40 m spacing between each member of the heritage team. This spacing was determined by the number of individuals present as well as terrain conditions.

*Plate 2: Heritage team lining up to walk a transect*

When archaeological objects were encountered, the heritage team conducted intensive, targeted inspection of the area in order to determine the nature and approximate extent of the find. If the objects were found to constitute a heritage place, they were recorded to site avoidance level with the assistance and involvement of the Traditional Owners. Artefact recording codes utilised during the heritage assessment are detailed in appendix 1.

Following thorough investigation, if objects were deemed to be of insufficient density or importance to constitute heritage places, artefacts were recorded as isolated objects. For isolated objects the location, artefact lithology and typology were noted. Artefacts were then returned to their original location and orientation. Objects were deemed to be isolated unless one or more of the following conditions existed:

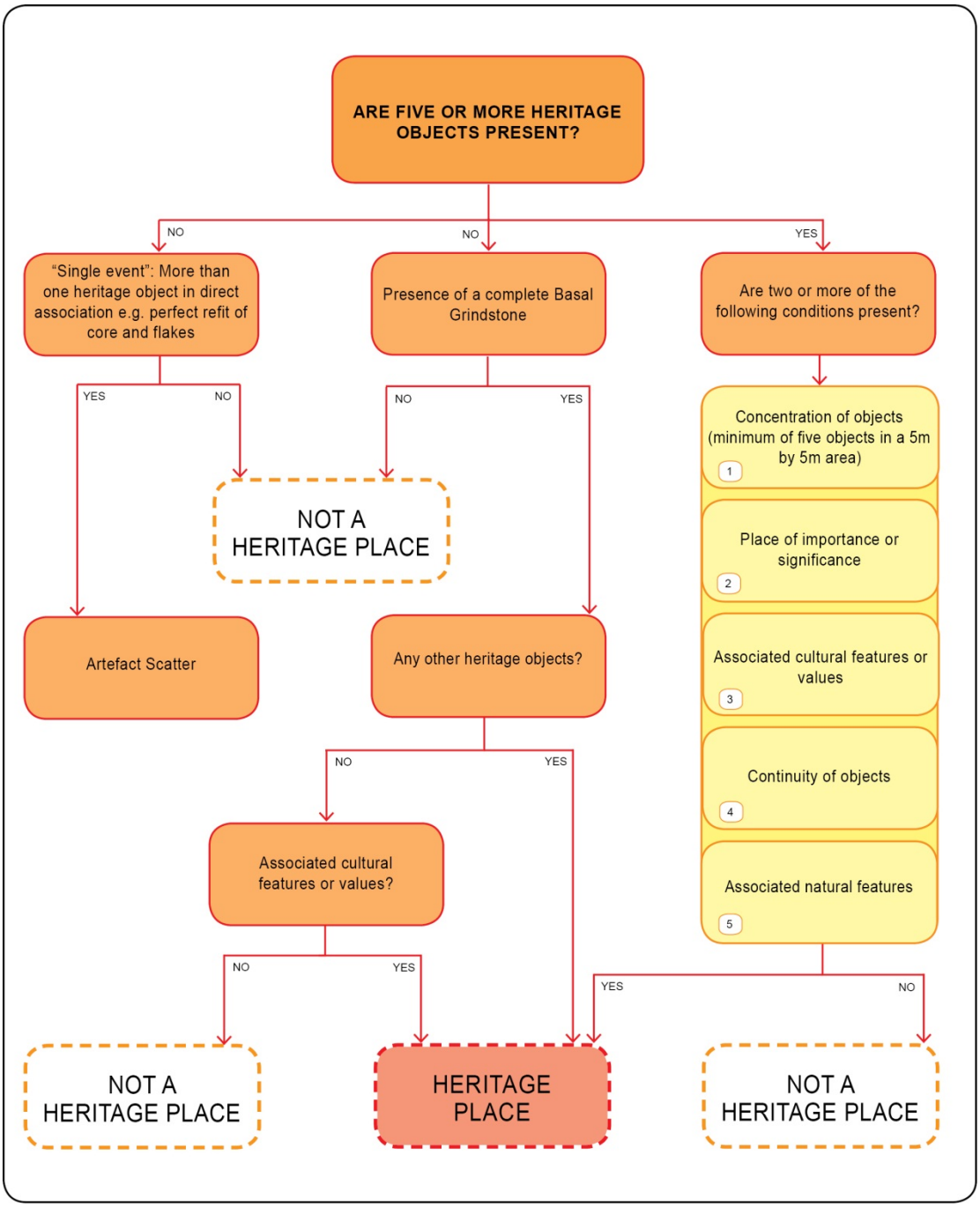
- The density of objects exceeded five artefacts within 25 $m^2$;
- The objects were identified in association with other heritage values or heritage place elements;
- The presence of a grindstone base when considered with the above criteria; or
- The Traditional Owners requested that the objects be recorded as a heritage place.

The methods employed during the heritage assessment were discussed in depth with the Traditional Owners. The methodology was approved and endorsed by the Traditional Owners who participated in the field work.

#### *2.3.1.1 Artefact Scatter Recording Methodology*

For those heritage places classified as (or including) artefact scatters, initial recording began with the determination of an accurate boundary. The boundaries were delineated via a series of intensive pedestrian transects to determine the visible surface extent of the concentration of objects, identification of landforms constituting natural boundaries and/or the systematic placement of sample squares. Boundaries are defined by the margin of the presence or absence of a concentration of objects, or where perceived background scatter (comprised of isolated objects) is encountered. The following flow chart indicates the process followed in determining whether a concentration of artefacts is classified as an artefact scatter:

*Figure 1: Artefact scatter assessment process*




The sampling strategy of the artefact assemblage was determined by the size and density of the scatter. Small, low density scatters were subject to a 100% sample of all visible surface artefacts. For larger, or more dense, artefact scatters sample squares were placed randomly throughout the heritage place. The total area sampled for each site was discretionary, with only enough information being gathered to characterise the site.

The type and lithology of all artefacts located within the sampled area of each scatter were recorded, along with any retouch or usewear. All artefacts recorded within the sampled assemblage have been subject to recording criteria, consistent with a site avoidance standard. This involved taking a series of measurements as well as recording the attribute variation amongst the assemblage.

Artefact attribute data collected during a site avoidance standard of recording is subjected to statistical analysis in order to preliminarily assess the nature of the heritage place within a localized and regional framework.

In addition to this information, a brief heritage place description is generated. This includes geological and environmental features, and any comments the Traditional Owners wish to contribute.

The boundaries for all heritage places identified during the course of the heritage assessment were defined and recorded using handheld GPS units. It is assumed that the concentrations of artefacts noted on the surface are likely to represent the higher density sections of potential subsurface material assemblage and can thus be assumed to be relatively reliable indicators of the spatial extent of the scatter.

As such, the boundaries are representative of only what was present or visible by the recorder/s during the field work, and do not account for any future and/or unforeseen changes in layout or the landscape within which heritage places are located.

#### *2.3.1.2 Definition of Archaeological Boundaries*

Archaeological boundaries are defined based on the density and extent of artefactual material. Any area with an artefact density exceeding five artefacts per 5 $m^2$ is considered sufficient density to warrant identification as a heritage place. The boundary of that heritage place is determined once that density no longer exists. Boundaries are delineated in the field where possible, and recorded using a hand-held Garmin GPS unit. Where field-based delineation of boundaries is not feasible, accurate extents of objects or areas comprising heritage places are calculated using GIS determinations during assessment of field data in the office.

For information on how boundaries are assessed for different heritage place classifications please refer to the methods outlined above.

### 2.3.2 Ethnographic Methodology

Following an initial field work brief, ethnographic assessment of the PDA was undertaken using a targeted approach. Areas of ethnographic importance and significance known to the Traditional Owners were visited by the heritage team and where necessary heritage place boundaries were established.

Ethnographic consultation occurred consistently throughout the heritage assessment in open discussions with the Traditional Owners and the attending heritage consultant. The heritage consultant recorded ethnographic comment offered by the Traditional Owners regarding heritage places identified within the PDA and surrounding area, along with any management recommendations. Where feasible, potential deviations were established around heritage places in consultation with the Traditional Owners and the route of the divergence was captured using a handheld GPS.

Further to identifying heritage concerns within the PDA, the Traditional Owners were invited to provide broader ethnographic comment regarding the PDA and surrounding areas, to discuss concerns regarding the proposed development, and to specify recommendations regarding the project and management of heritage interests within the area.

The boundaries for any ethnographic heritage places recorded during the course of the field work are defined by the physical extent of cultural values as indicated by the Traditional Owners at the time of recording. Handheld GPS units are used to capture boundary coordinates and the location of any significant features identified within the heritage places and surrounding area. As such, ethnographic heritage place boundaries are representative of the cultural knowledge held by the Traditional Owners present during the heritage assessment.

## 2.4 Post-Field Work Analysis

### 2.4.1 Heritage Report Review Process

Outcomes of the heritage research are reviewed by Heritage Link in conjunction with the Badimia Traditional Owners prior to dissemination of results to the Proponent. This includes the full and final heritage report that details the desktop and field work results. The review process ensures that culturally sensitive information is appropriately indicated, the recommendations discussed amongst the heritage team are assessed by a wider representative group and any amendments are made in accordance with the Traditional Owners' suggestions. The review process allows for Heritage Link, on behalf of the Traditional Owners, to provide Terra Rosa CRM with feedback on the report, which is subsequently taken into account during the final editing of the report. Terra Rosa CRM responds to feedback based on professional standards, and reports impartially as an independent party on the research results of heritage assessment.

# 3 DESKTOP RESEARCH

Prior to field work, desktop research was undertaken to establish an overview of previous heritage findings in the area and to forecast distribution of, or likely factors impacting, heritage places based on biogeographical features of the area.

## 3.1 AHIS Research

The boundaries of the PDAs were searched on the Aboriginal Heritage Inquiry System (AHIS) to establish the presence or absence of registered Aboriginal sites (status R) and OHPs (status L, S or I) previously catalogued by the DAA. The search revealed **no** registered Aboriginal sites and **two** OHPs within the PDAs. Status abbreviations are defined in section 2.2.

The AHIS was also searched for reports detailing the results of previous heritage surveys within the PDA. **Three** heritage reports are catalogued with the DAA as being relevant to the PDA.

The lack of registered Aboriginal sites and OHPs within the PDAs does not necessarily indicate an absence of heritage places heritage or objects within the area. Any previous heritage assessments undertaken within the area may have lacked the scope to record and register identified heritage places or heritage objects.

### 3.1.1 Summary of OHPs Intersecting the PDA

Two OHPs are catalogued with the DAA as having boundaries that intersect the PDA and are summarised in table 2, below. As the OHPs identified in the research have a 'closed' status, the site files are not currently available for public access.

*Table 2: OHPs within the PDA*

| DAA ID | Name | Classification | Status | Location |
|---|---|---|---|---|
| **24588** | MM01 | Mythological | Closed | Not available for closed sites |
| **24589** | MM02 | Mythological | Closed | Not available for closed sites |

### 3.1.2 Heritage Reports Relevant to the PDA

The heritage reports relevant to the PDA are listed in table 3.

*Table 3: Registered heritage reports relevant to the PDA*

| REGISTERED DAA REPORTS | | |
|---|---|---|
| **DAA Report ID** | **Author / Year** | **Report Title** |
| **21578** | Barrie Machin, 2000 | *Aboriginal Heritage Report on a Site Survey for Gindalbie Gold NL Minjar North Project Tenements E59/518, M 59/219,406,420, 421, 457, 458 with Widi Mob 97/72, Pandawn 96/83,Badimia WC 96/98 Claimants.* |
| **103216** | Peter Veth,Philip Moore, Celmara Pocock,1990 | *Report of archaeological and ethnographic survey of the Winddine Project, south of Yalgoo, Western Australia* |

# 4 OVERVIEW OF THE PROPOSED DEVELOPMENT AREA

## 4.1 Shu's Flat PDA

The Shu's Flat PDA is located approximately 73 km south-southeast of Yalgoo and 230 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within exploration tenement E59/1201 and measures 0.1 km².

The Shu's Flat PDA is a densely vegetated area which gently rises towards the eastern extent. The ground surface of the PDA is comprised of red hard pan alluvial deposits overlain by dense, large ironstone and laterite gibber at the eastern and western extremities, and moderate amounts of ironstone and quartz gibber throughout the remainder. The overall ground surface visibility in the PDA is relatively poor at 60%, restricted by the dense gibber and vegetation.

*Plate 3: Typical environment within Shu's Flat PDA*

The vegetation at Shu's Flat is composed of dense mixed Acacia scrub, dominated by Mulga trees less than 4 m in height. Kurara bushes, horse Mulga and Jam were also common throughout the area. The understory was sparse, comprising of small Acacia shrubs.

The Shu's Flat PDA has been impacted by anthropogenic processes to a minor level, with occasional old gridlines and light vehicle tracks being noted throughout the area. Some water erosion was also noted with sheet wash occurring down slope from east to west through the PDA.

## 4.2 Jaguar East PDA

The Jaguar East PDA is located approximately 86 km south-southeast of Yalgoo and 236 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within the area, which is situated within exploration tenement E59/1327 and measures 0.2 km².

The Jaguar East PDA is situated predominantly within a flat, open wash zone area with few distinguishing characteristics. The western portion of the PDA was gently undulating, with some minor outcropping of granite. The ground surface was consistent throughout, consisting of a hard pan red alluvial surface overlain by ironstone and laterite gravels. Sparse quartz gibber also occurred in some areas. The overall ground surface visibility was 80% in the Jaguar East PDA.

*Plate 4: Typical environment within Jaguar East PDA*

The vegetation in the PDA is characterised by an open, mixed Acacia and Eucalyptus woodland, with occasional thickets of Acacia shrubs. Mulga trees less than 6 m in height dominated the subset, while mature Eucalyptus trees, horse Mulga and Jam were also common throughout. The sparse understorey consisted predominantly of flannel bushes and immature Acacia shrubs.

The ground surface of this PDA exhibited moderate levels of erosion caused by sheet wash and occasional shallow, braided drainage channels were noted throughout. Old, overgrown gridlines transect the area, causing minimal damage to the overall integrity of the PDA.

## 4.3 Jaguar PDA

The Jaguar PDA is situated approximately 86 km south-southeast of Yalgoo and 236 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within the area, which is situated within exploration tenement E59/1327 and measures 0.09 km².

The PDA occurs on gently undulating ground with low laterite hills in the south, feeding into a well-defined, ephemeral creekline beyond the southern boundary. The ground surface within the PDA is characterised by red hard pan alluvium overlain by dense, weathered basalt gibber. Angular laterite cobbles mix with the basalt in the southern portions of the area, with occasional quartz nodules being noted throughout. The overall ground surface visibility within the Jaguar PDA was 40 % to 60 % at the time of recording. Visibility was restricted by dense vegetation and gibber within the PDA.

*Plate 5: Typical environment within Jaguar PDA*

The Jaguar PDA largely consisted of dense thickets of Acacia scrub with clearings containing mature Eucalypts. Mulga less than 4 m in height and mature Eucalyptus dominated the upperstorey, with occasional Minna Ritchie and Kurara bush also being noted. The understorey comprised of very sparse flannel bushes and seasonal tussock grasses.

A historical mining camp and shafts were noted within the central portion of the Jaguar PDA. A relatively large area had been cleared as a result of this activity and has moderately impacted the integrity of the ground surface. In addition to this, a number of old gridlines and surface trenches were noted within the PDA, as well as feral goat activity. Minor water erosion was also evident in some portions of the PDA.

## 4.4 Mug's Luck West PDA

Mug's Luck West is a small PDA measuring 0.03 km², situated approximately 88 km south-southeast of Yalgoo and 235 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within the area located on exploration tenement E59/1021.

The PDA is situated in a wash zone area, draining away from low hills to the north and north-east. A small dolerite hill is located at the far eastern extent of the PDA and as a result this portion of the PDA is overlain by dolerite cobbles and scree. In general, the ground surface at Mug's Luck West PDA is comprised of compacted red alluvial deposits overlain by fine ironstone gravels with occasional quartz gibber in the western portions and dense laterite and dolerite gibber and scree to the east. An ephemeral creek is present just beyond the southern boundary of the PDA. The overall ground surface visibility at Mug's Luck West PDA was 80 % at the time of the assessment, restricted only by the presence of a rocky mantle.

*Plate 6: Typical environment within western portion of Mug's Luck West PDA*

Vegetation within the PDA was comprised predominantly of open mixed Acacia scrub with mature York Gums. Occasional thickets of vegetation were encountered, particularly in the eastern section of the PDA. The understorey was sparse at the time of recording, consisting of occasional flannel bushes and mulla mullas.

While there was recent drilling activity noted in the vicinity of the area, no anthropogenic disturbance was noted within the PDA. Moderate disturbance had been caused to the ground surface by water run-off, particularly in the western section of the PDA. Overall, the integrity of the ground surface was high.

## 4.5 King Edward PDA

The King Edward PDA is located approximately 88 km south-southeast of Yalgoo and 235 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG propose to undertake RAB drilling within the PDA which is located on exploration tenement E59/1023 and measures 0.4 km².

The King Edward PDA is largely flat, with gently undulating ground towards the west and south-west. Low laterite outcrops were noted in the western portions of the PDA resulting in a moderately dense covering of laterite, ironstone and quartz gibber throughout this area. In general, the ground surface within the PDA is a hard pan red alluvium, overlain by fine ironstone gravels with occasional laterite gibber. The overall ground surface visibility varied considerably, with 40 % in the west and 80 % in the east. A range of low hills was visible to the south of the PDA.

*Plate 7: Typical environment within King Edward PDA*

The vegetation within the King Edward PDA consisted of fairly dense mixed Acacia scrub throughout, with occasional clearings through the central portions. Mulga dominated the upperstorey of vegetation, while occasional Minna Ritchie and mature Eucalypts were also noted. The sparse understorey comprised of flannel bushes, mulla mullas and Dianella grasses.

The integrity of the ground surface at this PDA was generally high, with occasional light vehicle tracks being noted. Erosion caused by sheet wash was evident, particularly in the central eastern portion of the PDA.

## 4.6 St Patrick PDA

The St Patrick PDA is located approximately 88 km south-southeast of Yalgoo and 235 km east-southeast of Geraldton in the Mid West region of Western Australia. It is 0.1 km² in size and is situated on exploration tenement E59/1327. MJG proposes to undertake RAB drilling within this PDA.

The St Patrick PDA is situated largely on flat ground, with low laterite hills in the north-eastern portion. The ground surface is comprised of red, hard pan alluvium overlain by moderate quantities of coarse ironstone, laterite and quartz gibber, with the volume of laterite scree increasing around the low hills in the north-east. The overall ground surface visibility varies considerably across the PDA, with 40 % in the north-eastern section and 80 % elsewhere.

*Plate 8: Typical environment within St Patrick PDA*

The vegetation in the northern parts of the St Patrick PDA is characterised by dense mixed Acacia scrub, with Mulga dominating the subset. Mature Eucalypts were common throughout the remainder of the PDA, occurring mostly in clearing amongst the Acacia scrub. Flannel bushes, mulla mullas and *Dianella* grasses were also noted within the PDA.

An area of historical mining activity was noted within the St Patrick PDA, with multiple old mine shafts and camps being encountered just north of the centre of the area. A large area, measuring approximately 100 m² had been cleared, which has caused substantial damage to the ground surface. Numerous old grid lines were also noted. Further to this, water erosion caused by sheet wash has also decreased the integrity of the ground surface within this PDA.

*Plate 9: Example of historical mining within the St Patrick PDA*

## 4.7 Bentley (Sons of Erin) PDA

The Bentley (Sons of Erin) PDA is located approximately 88 km south-southeast of Yalgoo and 237 km east-southeast of Geraldton in the Mid west region of Western Australia. MJG proposes to undertake RAB drilling within this PDA, which is located within exploration tenement E59/1327 and measures 0.2 km².

Low, undulating laterite hills dominate the northern extent of this PDA, which slopes gently down towards the south. Occasional low, isolated outcrops of granite occur in the southern portions. Water tends to drain towards the south, indicated by the presence of well-defined, braided drainage lines throughout the area. The ground surface within this PDA is composed predominantly of red, soft pan alluvial deposits overlain by moderate amounts of ironstone, laterite and quartz mixed gibber. The terrain in the northern portions of the PDA is significantly rockier than in the south, with weathered laterite eroding from the low hills. The overall ground surface visibility at Bentley (Sons of Erin) PDA was considered to be 60 % to 80 % owing to the thick vegetation and rocky mantle, particularly in the northern portions.

*Plate 10: Typical environment within Bentley (Sons of Erin) PDA*

The vegetation in the Bentley (Sons of Erin) PDA is predominantly comprised of mixed Acacia scrub increasing in density towards the north. Mulga, Jam and Kurara bushes were the most common species noted, with mature Eucalypts occurring frequently in the central portion of the PDA. Occasional native pine trees and Karrajongs were also noted throughout. The understorey was very sparse, with flannel bushes and Dianella grasses occurring throughout.

Occasional old grid lines and drill pads were identified within the PDA. These have resulted in minimal impacts to the overall integrity of the ground surface in this area. It is noted that the area is prone to water erosion caused by sheet wash from the hills in the north.

## 4.8 New Target 5 PDA

The New Target 5 PDA is located approximately 97 km south-southeast of Yalgoo and 233 km east-southeast of Geraldton in the Mid west region of Western Australia. It is situated 3 km to the west of Mt Mullagine, and is accessed via the Waridar road and old airstrip. The PDA measures 0.2 km² and is situated within mining tenements M59/460 and M59/425. MJG proposes to undertake RAB drilling within this PDA.

The New Target 5 PDA is characterised by a series of low, undulating laterite and granite hills with flat, open areas interspersed throughout. A low laterite breakaway was noted in the central north-eastern portion of the PDA. The ground surface was comprised predominantly of red hard pan alluvial deposits overlain by fine ironstone gravels in the north. Laterite and granite gibber occur throughout the remainder of the PDA, increasing in size and quantity around the low hills. The overall ground surface visibility within the New Target 5 PDA was considered to be 60 %, limited by dense vegetation and a very rocky surface.

*Plate 11: Typical environment within New Target 5 PDA*

The vegetation within the PDA consists predominantly of dense, mixed Acacia scrub of Mulga and Jam in the upperstorey and a sparse undertsorey of Acacia shrubs, *Solanum* spp and flannel bushes. Occasional clearings were noted around mature Eucalypts in water catchment basins throughout the PDA.

The PDA was largely intact with occasional old grid lines and some bull dozed areas causing a moderate amount of disturbance to the ground surface integrity. Water erosion was evident, with shallow drainage lines occurring throughout the low-lying areas coming off the hills.

## 4.9 Wolf / New Target 8 PDA

The Wolf / New Target 8 PDA is situated in close proximity and to the north of New Target 5 PDA. Wolf/New Target 8 PDA is approximately 97 km south-southeast of Yalgoo and 233 km east-southeast of Geraldton in the Mid west region of Western Australia. It is situated to the immediate west of Mt Mullagine, and is accessed via the Waridar road and old airstrip. The PDA measures 1.0 km² and is situated within mining tenements M59/387 and M59/425. MJG proposes to undertake RAB drilling within this PDA.

The Wolf / New Target 8 PDA is characterised by a series of low, undulating laterite and granite hills in the central and southern portions, with quartz blows occurring these areas. The northern portion of the PDA is characterised by low-lying flood zones, draining from Mt Mullagine to the northeast. The ground surface within the wash zones is comprised soft pan red alluvial deposits overlain by fine ironstone gravels. The remainder of the PDA is very rocky with dense ironstone, laterite, granite and quartz gibber and scree overlying hard pan red sediment. The overall ground surface visibility within the PDA ranges from 70 % in the northern sections, reduced by dense vegetation, to 60 % in the rockier areas to the south.

*Plate 12: Disturbance and environment in central portion of Wolf/New Target 8 PDA*

The vegetation within the PDA is largely composed of moderately dense mixed Acacia scrub dominated by Mulga, Jam and Kurara in the upperstorey. Stands of mature *Eucalypts* were common, particularly in clearings which occurred throughout the PDA. Occasional

Karrajongs, Sandalwood and Native Pines were noted, particularly in the south-eastern portion of the PDA. Flannel bushes, *Solanum* spp and small Acacia shrubs comprised the sparse understorey.

The Wolf / New Target 8 PDA was moderately disturbed by old grid lines and light vehicle tracks. A pit measuring roughly 15 m by 5 m was noted in the central portion of the PDA, alongside the main access track. Heavy water erosion was evident in this PDA, with sheet wash from Mt Mullagine causing moderate damage to the integrity of the land surface.

## 4.10 New Target 15 PDA

The New Target 15 PDA is located 1 km south of the Wolf/New Target 8 PDA, 100 km south-southeast of Yalgoo and 233 km east-southeast of Geraldton in the Mid west region of Western Australia. It is situated to the southwest of Mt Mullagine, and is accessed via the Waridar road and old airstrip. MJG proposes to undertake RAB drilling within the PDA, which situated within mining tenement M59/387 and is 0.6 km² in size.

The New Target PDA is largely undulating, with a series of low laterite and granite hills occurring throughout the central and northern portions of the PDA. A series of large quartz outcrops, orientated roughly north to south, occur through the centre of the PDA. Some of these outcrops are of high lithic quality and show evidence of quarrying by past Aboriginal inhabitants. The southern portion of the PDA slopes gently down towards the south and is a characteristically open wash zone. The ground surface within the PDA is comprised of hard pan red alluvial deposits, overlain by very dense mixed gibber and scree in the central and northern portions, and soft pan red alluvium overlain by fine ironstone gravels in the south. The overall ground surface visibility ranges from 80 % in the south and 50 % in the central and northern portions.

*Plate 13: Typical environment within New Target 15 PDA*

The vegetation within the New Target 15 PDA is very dense mixed Acacia scrub in the northern portions around the hills, and opens out into a *Eucalyptus* and *Acacia* woodland in the south. Mulga and Jam dominate the uppestorey in the northern portion, with *Solanum spp.* and flannel bushes comprising the sparse understory. Sandalwood trees were noted throughout the PDA.

The overall integrity of the land surface within the New Target 15 PDA is very good, with only minor impacts caused by very occasional old grid lines and evidence of Sandalwood cutters passing through in historical times. Some water erosion was noted in the southern portions of the PDA; however, this does not seem to have had a significant impact of the overall integrity of the ground surface.

## 4.11 Summary of Ethnographic Consultation regarding the PDAs

The PDAs were described as transitory areas most likely occupied by individuals and groups navigating to permanent camp sites located near Ninghan, Warrada, Karara and Gilson station to the south, north and south west of the PDAs.

The Badimia Traditional Owners stressed the importance of surrounding areas where numerous *gnamma* holes, permanent springs and evidence of permanent camping are well known. They stated that activity found within the PDAs was evident of very short periods of occupation, lasting no longer than a few days.

The Badimia Traditional Owners referred to the presence of Malleefowl that would have been hunted traditionally. They noted the area is well known for the presence of the bird and recalled hunting and eating the bird themselves when young. They accounted the method of gathering Malleefowl eggs and methods of cooking the eggs.

With the exception of newly identified Heritage Place NT15AS13-01 (see field work results), there were no specific ethnographic sites of importance in the PDA's. However, the Traditional Owners did note the use of various plant species in the areas commonly utilised by their ancestors and concurrently utilised. One such plant was the Kurrajong tree found in the Wolf / NT 8 PDA which can be used to obtain water. The tree is manipulated by digging up the roots and then being chewed on to gain moisture.

# 5 FIELD WORK RESULTS

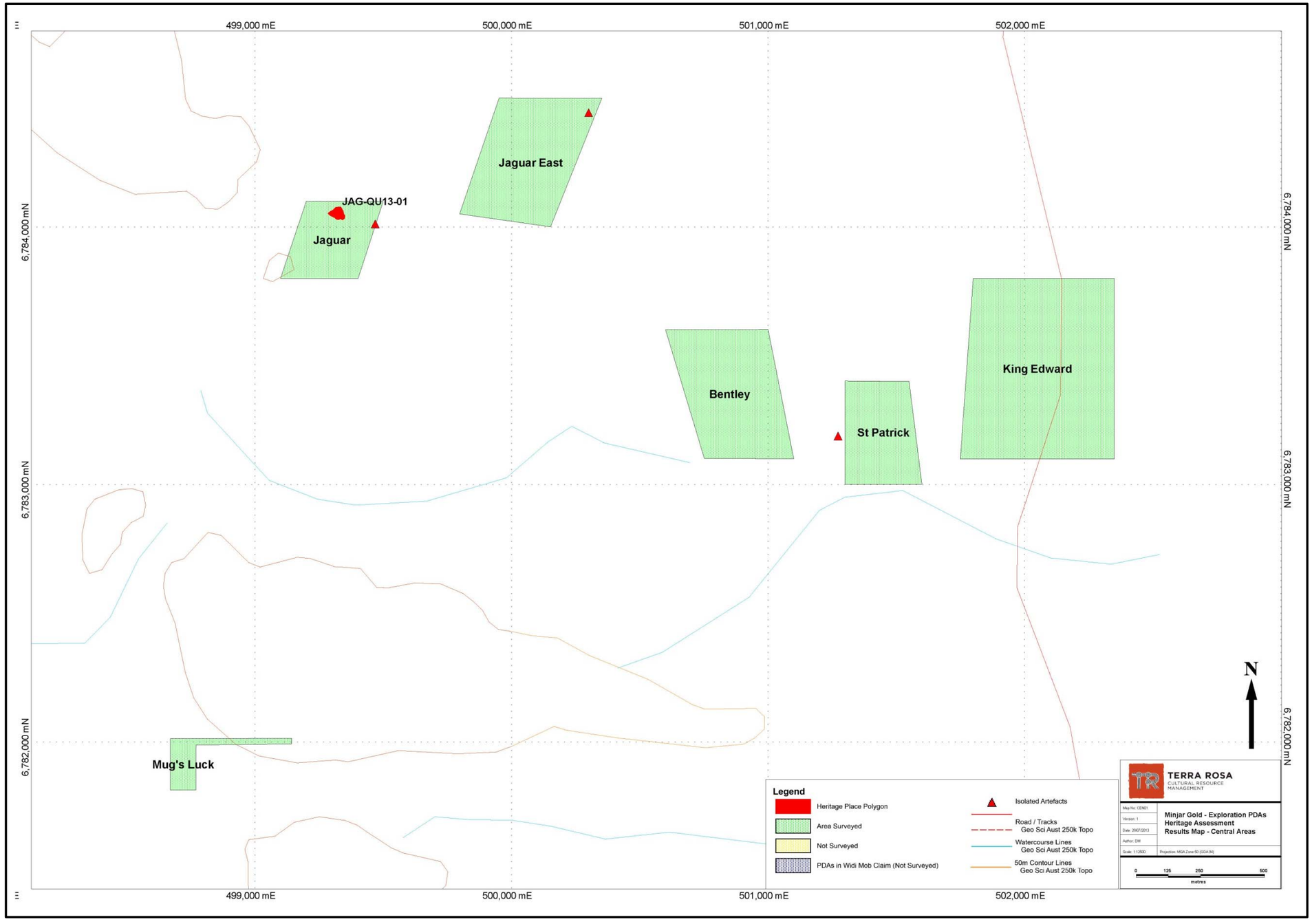
In July 2013, representatives of the Badimia Traditional Owners, in conjunction with Terra Rosa CRM conducted a site avoidance assessment for archaeological and ethnographic sites over 10 PDAs for MJG. The results of the field work are as follows:

- A total of **six** newly identified heritage places were recorded to site avoidance standard (see table 4 and section 5.1, below); and
- A total of **51** isolated objects were identified within the 10 PDAs (see Section 6.2)

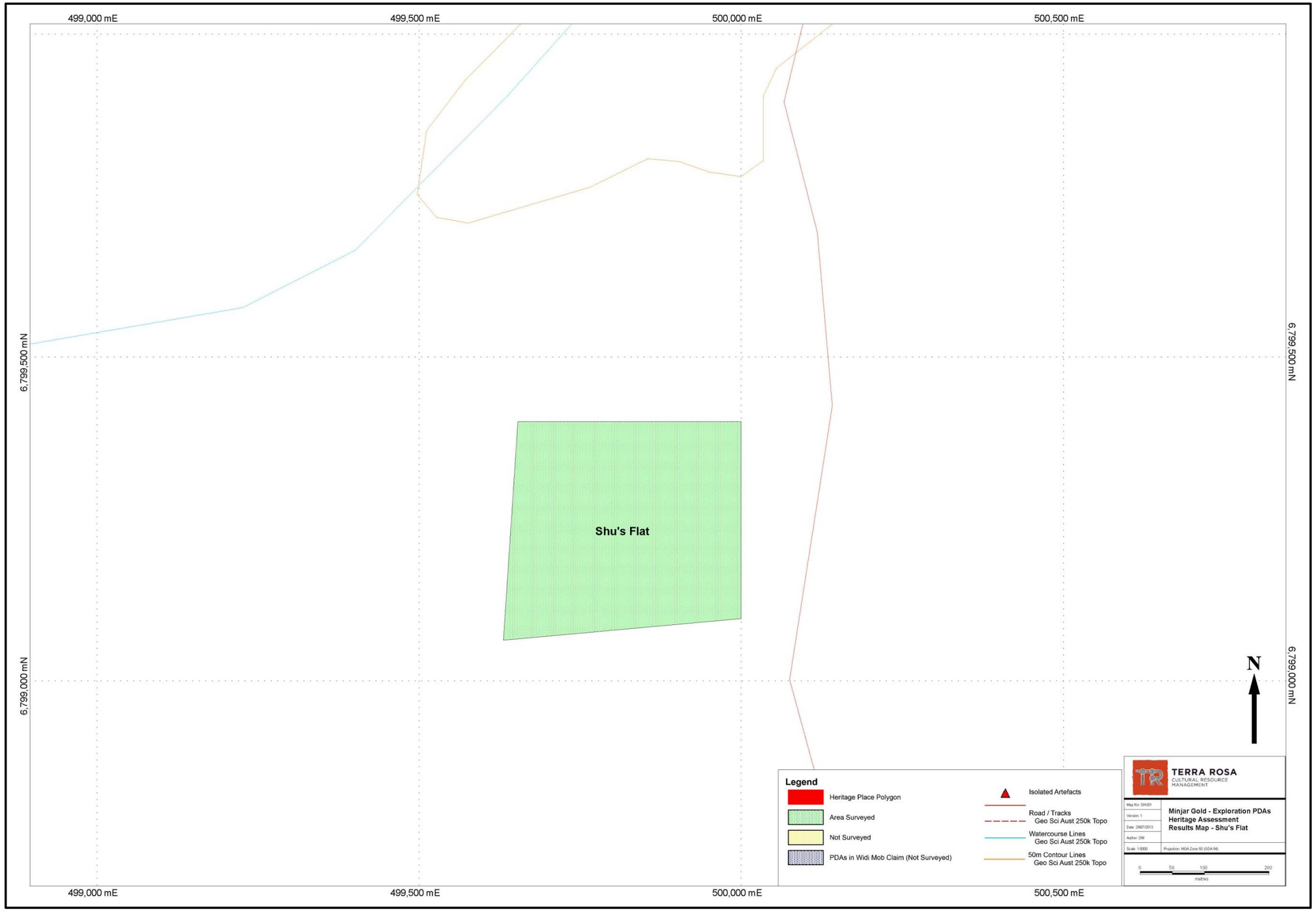
*Table 4: Summary of newly identified heritage places*

| Heritage Place Code | Type | Central Coordinate | PDA |
|---|---|---|---|
| **JAGQU13-01** | Quarry | 499323 mE / 6784058 mN | Jaguar |
| **WLFST13-01** | Scar tree | 496531 mE / 6770542 mN | Wolf/New Target 8 |
| **NT15QU13-01** | Quarry | 495794 mE / 6769094 mN | New Target 15 |
| **NT15AS13-01** | Artefact scatter | 495902 mE / 6768283 mN | New Target 15 |
| **NT13AS13-02** | Artefact scatter | 495963 mE / 6768550 mN | New Target 15 |
| **NT15AS13-03** | Artefact scatter | 495814 mE / 6768942 mN | New Target 15 |

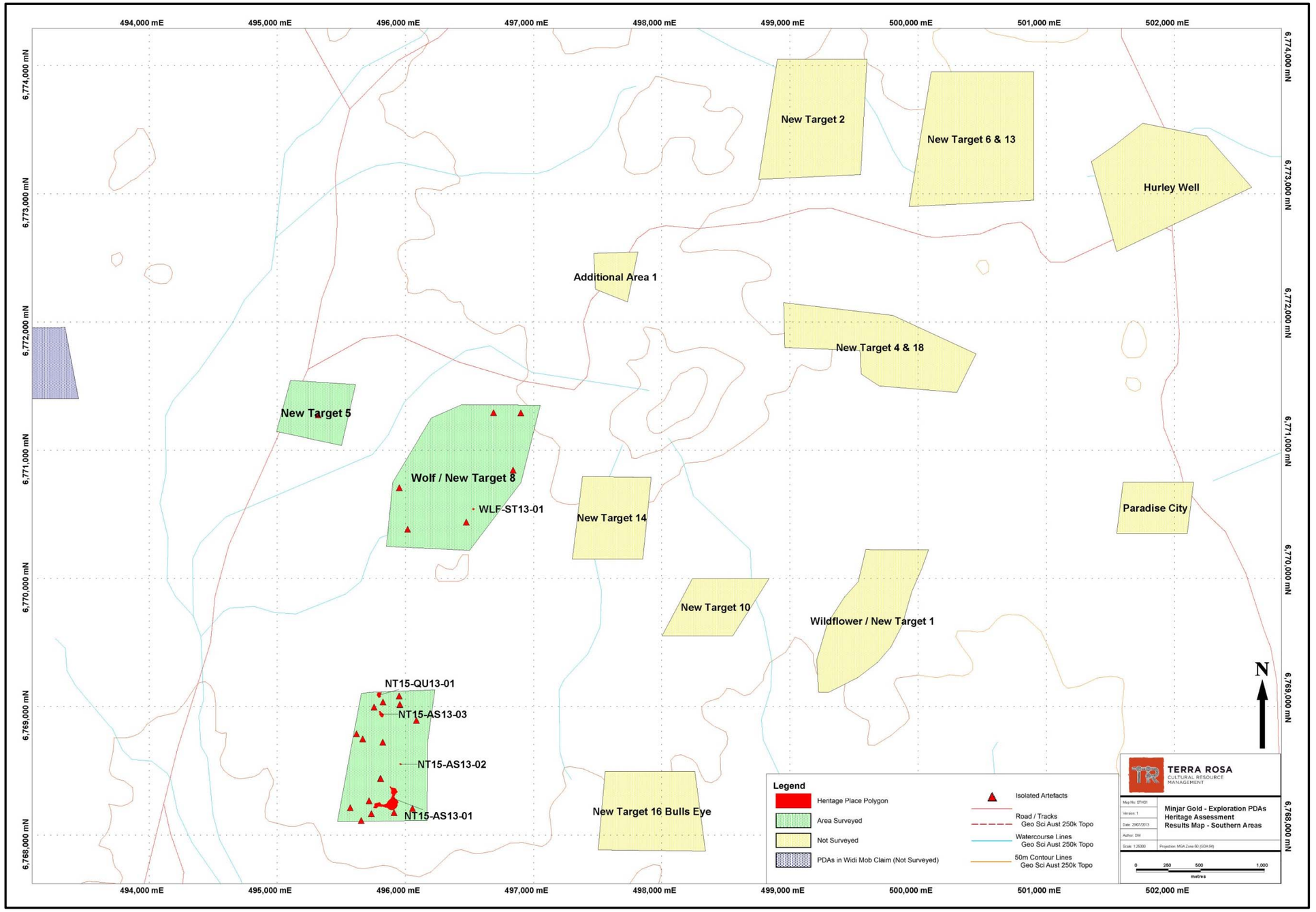
*Map 4: Central PDAs results overview*



*Map 5: Shu's Flat PDA result overview*



*Map 6: Southern PDAs results overview*



## 5.1 Heritage Places Identified within the PDA

### 5.1.1 JAGQU13-01 (Quarry)

#### *5.1.1.1 Location and environment*

JAGQU13-01 is located in the central-northern portion of the Jaguar PDA. The heritage place is situated on a gentle slope with the ground surface comprised of compacted red alluvial deposits overlain by dense basalt, laterite and dolerite gibber. Weathered basalt was noted to be eroding out of the ground surface throughout the greater area. The overall ground surface visibility was 60 %, mainly restricted by the presence of a dense rocky mantle and thick vegetation.

JAGQU13-01 is surrounded by dense mixed Acacia scrub, characteristic of vegetation throughout the wider area. Mature Mulga trees less than 4 m in height dominate the upperstorey, with occasional Sandalwood trees and Kurara bushes being noted throughout. The sparse understorey is comprised of small Acacia shrubs and flannel bushes. Large, mature *Eucalypts* were present to the south of JAGQU13-01.

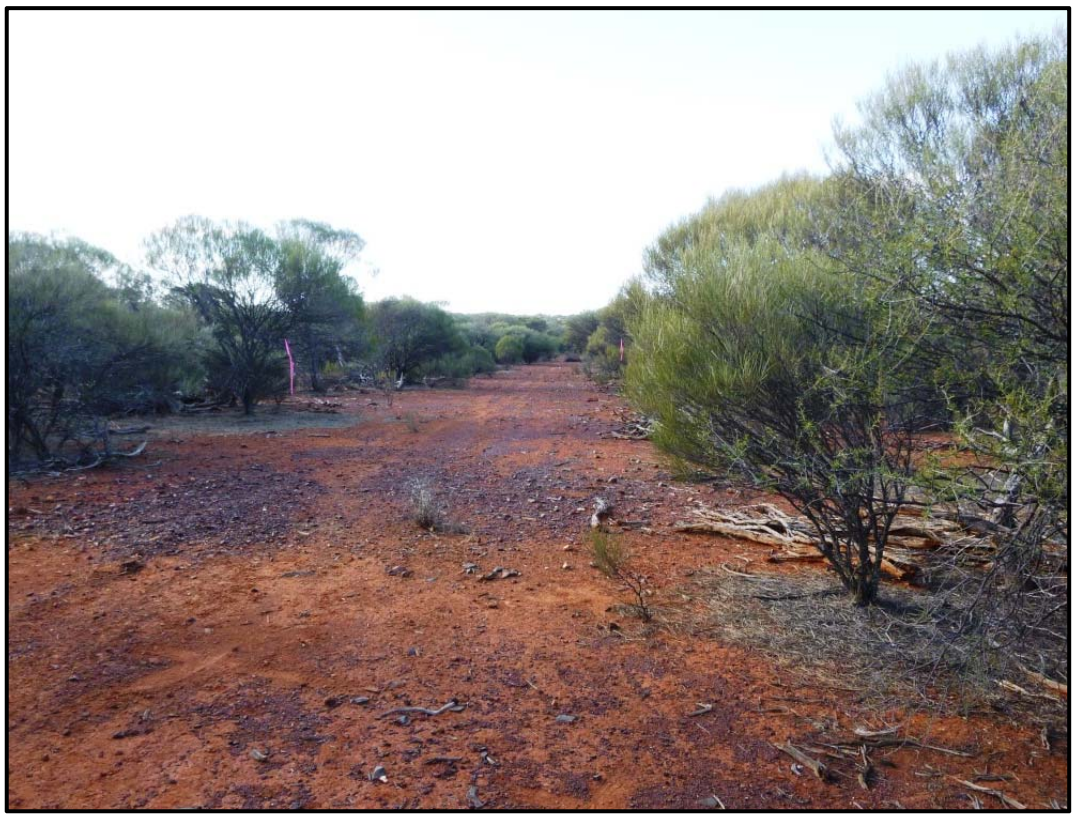
*Plate 14: View west from eastern boundary of JAGQU13-01*

#### *5.1.1.2 Condition and integrity*

The ground surface integrity of JAGQU13-01 was considered to be moderate at the time of recording. One old light vehicle track intersects with the heritage place along the western

boundary, while heavy ground disturbance caused by historical mining activity may have truncated JAGQU13-01 to the south.

*Plate 15: Vehicle track intersecting with western portion of JAGQU13-01*



### *5.1.1.3 Recording methodology and justification of boundary*

JAGQU13-01 is a small, moderately dense quarry with maximum dimensions of 60 m east to west and 50 m north to south. The heritage place covers a total area of 2,172 m².

The heritage place boundaries were obtained by conducting an intensive pedestrian inspection of the area, with the Traditional Owners and heritage consultants marking out the extent of cultural materials on handheld GPS units and identifying prominent natural and cultural features within and surrounding the JAGQU13-01. Boundary nodes were then demarcated around these where fitting, with the boundaries largely defined by the extent of artefactual materials. Each node has been marked with pink and black heritage flagging tape.

Four 5 m by 5 m sample squares were recorded within the heritage place boundary. This totalled a sampled area of 100 $m^2$, representing 4.6 % of the total area. The sample squares were randomly positioned in order to accurately capture the varying artefact densities across the heritage place and to not over-represent or bias the total density. This methodology resulted in a representative sample of the artefact assemblage being recorded. Every visible surface artefact within the sample squares was recorded to site avoidance standards.

*Plate 16: Terra Rosa CRM consultants recording a sample square at JAGQU13-01*

Numerous photographs were taken for the duration of the heritage place assessment in order to create an accurate pictorial record. Photographs of in situ and unusual examples of artefacts were also captured.

#### *5.1.1.4 Fabric*

JAGQU13-01 is a discrete, medium-sized heritage place consisting of a basalt quarry. While the broader area is overlain by coarse, low-grade basalt, the source material utilised is of a higher quality and has been selected for this reason.

The recorded artefact assemblage at JAGQU13-01 was comprised overwhelmingly of basalt, with one quartz and one dolerite artefact also being noted. Of the 33 artefacts recorded 56 % were broken flakes (n=19), 21 % were complete flakes (n=7) and 12 % were cores (n=4). A further 9 % of the assemblage exhibited retouch or were formal tools. The presence of formal, retouched tools indicates that the raw source material was not only being quarried here, but it was also being worked and refined in situ. This is unusual, as quarry sites are typically exploited for raw material and the material is then taken elsewhere for refining and use.

*Plate 17: Artefact in situ at JAGQU13-01*


Based on the recorded sample, it can be extrapolated that the minimum density of archaeological material at JAGQU13-01 is 0.12 / m², or a total of 260 artefacts across the surface of the heritage place. The maximum density of artefacts is 0.56 / m², or 1216 across the surface of the heritage place. Across the whole area of JAGQU13-01, the average density of material is 0.33 / m² or a total of 716. The latter estimate is likely to be the most accurate based on a visual inspection of the site.

#### *5.1.1.5 Application of the Act*

Newly identified JAGQU13-01 is a quarry which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It is represents a place where the ancestors of the Badimia Traditional Owners undertook activities associated with traditional cultural life. Raw lithic material was sourced, quarried and modified here as people travelled through the landscape.

Quarry sites in general are important as they provide information about the types of material preferred for use by Aboriginal people in the past. They are also able to provide information relating to trade routes and migratory routes, as stone tools can be sourced back to their original location. Further to this, quarry sites are not common in the broader region, with only 10 % of all Registered Sites and OHPs within 100 km of the PDA being quarry sites. This makes them quite rare in the broader context.

#### *5.1.1.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding JAGQU13-01:

- JAGQU13-01 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place JAGQU13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place JAGQU13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 5.1.2 WLFST13-01 (Scar tree)

#### *5.1.2.1 Location and environment*

Newly identified heritage place WLFST13-01 is situated in the south-eastern portion of the Wolf / New Target 8 PDA on an open wash zone area, which slopes down towards the south and west. A low hill is visible to the south-southwest of the heritage place. The ground surface on which the scar tree is situated in comprised of crusted red alluvial deposits indicative of water soakage, with subcropping, and eroded laterite. Moderate amounts of ironstone and laterite gibber were also noted.

The vegetation surrounding WLFST13-01 is a relatively open mix of Acacia and Eucalyptus woodland. Mulga and Jam dominates the subset, while Sandalwood, Kurara and Native Willow were also noted in the vicinity. Low flannel bushes comprised the sparse understorey.

*Plate 18: Environmental context of WLFST13-01*

#### *5.1.2.2 Condition and Integrity*

The tree on which the cultural scar was identified is dead, but in relatively good condition. There were obvious signs of insect damage; however, the scar itself is still intact.

#### *5.1.2.3 Recording methodology and justification of boundary*

WLFST13-01 was identified during a pedestrian assessment of the Wolf / New Target 8 PDA. Once determined to be a scar of cultural origin, photographs and measurements were taken. The measurements included length, width and depth of the scar, height from the base of the tree and circumference of the tree. Photographs were taken of the whole tree in its environmental context, as well as close up images of the scar itself.

A small boundary was flagged around the tree to a maximum distance of 5 m. The placement of flagging tape was largely dependent on the presence of vegetation on which to tie it to.

*Plate 19: Detail of cultural scar*

### *5.1.2.4 Fabric*

WLFST13-01 is a cultural scar located on a large, dead *Eucalypt* of unknown species. The scar is situated 0.77 m from the base of the tree and measures 0.41 m in length by 0.13 m in width by 0.08 m in diameter. It is located in a small clearing in which no other cultural objects were identified.

The scar is in relatively good condition, with some insect damage to the dry face. The large bulge around the scar indicates that the scar was originally much larger than is currently visible, indicating that the tree continued to grow for a substantial period of time after the

removal of the bark object. The shape of this particular scar indicates use as either a shield or a large dish for carrying infants, food or water.

The Badimia Traditional Owners present during the heritage assessment stated that the scar would have been created to make wooden tools or objects, such as food or water dishes. The Traditional Owners asserted that the heritage place represents a short term, temporary camping place, possibly used during a single occupation event. They stated that the areas would have been temporarily occupied while groups or individuals travelled to permanent camping spots located near Ninghan, Warrada, Karrara and Gilson station.

#### *5.1.2.5 Application of the Act*

Newly identified WLFST13-01 is a scar tree which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a heritage place where the ancestors of the Badimia Traditional Owners modified an object for use in traditional cultural life. It is possible that the object manufactured from the bark of this tree was used for ritual, ceremonial, combat or mundane purposes.

Scar trees are very rare in the inland Mid West, with only three modified trees being represented on the Register of Sites within a 100 km box around the PDA. This constitutes less than 2 % of all heritage places listed on the Register for this area. This fact increases the significance and importance of this heritage place, as it is an unusual occurrence in this region.

#### *5.1.2.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding WLFST13-01:

- WLFST13-01 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place WLFST13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place WLFST13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 5.1.3 NT15QU13-01 (Quarry)

#### *5.1.3.1 Location and environment*

Newly identified quarry NT15QU13-01 is situated in the north-western portion of the New Target 15 PDA in an area characterised by low, undulating laterite and granite hills with frequently occurring quartz outcrops. The majority of the quartz in the vicinity is low grade, poor quality material and has not been utilised as a raw source material.

No major water sources were noted in the vicinity of NT15QU13-01; however, multiple ephemeral drainage lines transect the area. The ground surface at NT15QU13-01 is characteristically red soft pan alluvial deposits overlain by very dense quartz, ironstone and laterite gibber. The overall ground surface visibility was considered low at 40 %, due to the rocky nature of the ground surface.

*Plate 20: Environmental context of NT15QU13-01*

NT15QU13-01 is situated within a moderately dense, mixed *Acacia* woodland dominated by Mulga and Jam less than 5 m in height, with mature *Eucalypts* less than 15 m in height and Kurara bushes scattered throughout. Occasional Sandalwood trees were noted throughout NT15QU13-01 and in the general vicinity. *Solanum* spp and flannel bushes comprise the sparse understorey.

#### *5.1.3.2 Condition and Integrity*

NT15QU13-01 is considered to be in very good condition, with no major anthropogenic impacts being noted. Due to its position on a slight slope, the integrity of the ground surface within NT15QU13-01 is considered to be moderate. This has caused some minor

redeposition of archaeological material by water activity. Despite this, the material has remained relatively contained due to the nature of the vegetation.

#### *5.1.3.3 Recording methodology and justification of boundary*

NT15QU13-01 is a small, dense quartz quarry with maximum dimensions of 35 m east to west and 40 m north to south. The heritage place covers a total area of 889.42 m².

The boundaries were obtained by conducting an intensive pedestrian inspection of the area, with the Traditional Owners and heritage consultants marking out the extent of cultural materials on handheld GPS units and identifying prominent natural and cultural features within and surrounding the site. Boundary nodes were then demarcated around these where fitting, with the boundaries largely defined by the extent of artefactual materials. Each node has been marked with pink and black heritage flagging tape.

*Plate 21: Glynn Fogarty helping establish the site boundary*

One 5 m by 5 m sample square was recorded within the site boundary. This totalled a sampled area of 25 m², representing 2.8 % of the total site area. The sample square was randomly positioned in order to avoid bias in the gathering of data. This methodology resulted in a representative sample of the artefact assemblage being recorded. Every visible surface artefact within the sample square was recorded to site avoidance standards.

Numerous site photographs were taken for the duration of the heritage place recording in order to create an accurate pictorial record. Photographs of in situ and unusual examples of artefacts were also captured.

### *5.1.3.4 Fabric*

Newly identified Heritage Place NT15QU13-01 is a small, discrete quarry located at the base of a low laterite hill. The wider area in which the heritage place is situated is characterised by numerous outcrops of quartz and the quartz scree eroding from these. This heritage place represents an area of high quality quartz which has been extensively utilised and quarried as a source of raw material for tool manufacture.

A total of 69 artefacts were recorded as part of the sampled assemblage. Of these, 52 % are manufactured from quartz, while the remaining 48 % are manufactured from crystal quartz. Broken flakes and flake fragments were the most common artefact type, comprising 48 % (n=33) of the total recorded assemblage, while complete flakes constituted 35 % (n=24) and cores constituted 17 % (n=12). These figures are consistent with typical waste flake to core ratios at quarry sites. No formal tools were identified within the heritage place, while two flakes of dolerite were identified.

*Plate 22: Crystal quartz artefacts in situ at NT15QU13-01*

*Plate 23: Quartz artefacts in situ at NT15QU13-01*

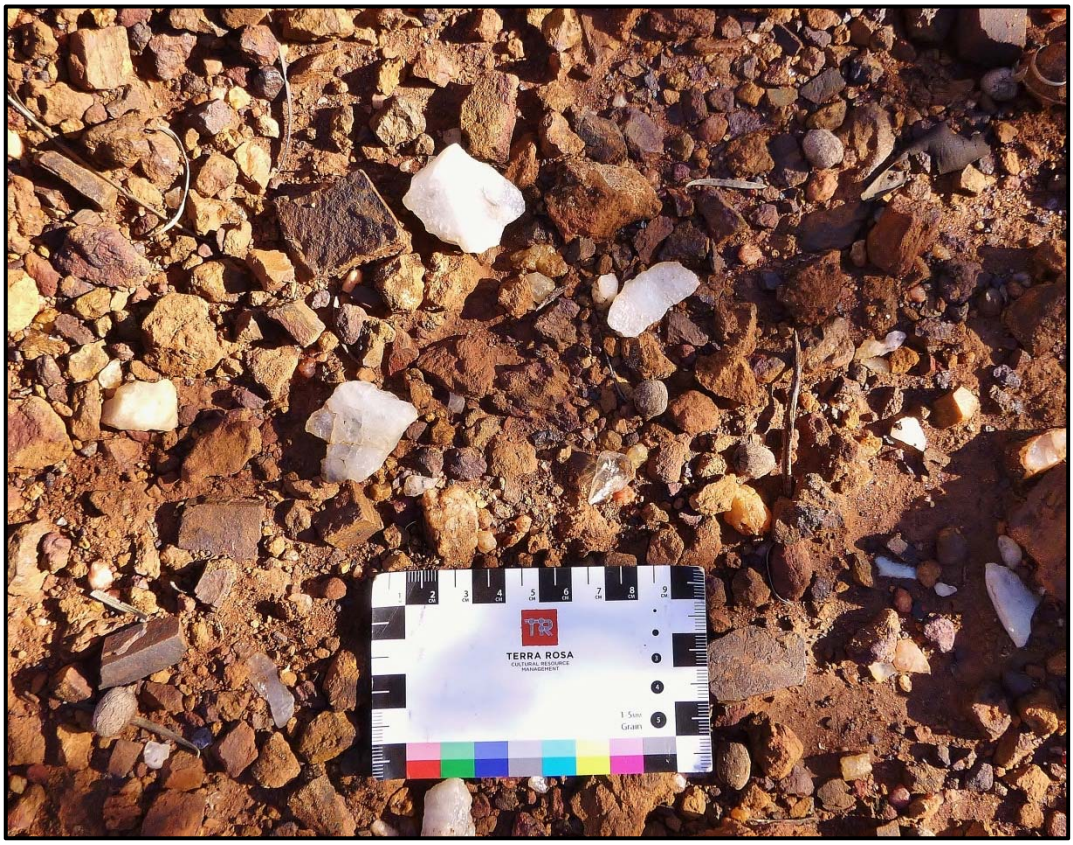



*Plate 24: Dolerite flake in situ at NT15QU13-01*

Based on the results of the sample, it can be extrapolated that the average density of artefacts at NT15QU13-01 is 2.76 / m² or a total of 2455 artefacts across the surface of the heritage place. Based on the visual inspection of NT15QU13-01, this is likely to be a low estimate of the actual number of artefacts present here.

#### *5.1.3.5 Application of the Act*

Newly identified NTQU13-01 is a quarry which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It is represents a heritage place where the ancestors of the Badimia Traditional Owners undertook activities associated with traditional cultural life. Raw lithic material was sourced, quarried and modified here as people travelled through the landscape. Being a quartz quarry may also imbue a high level of significance as many groups associate this material with ritual and ceremonial activity.

Quarry sites in general are important as they provide information about the types of material preferred for use by Aboriginal people in the past. They are also able to provide information relating to trade routes and migratory routes, as stone tools can be sourced back to their original location. Further to this, quarry sites are not common in the broader region, with only 10 % of all Registered Sites and OHPs within 100 km of the PDA being quarry sites. This makes them quite rare in the broader context.

#### *5.1.3.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT15QU13-01:

- NT15QU13-01 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT15QU13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place NT15QU13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 5.1.4 NT15AS13-01 (Artefact scatter and water source)

#### *5.1.4.1 Location and environment*

Newly identified artefact scatter NT15AS13-01 is located in the central southern portion of the New Target 15 PDA on a relatively open wash zone which slopes gently down towards the south. Low, rocky laterite hills occur within the northern extent of the boundary of the heritage place.

The ground surface of NT15AS13-01 is characterised by soft pan red alluvial deposits overlain by fine ironstone gravels in the south and hard pan red alluvium overlain by dense laterite, ironstone and dolerite gibber and scree in the north. The overall ground surface visibility varies across the heritage place, with 80 % visibility in the south and 60 % in the north, directly affected by the density of the rocky ground cover.

*Plate 25: Environmental context of southern portion of NT15AS13-01*

*Plate 26: Environmental context of northern portion of NT15AS13-01*

NT15AS13-01 is situated within a moderately dense, mixed Acacia woodland dominated by Mulga, Jam and Kurara bush in the north, with mature *Eucalypts* less than 15 m in height occurring in the large clearings in the southern portions. Occasional Sandalwood trees were noted in the general vicinity. *Solanum* spp, small Acacia shrubs and flannel bushes comprise the sparse understorey.

### *5.1.4.2 Condition and Integrity*

NT15AS13-01 is in relatively good condition, with the exception of a single, light vehicle track which transects the northern portion of the heritage place. This track is well established and was used to access the area. Further to this some minor redeposition of archaeological material is possible from water erosion in the southern portions of the heritage place.

### *5.1.4.3 Recording methodology and justification of boundary*

NT15AS13-01 is a large, dispersed artefact scatter containing two *gnamma* holes. The maximum dimensions of the heritage place are 195 m east to west and 190 m north to south, covering a total area of approximately 1.13 ha.

The site boundaries were obtained by conducting an intensive pedestrian inspection of the area, with the Traditional Owners and heritage consultants marking out the extent of cultural materials on handheld GPS units and identifying prominent natural and cultural features within and surrounding the site. Boundary nodes were then demarcated around these where fitting, with the boundaries largely defined by the extent of artefactual materials. Each node has been marked with pink and black heritage flagging tape.

Ten 5 m by 5 m sample squares were recorded within the site boundary. This totalled a sampled area of 250 $m^2$, representing 2.2 % of the total site area. The sample squares were randomly positioned in order to accurately capture the varying artefact densities across the site and to not over-represent or bias the total site density. This methodology resulted in a representative sample of the artefact assemblage being recorded. Every visible surface artefact within the sample squares was recorded to site avoidance standards.

Numerous site photographs were taken for the duration of the heritage place recording in order to create an accurate pictorial record. Photographs of in situ and unusual examples of artefacts were also captured.

#### *5.1.4.4 Fabric*

Newly identified heritage place NT15AS13-01 is a large, dispersed artefact scatter and water source comprised of a mixed lithology scatter and two *gnamma* holes. It is situated predominantly within a low-lying catchment area prone to holding water, although there is relatively little evidence of displacement caused by sheet wash. An ephemeral, *Eucalypt*-lined creek is present to the south of the heritage place, and two *gnamma* holes provide an ephemeral water source.

*Gnamma* hole 1 (see plate 26) is a large, deep gnamma hole measuring 0.92 m in length by 0.73 m in width by 0.40 m in diameter. It is situated in a low laterite outcrop at the northern end of NT15AS13-01. *Gnamma* hole 2 (see plate 27) is very small in comparison to *gnamma* hole 1, measuring only 0.30 m in length by 0.22 m in width by 0.12 m in diameter. *gnamma* hole 2 is located at the northernmost extremity of NT15AS13-01.

*Plate 27: Gnamma hole 1, NT15AS13-01*

*Plate 28: Gnamma hole 2, NT15AS13-01*

A total of 53 artefacts were recorded within the sample at NT15AS13-01. Of these, 81 % were manufactured from quartz (n=43), while 15 % were manufactured from crystal quartz (n=8). Banded Iron Formation (BIF) and granite both represented 2 % of the overall recorded assemblage, with one artefact of each being identified. Broken flakes and flake fragments were the most common artefact type, representing 77 % of the total assemblage (n=41). Complete flakes represented 11 % of the assemblage (n=6), while cores and retouched pieces each constituted 6 % (n=3). The three retouched pieces were scrapers, which indicate activities such as food preparation or other activities associated with daily life.

Based on the results of the recorded sample, it can be extrapolated that the minimum artefact density across NT15AS13-01 is 0.04 / m² or a total of 251 artefacts across the whole heritage place. The maximum artefact density is 0.68 / m² or a total of 7672.44 artefacts across the heritage place, while the average artefact density is 0.212 / m² or a total of 2392 artefacts across the surface of the heritage place. The latter estimation is likely to be the most accurate, based on the observed density of artefacts at NT15AS13-01.

*Plate 29: Artefacts in situ at NT15AS13-01*


*Plate 30: Quartz flake in situ at NT15AS13-01*

#### *5.1.4.5 Application of the Act*

Newly identified NT15AS13-01 is an artefact scatter and two *gnamma* holes which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a heritage place in which the ancestors of the Badimia Traditional Owners camped and undertook activities directly associated with traditional cultural life.

The *gnamma* holes present within NT15AS13-01 hold significance for the Badimia Traditional Owners because of the scarcity of water within the PDA and surrounding vicinity. The holes were utilised to collect rainwater, which is viewed as significant by the Traditional Owners. They are also physical representations of connection to country, illustrating the past occupation of the area by ancestors. The holes were specifically used to collect water for drinking and attracting animals to the area for hunting. During the field work, the Badimia Traditional Owners cleaned the *gnamma* holes of debris and dirt, continuing traditional practices on country. The heritage team revisited the PDA after rain and the Traditional Owners noted that animals such as kangaroos, Malleefowl, emu and goats would have visited the water source. They stated that the two *gnamma* holes would have been used as resting places while travelling, with areas near by being occupied for one to two days.

While it is not possible to determine how many *gnamma* holes are on the Register within 100 km of the PDA due to labelling issues, it is the authors' experience that *gnamma* holes of this size located within artefact scatters are quite rare in the region. This, combined with the level of importance attributed to *gnamma* holes by the Badimia Traditional Owners increases the significance of this heritage place to being of a high level of significance and importance.

#### *5.1.4.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT15AS13-01:

- NT15AS13-01 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT15AS13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately;
- It is recommended that while the pre-existing access track that intersects with NT15AS13-01 may continue to be used, it is not altered or widened in any way. It is the preference of the Badimia Traditional Owners that fencing is erected where the existing track intersects with the site so as to avoid accidental damage; and
- If MJG proposes to utilise the area in which heritage place NT15AS13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 5.1.5 NT15AS13-02 (Artefact scatter and cave)

#### *5.1.5.1 Location and environment*

Newly identified heritage place NT15AS13-02 is located in the central portion of the New Target 15 PDA. It is situated in an area characterised by low, rocky laterite hills, and which slope gently down towards a minor, ephemeral creek to the east. Granite outcrops occur frequently in the vicinity.

The ground surface within NT15AS13-02 consists of hard pan pale red deposits and eroded laterite from the breakaway in which the cave is situated. The ground surface here is overlain by dense laterite scree and small boulders which have broken away from the laterite formation. The overall ground surface visibility is considered to be low at 40 %, with the scree and eroded laterite obscuring the ground surface considerably.

*Plate 31: Environmental context of NT15AS13-02, view towards ephemeral creek to the east*

NT15AS13-02 is situated within a moderately dense, mixed Acacia woodland dominated by Mulga, Jam and Kurara bush, with mature *Eucalypts* less than 15 m in height occurring along the ephemeral creek to the east. Occasional Sandalwood trees were noted in the general vicinity. *Solanum* spp, small Acacia shrubs and flannel bushes comprise the sparse understorey.

#### *5.1.5.2 Condition and Integrity*

NT15AS13-02 is in relatively good condition, with no obvious disturbance. Some minor redeposition of archaeological material has occurred; however, this has not compromised

the overall integrity of the heritage place as it is evident that the material has not moved very far from its original location.

#### *5.1.5.3 Recording methodology and justification of boundary*

NT15AS13-02 is a very small, discrete artefact scatter which occurs on the apron of a small cave. The maximum dimensions of the heritage place are 20 m east to west and 16 m north to south, covering a total area of 119.26 m².

The boundary was obtained by conducting an intensive pedestrian inspection of the area, with the Traditional Owners and heritage consultants marking out the extent of cultural materials on handheld GPS units and identifying prominent natural and cultural features within and surrounding the heritage place. Boundary nodes were then demarcated around these where fitting, with the boundaries largely defined by the extent of artefactual materials. Each node has been marked with pink and black heritage flagging tape.

All visible archaeological material was recorded at NT15AS13-02. This is due to the small site and relative low density of material observed here. Every visible surface artefact within the heritage place was recorded to site avoidance standards. In addition to this, the dimensions of the small cave were also recorded.

Numerous site photographs were taken for the duration of the recording of the heritage place in order to create an accurate pictorial record. Photographs of in situ and unusual examples of artefacts were also captured.

#### *5.1.5.4 Fabric*

Newly identified heritage place NT15AS13-02 is a small, discrete artefact scatter focussed around a small cave in a low laterite breakaway. It is situated among a series of low laterite and granite hills approximately 200 m north-northeast of NT15AS13-01 in the central portion of the New Target 15 PDA.

A total of 55 artefacts were recorded, comprising 100% of the visible assemblage. The assemblage was comprised overwhelmingly of quartz (n=53), which represented 96 % of the total assemblage. Single chert and basalt artefacts were identified, comprising 2 % each of the total assemblage. Broken flakes and flake fragments (n=48) constitute 88 % of the assemblage, while complete flakes (n=5) constitute 10 % and cores (n=1) comprise the remaining 2 %. As the total visible assemblage was recorded, it is possible to say that the overall artefact density across NT15AS13-02 is 0.46 / m² with a total of 55 artefacts across the surface of the heritage place.

*Plate 32: Chert artefact in situ at NT15AS13-02*


*Plate 33: Quartz artefact in situ at NT15AS13-02*

#### *5.1.5.5 Application of the Act*

Newly identified NT15AS13-02 is a small artefact scatter which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a heritage place in which the ancestors of the Badimia Traditional Owners undertook activities directly associated with traditional cultural life.

A search of the Register of a 100 km box around the PDA revealed that artefact scatters are the most common site type in the region. Of the 181 Registered Sites and OHPs in the designated search area, 52 % (n=94) are artefact scatters.

#### *5.1.5.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT15AS13-02:

- NT15AS13-02 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT15AS13-02 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place NT15AS13-02 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

## 5.1.6 NT15AS13-03 (ARTEFACT SCATTER)

### *5.1.6.1 Location and environment*

Newly identified heritage place NT15AS13-03 is located in the north-western portion of the New Target 15 PDA in an area characterised by low, rocky laterite hills and low breakaways interspersed with shallow, braided ephemeral creeklines. The cultural material comprising NT15AS13-03 is situated in a drainage tract which flows from a low laterite hill in the south toward an ephemeral creek to the north.

The ground surface within NT15AS13-0 consists of soft pan red alluvial deposits with eroded laterite subcropping throughout. A number of small granite outcrops occur frequently in the vicinity. The ground surface here is overlain by moderately dense quartz gibber, laterite scree and small boulders which have broken away from the laterite formation to the south. The overall ground surface visibility is considered to be moderate at 50 %, with the scree and eroded laterite obscuring the ground surface considerably.

*Plate 34: Environmental context of NT15AS13-03, north across laterite hill*

NT15AS13-02 is situated within moderately dense, mixed Acacia woodland dominated by Mulga, Jam and Kurara bush, with mature *Eucalypts* less than15 m in height occurring in the northern portion of the Place. *Solanum* spp, small Acacia shrubs and flannel bushes comprise the sparse understorey.

### *5.1.6.2 Condition and Integrity*

NT15AS13-03 is in relatively good condition; however, the ground surface integrity is considered low. Some major redeposition of archaeological material has occurred, with most

of the material having been washed downhill towards the north. It is likely that the material was originally positioned at the base of the low laterite hill situated only 10 m to 15 m from the northern extent of the current heritage place boundary.

*Plate 35: Water erosion at NT15AS13-03*


### *5.1.6.3 Recording methodology and justification of boundary*

NT15AS13-03 is a small, dispersed artefact scatter which occurs on the slope of a low laterite hill. The maximum dimensions of the heritage place are 35 m east to west and 55 m north to south, covering a total area of 961 m².

The boundary was obtained by conducting an intensive pedestrian inspection of the area, with the Traditional Owners and heritage consultants marking out the extent of cultural materials on handheld GPS units and identifying prominent natural and cultural features within and surrounding the heritage place. Boundary nodes were then demarcated around these where fitting, with the boundaries largely defined by the extent of artefactual materials. Each node has been marked with pink and black heritage flagging tape.

Four 5 m by 5 m sample squares were recorded within the heritage place boundary. This totalled a sampled area of 100 m², representing 10.4 % of the total area of NT15AS13-03. The sample squares were randomly positioned in order to accurately capture the varying artefact densities across the heritage place and to not over-represent or bias the total density. This methodology resulted in a representative sample of the artefact assemblage being recorded. Every visible surface artefact within the sample squares was recorded to site avoidance standards.

Numerous photographs of the heritage place were taken for the duration of the recording in order to create an accurate pictorial record. Photographs of in situ and unusual examples of artefacts were also captured.

### *5.1.6.4 Fabric*

Newly identified Heritage Place NT15AS13-03 is a small, dispersed artefact scatter located to the north of a low laterite hill. It is situated among a series of low laterite and granite hills approximately 420 m north-northwest of NT15AS13-02 and 140 m south of NT15QU13-01.

A total of 46 artefacts were recorded within the sampled assemblage at NT15AS13-03. Quartz artefacts comprise 87 % of the total recorded assemblage (n=40), while crystal quartz comprises 11 % (n=5) and dolerite 2 % (n=1). Broken flakes and flake fragments are once again the most common type of artefact present, representing 70 % of the assemblage (n=32). Complete flakes constitute 22 % (n=10), and cores constitute the remaining 8 % (n=3).

*Plate 36: Crystal quartz artefact in situ at NT15AS13-03*


Based on the results of the recorded sample, it can be extrapolated that the minimum artefact density at NT15AS13-03 is 0.28 / m², or a total of 269 artefacts across the surface of the heritage place. The maximum artefact density is 0.56 / m², or a total of 538 artefacts, while the average density would be 0.46 / m², or a total of 442 artefacts across the surface of the heritage place. The former estimates are likely to be more accurate, based on the visual inspection of NT15AS13-03.

#### *5.1.6.5 Application of the Act*

Newly identified NT15AS13-03 is a medium sized artefact scatter which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a place in which the ancestors of the Badimia Traditional Owners undertook activities directly associated with traditional cultural life.

A search of the Register of a 100 km box around the PDA revealed that artefact scatters are the most common site type in the region. Of the 181 Registered Sites and OHPs in the designated search area, 52 % (n=94) are artefact scatters.

#### *5.1.6.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT15AS13-03:

- NT15AS13-03 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT15AS13-03 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place NT15AS13-03 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

## 5.2 Isolated Objects

Following thorough investigation, if objects were deemed to be present in insufficient densities to constitute heritage places, artefacts were recorded as isolated material. During the heritage assessment a number of isolated objects, which were not associated with a heritage place, were identified within the PDAs. Details of these objects were recorded and are reported below in accordance with s15 of the Act, which requires that anyone who has knowledge of the existence of anything in the nature of an object to which the Act applies shall report its existence to the Registrar.

**Fifty one** isolated objects were identified within the PDAs. The location, artefact lithology and typology of isolated objects were recorded. Details of isolated objects are provided table 5, below. Artefact recording codes are defined in appendix 1.

*Table 5: Isolated objects identified during the heritage assessment*

| Typology | Lithology | Retouch / Utilisation | PDA | Easting (mE) | Northing (mN) |
|---|---|---|---|---|---|
| F | BS | | Bentley | 500853 | 6783229 |
| BGF | GR | PITTING | Bentley | 500849 | 6783259 |
| F | BS | | Jaguar | 499297 | 6784082 |
| F | BS | | Jaguar | 499297 | 6784082 |
| F | BS | | Jaguar | 499297 | 6784082 |
| MPC | DOL | | Jaguar | 499469 | 6784012 |
| SPC | BS | | Jaguar East | 500301 | 6784444 |
| SPC | BS | | St Patrick | 501273 | 6783188 |
| TBFD | DOL | | New Target 15 | 496000 | 6768567 |
| MPC | QZ | | New Target 15 | 496052 | 6769029 |
| F | QZ | | New Target 15 | 496054 | 6769074 |
| F | QZ | | New Target 15 | 496054 | 6769074 |
| F | BS | | New Target 15 | 495850 | 6768327 |

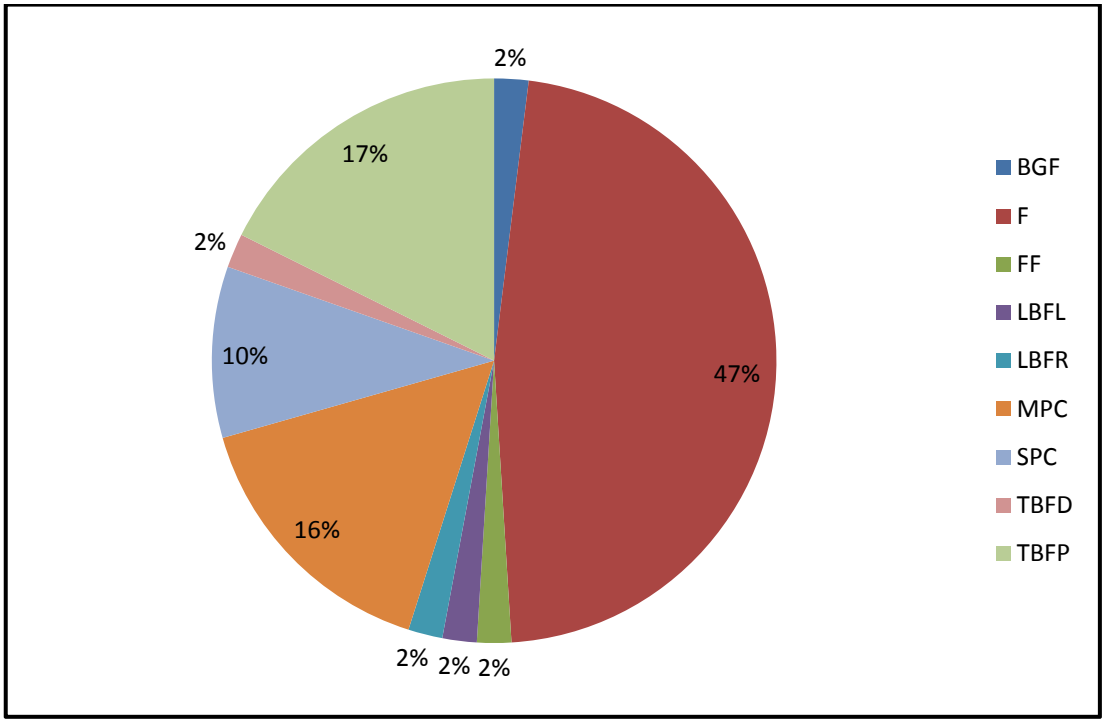
| Typology | Lithology | Retouch / Utilisation | PDA | Easting (mE) | Northing (mN) |
|---|---|---|---|---|---|
| MPC | DOL | | New Target 15 | 495782 | 6768288 |
| F | QZ | | New Target 15 | 495777 | 6768359 |
| F | QZ | | New Target 15 | 495803 | 6768759 |
| MPC | BS | | New Target 15 | 495629 | 6768814 |
| F | QZ | | New Target 15 | 495610 | 6768266 |
| F | QZ | | New Target 15 | 495610 | 6768266 |
| MPC | BS | | New Target 15 | 495600 | 6768256 |
| SPC | CQ | | New Target 15 | 495600 | 6768256 |
| MPC | BS | | New Target 15 | 495741 | 6768117 |
| F | CQ | | New Target 15 | 495779 | 6768221 |
| F | CQ | | New Target 15 | 495779 | 6768221 |
| MPC | QC | | New Target 15 | 496056 | 6768207 |
| F | QZ | | New Target 15 | 495912 | 6768175 |
| SPC | BS | | New Target 15 | 495956 | 6769014 |
| F | QZ | | New Target 15 | 495952 | 6769083 |

| Typology | Lithology | Retouch / Utilisation | PDA | Easting (mE) | Northing (mN) |
|---|---|---|---|---|---|
| F | QZ | | New Target 15 | 495717 | 6768266 |
| F | QZ | | New Target 15 | 495756 | 6768996 |
| F | QZ | | New Target 15 | 495570 | 6768212 |
| TBFP | QZ | | New Target 15 | 495656 | 6768114 |
| F | CH | | New Target 15 | 495735 | 6768167 |
| F | BS | | New Target 15 | 496086 | 6768892 |
| SPC | QZ | | New Target 15 | 495806 | 6768440 |
| TBFP | QZ | | New Target 15 | 495808 | 6768438 |
| MPC | QZ | | New Target 15 | 495824 | 6768719 |
| F | QZ | | New Target 15 | 495667 | 6768744 |
| LBFR | BS | | New Target 15 | 495619 | 6768784 |
| TBF-P | QZ | | New Target 15 | 495319 | 6771274 |
| F | BAS | | New Target 15 | 495957 | 6769017 |
| TBF-P | QZ | | New Target 15 | 495825 | 6769035 |
| F | QZ | | New Target 15 | 495825 | 6769035 |

| Typology | Lithology | Retouch / Utilisation | PDA | Easting (mE) | Northing (mN) |
|---|---|---|---|---|---|
| TBFP | QZ | | New Target 15 | 495825 | 6769035 |
| LBFL | QZ | | New Target 15 | 495825 | 6769035 |
| F | CH | | Wolf/New Target 8 | 496688 | 6771292 |
| TBFP | QZ | | Wolf/New Target 8 | 495953 | 6770708 |
| TBFP | BS | | Wolf/New Target 8 | 496840 | 6770846 |
| TBFP | QZ | | Wolf/New Target 8 | 496476 | 6770439 |
| FF | BS | | Wolf/New Target 8 | 496017 | 6770383 |
| TBFP | BS | | Wolf/New Target 8 | 496017 | 6770383 |

Of the isolated objects identified during the Heritage assessment, 73 % were located in the New Target 15 PDA. This correlates to the identification of heritage places across the 10 PDAs, with four of the six newly identified heritage places also being located within this PDA. Of the isolated objects identified, 47 % were complete flakes, while 25 % were broken flakes and flake fragments. A further 26 % of all isolated objects were cores and the final 2 % is represented by a single grinding base fragment (see figure 2 below).

*Figure 2: Percentages of types of isolated objects identified across the 10 PDAs*



# 6 RECOMMENDATIONS

The following conclusions and recommendations have been approved by the Badimia Traditional Owner representatives who were present during the field work:

1. **MJG is advised that the archaeological and ethnographic site avoidance heritage assessment of the Shu's Flat, King Edward, St Patrick, Bentley (Sons of Erin), Mug's Luck West, Jaguar, Jaguar East, New Target 5, Wolf/New Target 8 and New Target 15 PDAs is complete.**

   A total of **six** heritage places have been newly identified within three of the ten PDAs and recorded to site avoidance standard. Details of newly identified heritage places JAGQU13-01, WLFST13-01, NT15QU13-01, NT15AS13-01, NT15AS13-02 and NT15AS13-03 are summarised in table 4 and boundary coordinates have been provided in appendix 2. A total of **51** isolated objects were identified during the heritage assessment of the ten PDAs. Details of the isolated objects identified during the assessment are available in table 5 of this report.

   MJG are advised that beyond the buffer zone of the newly identified heritage places, the **assessed** areas within the Shu's Flat, King Edward, St Patrick, Bentley (Sons of Erin), Mug's Luck West, Jaguar, Jaguar East, New Target 5, Wolf/New Target 8 and New Target 15 PDAs are **archaeologically and ethnographically clear** for works to proceed.

2. **MJG is advised to engage two Badimia representatives to monitor all ground disturbing works within the 30 m buffer zone of the heritage places identified within the assessed PDAs.**

   It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage places JAGQU13-01, WLFST13-01, NT15QU13-01, NT15AS13-01, NT15AS13-02, and NT15AS13-03 so as to protect the areas from inadvertent damage caused by works in the vicinity

   The presence of Badimia Traditional Owner representatives as monitors is advised so that any subsurface cultural material that may be unearthed during works is managed appropriately. Additionally, cultural material may be unearthed during vegetation clearance as dense vegetation limited ground visibility in parts of the PDAs.

3. **MJG is advised that the pre-existing access track which intersects heritage place NT15AS13-01 may continue to be used; however, the track should not be altered or widened in any way beyond its existing boundaries.**

   Widening the track will impact the fabric and disturb condition of the heritage place further. It is preference of the Badimia Traditional Owners that fencing is erected where the existing track intersects with NT15AS13-01 so as to avoid accidental damage.

4. **All employees and contractors working within the above PDAs should be made aware of the location and boundaries of all heritage places identified therein and be clearly instructed to restrict access and works to areas that MJG has clearance to utilise.**

   Under s17 of the Act it is an offence to disturb an Aboriginal heritage place without prior written permission to do so under s16 or s18 of the Act. Heavy financial penalties may be applied against individuals or corporations who disturb a heritage place, whether knowingly or unknowingly.

   It is recommended that MJG employees and contractors are fully briefed on their obligations regarding heritage places and objects under the Act, attend cultural awareness training if available, and are clearly instructed to confine their activities to those areas that MJG has clearance to utilise.

5. **If MJG proposes to utilise areas in which heritage places have been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.**

   As noted above in item 4, it is an offence to disturb an Aboriginal heritage place without prior written permission to do so under s16 or s18 of the Act. Heavy financial penalties may be applied against individuals or corporations who disturb a heritage place, whether knowingly or unknowingly.

   S18 of the Act details the statutory provision for applications to be made to the Minister to utilise areas in which Aboriginal heritage places may exist. Approval to utilise areas in which Aboriginal heritage places may exist is subject to evaluation by the ACMC and the conditions of the Act.

# 7 REFERENCES

Australia ICOMOS 1999, *The Burra Charter: The Australia ICOMOS charter for places of cultural significance 1999*, viewed 10 August 2012, <http://australia.icomos.org/wp-content/uploads/BURRA_CHARTER.pdf>

Commonwealth of Australia 2002, A*ustralian Natural Heritage Charter 2002*, 2nd edn., viewed 10 August 2012, <http://www.environment.gov.au/heritage/ahc/publications/commission/books/pubs/australian-natural-heritage-charter.pdf>

**Legislation**

*Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Commonwealth of Australia), viewed 10 August 2012, <http://www.comlaw.gov.au/Details/C2010C00807>

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**DAA Registered Aboriginal Site and OHP Files**

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DAA 24589 – MM02 (not accessed due to closed status)

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Veth, P, P. Moore & C. Pocock 1990, *Report of archaeological and ethnographic survey of the Winddine Project, south of Yalgoo, Western Australia.*

# APPENDIX 1

## Artefact Recording Codes

# A1.1 ARTEFACT RECORDING CODES

## Artefact Type

Artefact types were identified in accordance with the site avoidance method outlined above. The following abbreviations have been employed in this report.

| | | | |
|---|---|---|---|
| **ADB** | *Burin Adze* | **LBFM** | *Longitudinally Broken Flake – Medial* |
| **ADT** | *Tula Adze* | **LBFR** | *Longitudinally Broken Flake – Right* |
| **BL** | *Blade* | **MPC** | *Multi-Platform Core* |
| **BGF** | *Basal Grind Fragment* | **MU** | *Muller* |
| **BGS** | *Basal Grindstone* | **MF** | *Muller Fragment* |
| **CF** | *Core Fragment* | **RUP** | *Re-touched/Utilised Piece* |
| **CT** | *Core Tool* | **SPC** | *Single Platform Core* |
| **F** | *Complete Flake* | **SR** | *Scraper* |
| **FF** | *Flake Fragment* | **TBFD** | *Transverse Broken Flake – Distal* |
| **GM** | *Geometric Microlith* | **TBFM** | *Transverse Broken Flake – Medial* |
| **HS** | *Hammer Stone* | **TBFP** | *Transverse Broken Flake – Proximal* |
| **LBFL** | *Longitudinally Broken Flake – Left* | **NA** | *Not applicable/not present* |

## Lithology

Lithology describes the material from which the artefact was manufactured. The following abbreviations have been employed in this report.

| | | | |
|---|---|---|---|
| **B** | *Bone* | **IS** | *Ironstone* |
| **BS** | *Basalt* | **KAL** | *Kaolinite* |
| **BIF** | *Banded Ironstone Formation* | **LM** | *Limestone* |
| **CA** | *Canga* | **LT** | *Laterite* |
| **CH** | *Chert* | **MUD** | *Mudstone* |
| **CQ** | *Crystal Quartz* | **SIL** | *Silcrete* |
| **CY** | *Chalcedony* | **SL** | *Siliceous Limestone* |
| **DOL** | *Dolerite* | **QI** | *Quartzite* |
| **GR** | *Granite* | **QZ** | *Quartz* |

# APPENDIX 2

## Heritage Place Boundary Coordinates

*Table 6: JAG-QU13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 499319 | 6784029 |
| 499310 | 6784037 |
| 499302 | 6784040 |
| 499292 | 6784045 |
| 499284 | 6784053 |
| 499294 | 6784061 |
| 499307 | 6784068 |
| 499314 | 6784077 |
| 499325 | 6784078 |
| 499334 | 6784079 |
| 499338 | 6784074 |
| 499344 | 6784063 |
| 499347 | 6784051 |
| 499351 | 6784043 |
| 499350 | 6784034 |
| 499342 | 6784027 |
| 499333 | 6784032 |
| 499328 | 6784029 |

*Table 7: WLFST13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 496526 | 6770548 |
| 496523 | 6770539 |
| 496531 | 6770535 |

| Easting (mE) | Northing (mN) |
|---|---|
| 496537 | 6770539 |
| 496537 | 6770545 |

*Table 8: NT15QU13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 495808 | 6769080 |
| 495805 | 6769090 |
| 495810 | 6769102 |
| 495814 | 6769108 |
| 495799 | 6769108 |
| 495784 | 6769108 |
| 495778 | 6769090 |
| 495784 | 6769082 |
| 495789 | 6769073 |
| 495799 | 6769071 |

*Table 9: NT15AS13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 495812 | 6768221 |
| 495822 | 6768223 |
| 495845 | 6768215 |
| 495861 | 6768212 |
| 495875 | 6768199 |
| 495896 | 6768194 |
| 495911 | 6768200 |
| 495929 | 6768213 |

| Easting (mE) | Northing (mN) |
|---|---|
| 495938 | 6768232 |
| 495937 | 6768246 |
| 495945 | 6768253 |
| 495942 | 6768263 |
| 495933 | 6768274 |
| 495895 | 6768262 |
| 495882 | 6768252 |
| 495865 | 6768262 |
| 495853 | 6768244 |
| 495831 | 6768235 |
| 495812 | 6768239 |
| 495798 | 6768254 |
| 495781 | 6768248 |
| 495763 | 6768246 |
| 495758 | 6768235 |
| 495760 | 6768224 |
| 495749 | 6768214 |
| 495761 | 6768210 |
| 495776 | 6768211 |
| 495787 | 6768222 |
| 495799 | 6768224 |
| 495920 | 6768283 |
| 495918 | 6768288 |
| 495911 | 6768296 |

| Easting (mE) | Northing (mN) |
|---|---|
| 495917 | 6768309 |
| 495922 | 6768319 |
| 495930 | 6768326 |
| 495939 | 6768335 |
| 495931 | 6768347 |
| 495926 | 6768359 |
| 495913 | 6768365 |
| 495892 | 6768367 |
| 495886 | 6768373 |
| 495880 | 6768378 |
| 495880 | 6768370 |
| 495888 | 6768359 |
| 495891 | 6768340 |
| 495888 | 6768326 |
| 495901 | 6768313 |
| 495896 | 6768302 |
| 495886 | 6768282 |

*Table 10: NT15AS13-02 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 495956 | 6768554 |
| 495953 | 6768550 |
| 495964 | 6768544 |
| 495969 | 6768543 |
| 495967 | 6768555 |

*Table 11: NT15AS13-03 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 495827 | 6768925 |
| 495830 | 6768932 |
| 495831 | 6768939 |
| 495820 | 6768947 |
| 495810 | 6768954 |
| 495808 | 6768962 |
| 495799 | 6768964 |
| 495793 | 6768963 |
| 495800 | 6768949 |
| 495796 | 6768939 |
| 495812 | 6768919 |
| 495823 | 6768917 |

# REPORT OF AN ARCHAEOLOGICAL AND ETHNOGRAPHIC SITE AVOIDANCE HERITAGE ASSESSMENT OF 10 PROPOSED DEVELOPMENT AREAS WITHIN THE MINJAR GOLD PROJECT, CONDUCTED BY THE BADIMIA TRADITIONAL OWNERS AND TERRA ROSA CULTURAL RESOURCE MANAGEMENT PTY LTD, AND PREPARED FOR MINJAR GOLD PTY LTD.

Report of the archaeological and ethnographic site avoidance heritage assessment of 10 PDAs for Minjar Gold, conducted with the Badimia Traditional Owners

TERRA ROSA
CULTURAL RESOURCE MANAGEMENT

**August 2013**

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## COORDINATE CAPTURE

The authors advise that all coordinates quoted in this document were initially obtained with a Garmin hand held GPS, using the MGA 94 datum. All grid references provided are located within MGA Zone 50, unless otherwise stated.

## ACKNOWLEDGEMENTS

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- The Badimia Traditional Owners who participated in the field work;
- Travis Craig and Dale Fergusson of Minjar Gold Pty Ltd.; and
- Patricia Edwards of Heritage Link.

# FIELDWORK PARTICIPANTS

The heritage team consisted of four representatives of the Badimia Traditional Owners and two heritage consultants from Terra Rosa Cultural Resource Management.

Field work was conducted with the assistance and involvement of the following people:

**Trip 2 Field Work dates: 18 August to 22 August 2013**

| BADIMIA TRADITIONAL OWNERS | |
|---|---|
| Frank Walsh, Jnr. | Brett Little |
| Warren Walsh | Glynn Fogarty |

| TERRA ROSA CULTURAL RESOURCE MANAGEMENT | |
|---|---|
| Sunissa Brown (anthropologist) | Francois Mazieres (archaeologist) |

| MINJAR GOLD LTD | |
|---|---|
| Travis Craig | Dale Fergusson |

## TERMS AND ACRONYMS

The following terms and acronyms are utilised throughout the report. Definitions are provided below for reference.

| TERM / ABBREVIATION | DEFINITION |
|---|---|
| ACMC | Aboriginal Cultural Materials Committee |
| AHIS | Aboriginal Heritage Inquiry System |
| ATSIHPA | *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (Cth) |
| BLAC | Badimia Land Aboriginal Corporation |
| BOM | Australian Government Bureau of Meteorology |
| CHMP | Cultural Heritage Management Plan |
| DAA | Department of Indigenous Affairs |
| GIS | Geographic Information System |
| GPS | Global Positioning System |
| Heritage object | An object to which the Act applies under s6 |
| Heritage place | Any place to which there is evidence that s5 of the Act applies |
| MGA | Map Grid of Australia |
| MJG | Minjar Gold Pty Ltd. |
| NNTT | National Native Title Tribunal |
| OHP | Other heritage place catalogued by the DAA but not included on the Register of Aboriginal Sites for one of the following reasons:<br>1. Information about the OHP has been lodged with the DAA but is pending assessment by the ACMC (status L - lodged);<br>2. Insufficient information has been provided to the DAA for the ACMC to accurately assess whether the OHP constitutes a heritage place under the Act (status I - insufficient information); or<br>3. The ACMC assessed the OHP and considered it not to meet the evaluation criteria for inclusion on the Register of Sites (ie not a registered Aboriginal site) (status S - stored). |

| TERM / ABBREVIATION | DEFINITION |
|---|---|
| PDA | Proposed Development Area |
| Registered Aboriginal site | A heritage place which has been registered by the Registrar of Aboriginal Sites (DAA status R - registered) |
| Terra Rosa CRM | Terra Rosa Cultural Resource Management Pty Ltd |
| Traditional Owners | Badimia Native Title Claimants (NNTT no WC96/98) |
| The Act | *Aboriginal Heritage Act 1972* (WA) |

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# 1 PROJECT BRIEF

## 1.1 Overview

This report is an addendum to the *Report of the Archaeological and Ethnographic Site Avoidance Heritage Survey of 10 PDAs for Minjar Gold, conducted with the Badimia Traditional Owners Trip 1* (Terra Rosa, 2013), submitted previously to Minjar Gold. This report should therefore be read in conjunction the aforementioned report.

Minjar Gold Pty Ltd. (MJG) proposes to undertake prospecting for gold, base metals, nickel, tungsten molybdenum and iron ore within their current exploration and mining leases. The Minjar Project Area is located approximately 400 km north-northeast of Perth and approximately 55 km south-southeast of Yalgoo, in the Mid West region of Western Australia. The project tenements cover a total area of approximately 1,400 km$^2$. A number of the project tenements have been mined by preceding operators including Gindalbie Metals, Monarch Resources and Golden Stallion Resources; however, mining operations in this area are currently inactive. Following the initiation of Rotary Air-Blast (RAB) drilling in September 2012, there is intent to re-commence mining and expansion within known deposit areas.

The Badimia Traditional Owners, through Heritage Link and Badimia Land Aboriginal Corporation (BLAC), commissioned Terra Rosa Cultural Resource Management (Terra Rosa CRM) to undertake an archaeological and ethnographic site avoidance heritage survey of a number of proposed development areas (PDAs) (see maps 1 to 3). The objective of the heritage assessment was to identify areas within the PDAs that constitute Aboriginal heritage places as defined under s5 of the Act, and record them to a site avoidance level.

Trip 1 of the current archaeological and ethnographic heritage assessment was conducted from the 9 July to 13 July 2013 and included an initial assessment of ten PDAs (see table 1). Trip 2 of the current archaeological and ethnographic heritage assessment was conducted from the 18 August to 23 August 2013 and included the assessment of ten PDAs (see table 2).

The PDAs detailed in the scope of works for trip 1 and trip 2 are wholly contained within the Native Title Claim boundaries of the Badimia Traditional Owners (NNTT no WC96/98).

*Table 1: MJG PDAs assessed during trip 1*

| Tenement(s) | PDA | Survey Area (km$^2$) |
|---|---|---|
| E59 / 1201 | Shu's Flat | 0.1 |
| E59 / 1327 | Jaguar East | 0.2 |
| E59 / 1327 | Jaguar | 0.09 |

| Tenement(s) | PDA | Survey Area ($km^2$) |
|---|---|---|
| E59 / 1021 | Mug's Luck West | 0.03 |
| E59 / 1023 | King Edward | 0.4 |
| E59 / 1327 | St Patrick | 0.1 |
| E59 / 1327 | Bentley (Sons of Erin) | 0.2 |
| M59 / 460<br>M59 / 425 | New Target 5 | 0.2 |
| M59 / 425<br>M59 / 387 | Wolf /<br>New Target 8 | 1.0 |
| M59 / 387 | New Target 15 | 0.6 |

*Table 2: MJG PDAs assessed during trip 2*

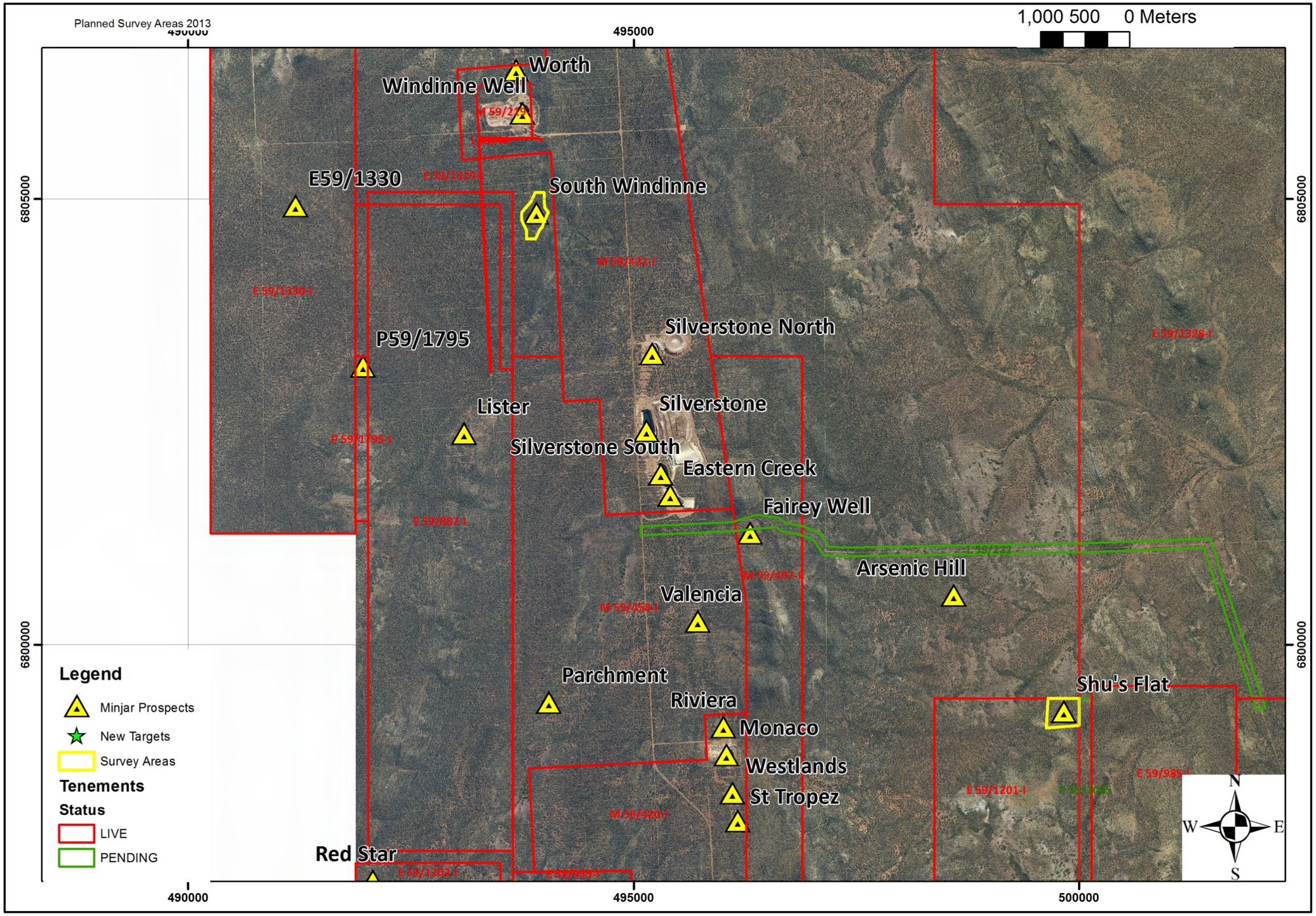
| Tenement(s) | PDA | Survey Area ($km^2$) |
|---|---|---|
| P59/1783-1<br>E59/1324-1 | New Target 17 / Hurley Well (New Target 17 / Hurley) | 0.9 |
| M59/425-1 | New Target 21 (New Target 21) | 0.1 |
| P59/178-1<br>M59/425-1<br>E59/1324-1 | New Target 2 / 20<br>(NewTarget 2 / 20) | 0.4 |
| M59/386-1<br>M59/425-1 | New Target 4 / 18<br>(New Target 4 / 18) | 0.7 |

| Tenement(s) | PDA | Survey Area (km$^2$) |
|---|---|---|
| E59/1324-1<br>P59/1782-1<br>P59/1781-1 | New Target 13 / 6<br>(New Target 13 / 6) | 0.5 |
| M59/386-1<br>M59/387-1 | New Target 14<br>(New Target 14) | 0.3 |
| P59/1785-1<br>P59/1786-1 | New Target 16 / Bullseye<br>(New Target 16) | 0.4 |
| P59/1790-1 | Paradise City | 0.3 |
| M59/497-1 | South Island | 0.3 |
| M59/386-1 | New Target 10<br>(New Target 10) | 0.3 |

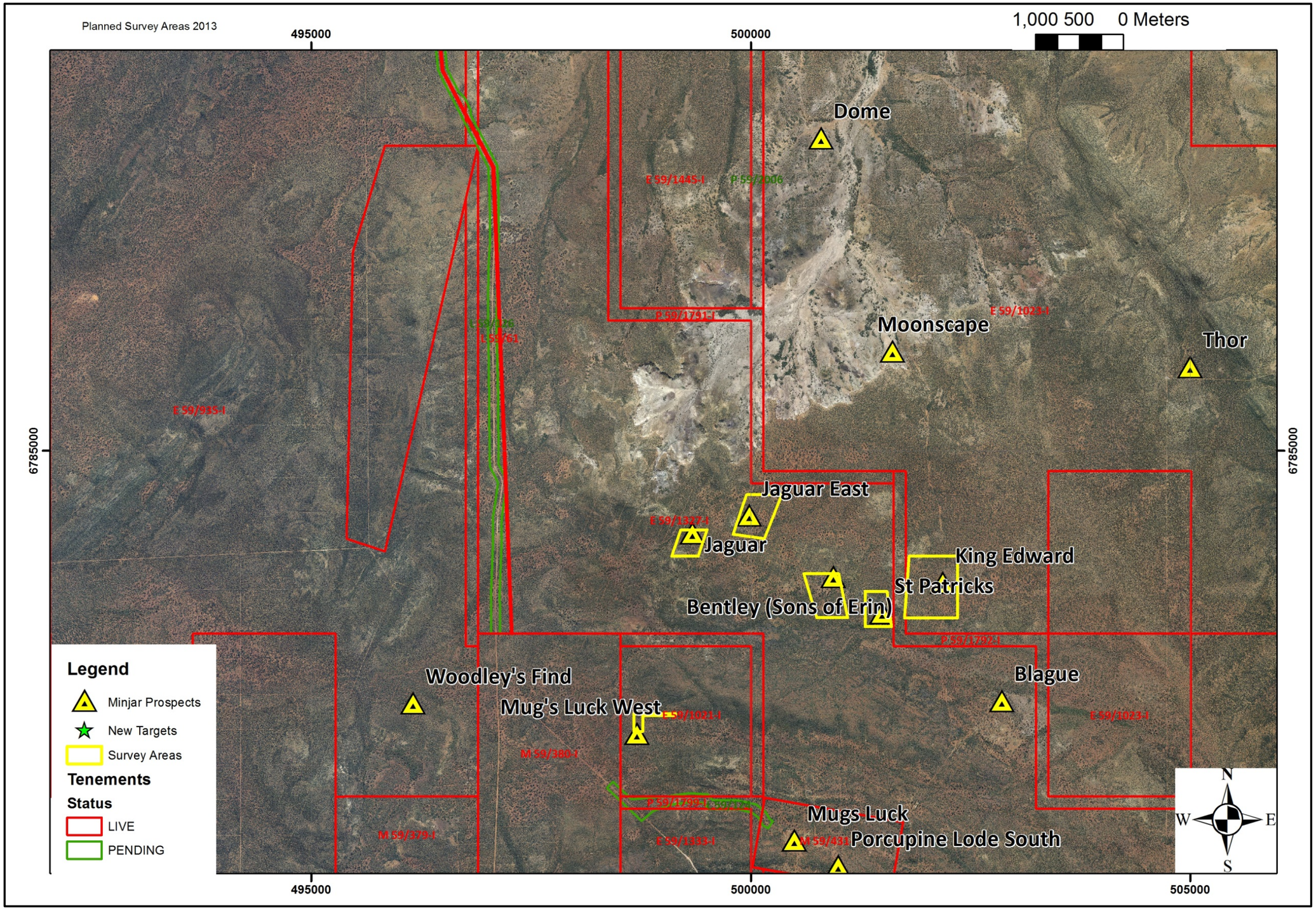
## 1.2 Qualifications to the scope of works

During the first briefing on the first day of field work, MJG representative Travis Craig presented an amendment to the original scope of works. MJG added the South Island PDA to the list of priorities to be assessed in scope of works. In conjunction to this addition, the New Target 1 – Wildflower was removed from the initial scope of works. Additionally, all the PDA shapes within the initial scope of works have been modified to allow easier assessment transects.

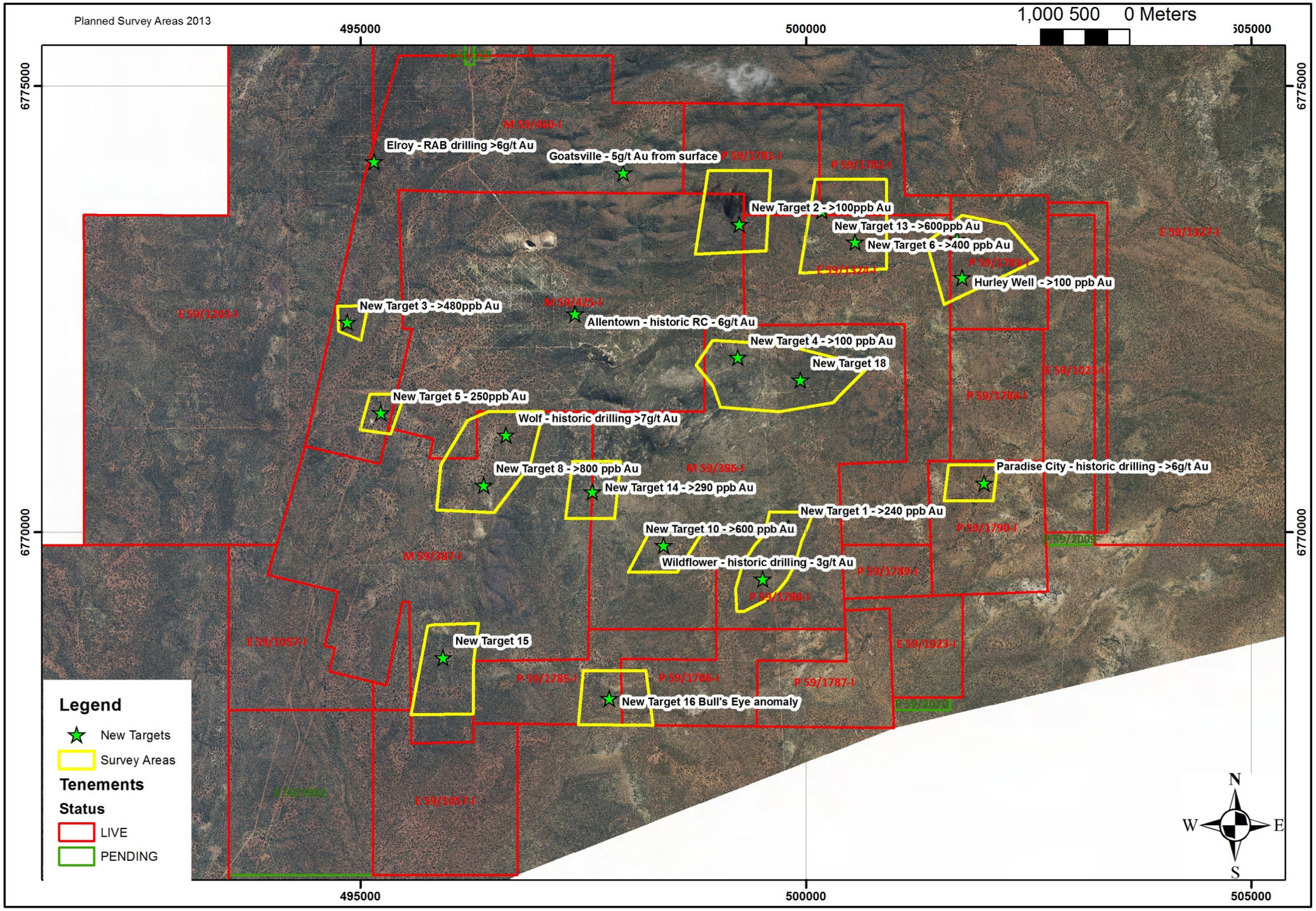
*Map 1 : MJG project area overview*



*Map 2: MJG project area overview*



*Map 3: MJG project area overview*



## 1.3 Participation of the Traditional Owners

Four representatives of the Badimia Traditional Owner group participated in the heritage assessment of the ten PDAs. The Traditional Owners directed the heritage assessment process in conjunction with the heritage consultants and actively participated in the pedestrian transects and recording.

*Plate 1: Trip 2 heritage team (L-R: Brett Little, Warren Walsh, Frank Walsh Jnr, Sunissa Brown; Front: Francois Mazieres)*

## 1.4 Limitations to the heritage assessment

The start of the fieldwork was initially hindered by MJG protocols. The MJG representative who directed the heritage team to the PDAs had to participate in a daily morning meetings and meant the delay to the start of the fieldwork during the initial two days of the assessment. After consultation with MJG representatives, the heritage team proceeded to the PDAs alone on the remaining days. It is also noted that the heritage team acknowledged that a limited recording time had been allocated to sufficiently address proper archaeological and ethnological heritage places boundaries during the course of trip 2.

## 1.5 Amended Archaeological Method

Due to time limitations, the heritage assessment was conducted using an adapted site avoidance methodology in order to allow the recording of sufficient data to approximately delineate heritage place boundaries. Therefore, the first objective of the heritage assessment was first to determine which parts of the PDA were **cleared** or **not clear** for the

proposed activities, and secondly to operate a minimal recording process to comply with site avoidance survey standards. Thus providing basic information of heritage place composition.

The heritage place boundaries were obtained by conducting several pedestrian inspections of the heritage place areas, with the Traditional Owners and heritage consultants marking out the extent of cultural materials on handheld GPS units and identifying prominent natural and cultural features within and surrounding heritage places. Boundary nodes were then located using GIS where fitting with the boundaries largely defined by the extent of the artefactual material distribution.

No sample squares were recorded within heritage places boundary (unless specified) due to the time limitations This methodology resulted in the clear expression of the artefact assemblage distribution being recorded. Every visible surface artefact within the artefact scatter was recorded to site avoidance standards, this included notation of type and lithology, and the presence or absence of retouch.

This methodology was utilised to determine the relevant heritage management recommendations in regard to specific heritage place locations and cultural material present within them. This method was approved and endorsed by the Traditional Owners that participated in the field work.

## 1.6 Heritage report review process

Outcomes of the heritage research are reviewed by Heritage Link in conjunction with the Badimia Traditional Owners prior to dissemination of results to the Proponent. This includes the full and final heritage report that details the desktop and field work results. The review process ensures that culturally sensitive information is appropriately indicated, the recommendations discussed amongst the heritage team are assessed by a wider representative group and any amendments are made in accordance with the Traditional Owners' suggestions. The review process allows for Heritage Link, on behalf of the Traditional Owners, to provide Terra Rosa CRM with feedback on the report, which is subsequently taken into account during the final editing of the report. Terra Rosa CRM responds to feedback based on professional standards, and reports impartially as an independent party on the research results of heritage assessment.

# 2 DESKTOP RESEARCH RESULTS

Prior to field work, desktop research was undertaken to establish an overview of previous heritage findings in the area and to forecast any likely site patterning based on biogeographical features of the area.

## 2.1 AHIS research

The boundaries of the PDA were searched on the Aboriginal Heritage Inquiry System (AHIS) to establish the presence or absence of registered Aboriginal sites (status R) and OHPs (status L, S or I) previously catalogued by the DAA. The search revealed **no** registered Aboriginal site and **2** OHPs within the PDA. Status abbreviations are defined in section 2.2.

The AHIS was also searched for reports detailing the results of previous heritage surveys within the PDA. **One** heritage reports are catalogued with the DAA as being relevant to the PDA.

### 2.1.1 Summary of OHPs intersecting the PDA

Two OHPs are catalogued with the DAA as having boundaries that intersect the PDA and are listed in table 3, below.

*Table 3: OHPs intersecting the PDA*

| OHPs | | | | |
|---|---|---|---|---|
| **DAA ID** | **Name** | **Classification** | **Status** | **Location** |
| 24588 | MM01 | Mythological | L / C / N | Not available for closed Places |
| 24589 | MM02 | Mythological | L / C / N | Not available for closed Places |

### 2.1.2 Heritage reports relevant to the PDA

The heritage reports relevant to the PDA are listed in table 4.

*Table 4: Registered heritage reports relevant to the PDA*

| REGISTERED DAA REPORTS | | |
|---|---|---|
| **DAA report ID** | **Author / year** | **Report title** |
| 21578 | Barrie Machin 2000 | *Aboriginal Heritage Report on a Site Survey for Gindalbie Gold NL Minjar North Project Tenements E59/518, M 59/219,406, 420, 421, 457, 458 with Widi Mob 97/72, Pandawn 96/83, Badimia WC 96/98 Claimants* |

# 3 OVERVIEW OF THE PROPOSED DEVELOPMENT AREA

## 3.1 New Target 17 / Hurley PDA

The New Target 17 / Hurley PDA is located approximately 96 km south-southeast of Yalgoo and 239 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within tenements P59/1783-1 and E59/1324-1. The PDA spans a total area of 0.9 km².

The New Target 17 / Hurley PDA is a densely vegetated area which gently rises towards the south and south-western extent. The ground surface of the PDA is comprised of red hard pan alluvial deposits overlain by dense, large ironstone and laterite gibber in the north, and moderate amounts of ironstone and quartz gibber throughout the southern section. The overall ground surface visibility in the PDA is relatively moderate at 70%, restricted by the dense gibber and vegetation on slopes and creek beds, which lead to a more open landscape on the northern hardpans.

*Plate 2: Typical environment within New Target 17 / Hurley PDA*

Vegetation within the PDA is comprised of eucalypt woodlands with prominent saltbush and bluebush understoreys on the southern basalt and greenstone rises, and low hills. The central hardpan terraces support mulga, Kurara and other Acacia shrubs, while the low north-eastern greenstone rises and stony plain areas support chenopod shrubs with a patchy Eucalypt upperstorey.

The New Target 17 / Hurley PDA has been impacted by anthropogenic processes on a minor level, with occasional old gridlines and light vehicle tracks being noted throughout the

area. Some water erosion was also noted with sheet wash occurring east to west throughout the PDA collecting into minor and more extended drainage systems.

## 3.2 South Island PDA

The South Island PDA spans a total area of 0.3 km² and is located approximately 77 km south-southeast of Yalgoo and 231 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within the PDA, which is situated within mining tenement M59/497-1.

The South Island PDA is a sparsely vegetated area which gently rises towards the west. The ground surface of the PDA is comprised of red hard pan alluvial deposits overlain by dense, large ironstone and laterite gibber in the north and south-east, and moderate amounts of ironstone and quartz gibber throughout the rest of PDA. The overall ground surface visibility in the PDA is relatively moderate at 70%.

*Plate 3: Typical environment within South Island PDA*

Vegetation on the western and central portion of the PDA is mainly comprised of eucalypt woodlands with prominent saltbush and bluebush understoreys, while Chenopod shrublands with a patchy *Eucalypt* upperstorey grow on the eastern plains.

Evidence of recent mining activity (before 1970) was noted within the South Island PDA, with multiple bulldozed areas being encountered throughout the centre and south-east of the area. Additionally, water erosion caused by sheet wash has also marginally decreased the integrity of the ground surface within this PDA.

## 3.3 Paradise City PDA

The Paradise City PDA spans 0.3 km² and is located approximately 98 km south-southeast of Yalgoo and 239 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within tenement P59/1790-1.

The Paradise City PDA is a moderately vegetated area which gently rises towards its central and south western extent. The ground surface of the PDA is comprised of quartz and crystal quartz alluvial deposits overlain by dense, large ironstone and laterite gibber, and moderate amounts of ironstone gibber throughout the PDA. The overall ground surface visibility in the PDA is relatively good at 80%.

*Plate 4: Typical environment within Paradise City PDA*

Vegetation within the PDA was comprised predominantly of low *Eucalypt* woodland with prominent saltbush and bluebush understoreys on the basalt and greenstone rises, and low hills.

Evidence of historical mining activity was noted within the Paradise City PDA, with an extended camp being encountered in the centre of the area. Numerous old grid lines were also noted. Further to this, limited water erosion caused by sheet wash has decreased the integrity of the ground surface within this PDA.

## 3.4 New Target 2 / 20 PDA

The New Target 2 / 20 PDA is an area of 0.4 km² located approximately 94 km south-southeast of Yalgoo and 236 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within tenements P59/1781-1, M59/425-1, E59/1324-1.

The New Target 2 / 20 PDA is a densely vegetated area which gently rises towards its northern and western extent. The ground surface of the PDA is comprised of red hard pan alluvial deposits overlain by dense, large ironstone and laterite gibber and in the central and east section of the PDA, and moderate amounts of ironstone and quartz gibber on the slopes. The overall ground surface visibility in the PDA is poor to moderate at 60%.

*Plate 5: Typical environment within New Target 2/20 PDA*

Vegetation within the PDA was comprised predominantly of dense Casuarina and Acacia scrub within rugged greenstone ranges in the north-west of the area. The understorey was sparse at the time of recording, consisting of occasional flannel bushes and Mulla mullas.

Evidence of historical mining activity was noted within the New Target 2 / 20 PDA, with multiple old mine shafts and camps being encountered just north of the centre of the PDA. Numerous old grid lines were also noted in the area. Additionally, water erosion caused by sheet wash has also decreased the integrity of the ground surface within this PDA.

## 3.5 New Target 4 / 18 PDA

The New Target 4 / 18 PDA spans an area of 0.7 km² and is located approximately 97 km south-southeast of Yalgoo and 237 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within mining tenements M59/386-1 and M59/425-1.

The New Target 4 / 18 PDA is a densely vegetated area which gently rises towards the south western extent. The ground surface of the PDA is comprised of limited red hard pan alluvial deposits overlain by dense, large ironstone and laterite gibber in the northern and eastern extents, and moderate amounts of ironstone and quartz gibber throughout the granitic slopes of PDA. The overall ground surface visibility in the PDA is good to moderate at 70%.

*Plate 6: Typical environment within New Target 4 / 18 PDA*

The main south western and west sections of the PDA were composed of Granite hills with exfoliating domes and extensive tor fields, supporting a very dense Acacia scrub. Within the northern and eastern boundary, the PDA was comprised of basalt, greenstone rises and low hills supporting *Eucalypt* woodlands with prominent saltbush and bluebush understoreys.

An area of recent drilling activity was noted within the New Target 4 / 18 PDA, with a dated drill hole from 1969. An old windmill was also located within the central southern section of the PDA. The Traditional Owners present during the fieldwork identified that a nearby soak was the potential water source for the windmill and requested that this water source be protected during the future development of the PDA. Additionally, limited water erosion

caused by sheet and rill wash has impacted the integrity of the ground surface within this PDA.

## 3.6 New Target 10 PDA

The New Target 10 PDA spans 0.3 km² and is located approximately 98 km south-southeast of Yalgoo and 236 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within mining tenement M59/386-1.

The New Target 10 PDA is a densely vegetated area which gently rises towards the east. The ground surface of the PDA is comprised of red hard pan alluvial deposits overlain by occasional small ironstone and laterite gibber. The overall ground surface visibility in the PDA is good at 80%.

*Plate 7: Typical environment within New Target 10 PDA*

Granite hills with exfoliating domes and extensive tor fields are support Acacia shrubs within the western section of the PDA. The eastern section of the PDA is mainly comprised of low greenstone rises and stony plains which support chenopod shrubs with a patchy Eucalypt upperstorey. The integrity of the ground surface at this PDA was generally high, with occasional light vehicle tracks being noted. Erosion caused by sheet wash was evident, particularly in the south-eastern portion of the PDA.

## 3.7 New Target 13 PDA

The New Target 13 PDA spans 0.5 km² and is located approximately 95 km south-southeast of Yalgoo and 237 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within tenements E59/1324-1, P59/1782-1 and P59/1781-1.

The New Target 13 PDA is a densely vegetated area which gently rises towards east. The ground surface of the PDA is comprised of red hard pan alluvial deposits overlain by dense, large ironstone and laterite gibber and in the central and east section of the PDA, and moderate amounts of ironstone and quartz gibber on the slopes. The overall ground surface visibility in the PDA is moderate at 70%.

*Plate 8: Typical environment within NT13 PDA*

Rugged greenstone ranges within the Western and north western portion of the PDA supports dense Casuarina and Acacia scrub. The south-eastern section of the PDA is comprised of hardpan plains and drainage tracts, which support Mulga, Kurara and other Acacia shrublands.

Evidence of historical mining activity was noted within the New Target 13 PDA, with multiple old mine shafts and camps being encountered just of the centre of the area. Further to this, water erosion caused by sheet and rill wash has also decreased the integrity of the ground surface within this PDA.

## 3.8 New Target 14 PDA

The New Target 14 PDA is an area measuring 0.3 km² located approximately 97 km south-southeast of Yalgoo and 235 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within tenements M59/386-1 and M59/387-1.

The New Target 14 PDA is a densely vegetated area which quickly rises towards the northern extent. The ground surface of the PDA is comprised of red hard pan alluvial deposits overlain by dense, large ironstone and laterite gibber and in the central and south section of the PDA. Moderate amounts of quartz gibber were noted on the granitic slopes of the PDA. The overall ground surface visibility in the PDA is poor to moderate at 60%.

*Plate 9: Typical environment within NT14 PDA*

Predominantly situated in the north extent of the PDA, granite hills with exfoliating domes and extensive tor fields support Acacia scrub. These species are more developed over the southern hardpan plains and drainage tracts carrying concentrated water flow, which also support Mulga, Kurara and other Acacia scrubs.

Evidence of historical mining activity was noted of the New Target 13 PDA, with multiple old mine shafts and camps being encountered within the northern-central and north-eastern portions of the area. Additionally, limited water erosion caused by sheet and rill wash has decreased the integrity of the ground surface within the PDA.

## 3.9 New Target 16 PDA

The New Target 16 PDA is an area measuring 0.4 km² located approximately 100 km south-southeast of Yalgoo and 236 km east-southeast of Geraldton in the Mid-West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within tenements P59/1785-1 and P59/1786-1.

The New Target 16 PDA is a moderately vegetated with a gentle rise at the centre of the area. The ground surface of the PDA is comprised of red hard pan alluvial deposits overlain by dense, small ironstone and laterite gibber throughout the area. The overall ground surface visibility in the PDA is moderate at 70%.

*Plate 10: Typical environment within NT16 PDA*

Punctuated low greenstone rises and stony plains throughout the PDA are support Chenopod scrub and a patchy Eucalypt upperstorey.

## 3.10 New Target 21 PDA

The New Target 21 PDA spans a total of 0.1 km² and is located approximately 95 km south-southeast of Yalgoo and 234 km east-southeast of Geraldton in the Mid West region of Western Australia. MJG proposes to undertake RAB drilling within this area, which is situated within exploration tenement M59/425-1.

The New Target 21 PDA is a densely vegetated area which quickly rises towards the northern and southern extent of the area, with a small gully in the central access point. The ground surface is comprised of red and yellow alluvial deposits overlain by dense, medium ironstone and laterite gibber in the north and south sections of the PDA. Moderate amounts of ironstone and quartz gibber were noted within the alluvial in the central section of the area. The overall ground surface visibility in the PDA is poor to moderate at 60%.

*Plate 11: Typical environment within NT21 PDA*

Vegetation within the PDA was comprised mainly of eucalypt woodlands with prominent saltbush and bluebush understoreys located on the basalt greenstone rises and low hills. Evidence of historical mining activity was noted within the New Target 21 PDA with multiple mine shafts being encountered just north of the centre of the area. A large area to the north of the New Target 21 PDA was also noted to have been cleared of vegetation. Further to this, water erosion caused by sheet and rill wash has also decreased the integrity of the ground surface within this PDA.

# 4 FIELDWORK RESULTS

In August 2013, representatives of the Badimia Traditional Owners, in conjunction with Terra Rosa CRM conducted a site avoidance assessment for archaeological and ethnographic sites over ten PDAs for MJG. The results of the field work are as follows:

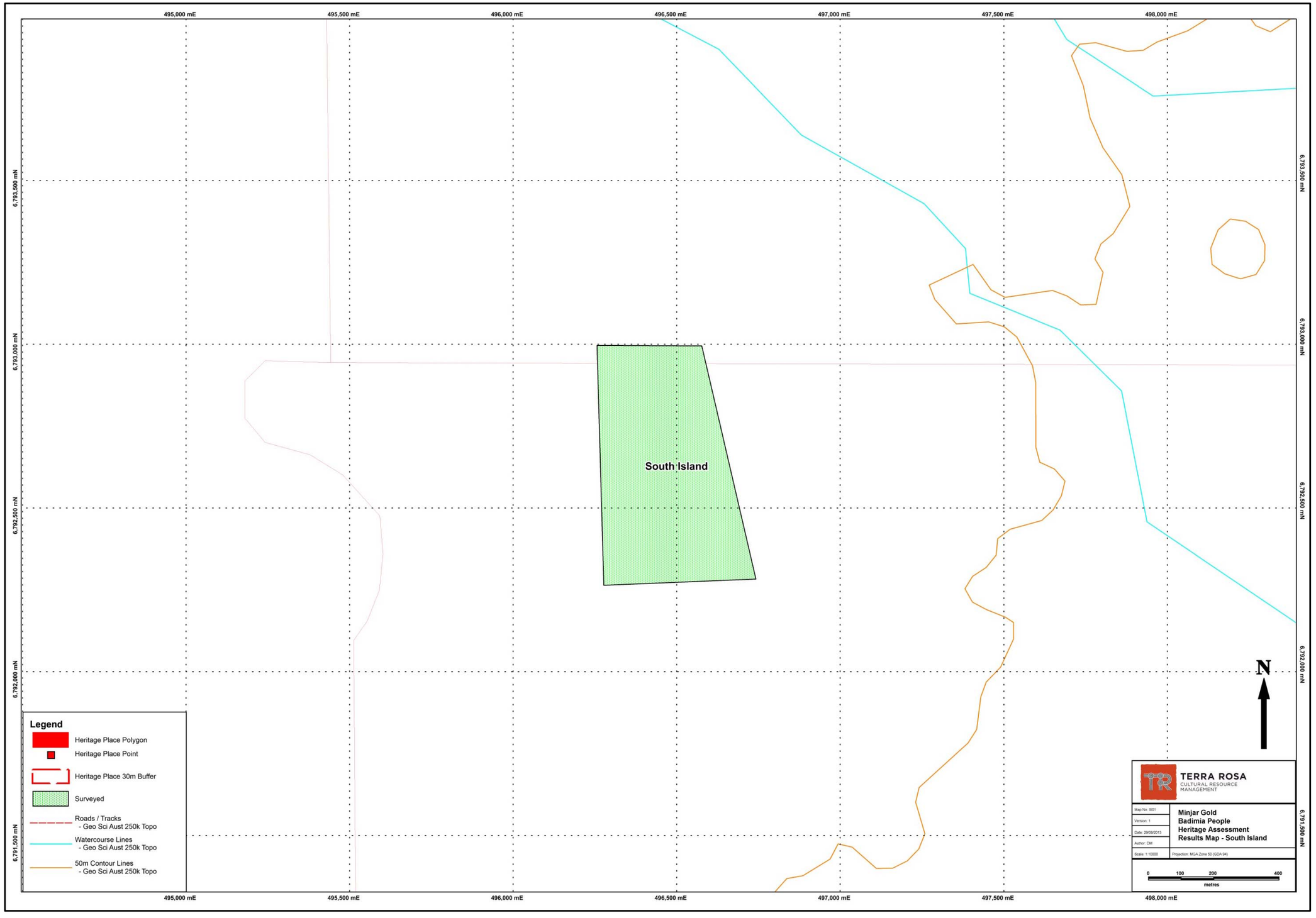
- A total of **ten** newly identified heritage places were recorded to site avoidance standard (see table 5 and section 4.1, below); and
- A total of **42** isolated objects were identified within the 10 PDAs (see section 5.2)

Newly identified heritage places are listed in table 5, below, and further detailed in section 4.1. Results of the fieldwork are illustrated in map 4 and map 5.

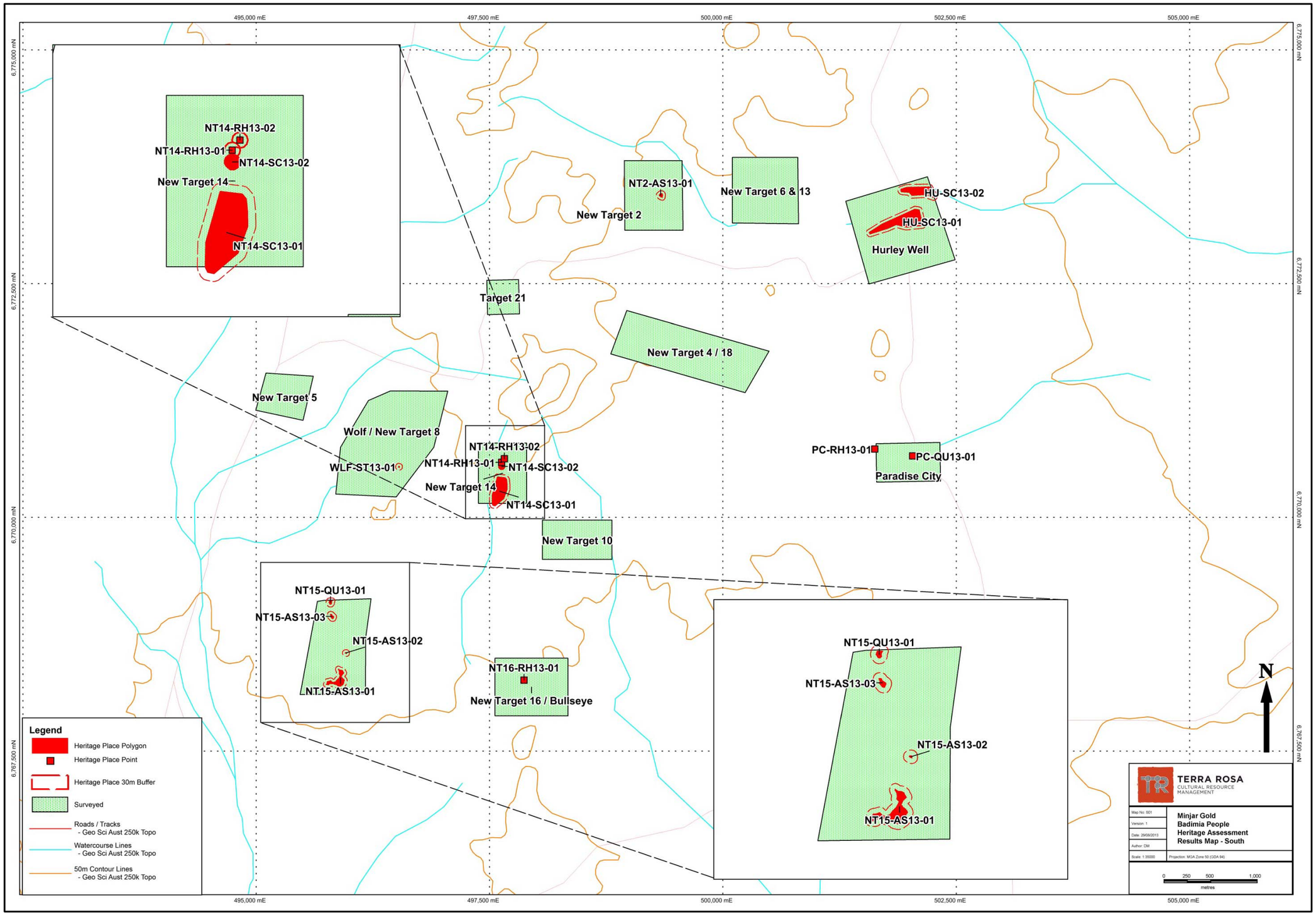
*Table 5: Summary of newly identified heritage places*

| Heritage Place Code | Type | Central Coordinate | PDA |
|---|---|---|---|
| **HUSC13-01** | Site complex | 501852 mE / 6773165 mN | New Target 17 Hurley |
| **HUSC13-02** | Site complex | 502086 mE / 6773477 mN | New Target 17 Hurley |
| **NT14SC13-01** | Site complex | 497608 mE / 6770279 mN | New Target 14 |
| **NT14SC13-02** | Site complex | 497630 mE / 6770544mN | New Target 14 |
| **NT14RH13-01** | Rock hole | 497630 mE / 6770589 mN | New Target 14 |
| **NT14RH13-02** | Rock hole | 497659 mE / 6770627 mN | New Target 14 |
| **NT2AS13-01** | Artefact scatter | 499335 mE / 6773443 mN | New Target 2 / 20 |
| **PCRH13-01** | Rock hole | 501627 mE / 6770730 mN | Paradise City |
| **PCQU13-01** | Quarry | 502031 mE / 6770657mN | Paradise City |
| **NT16RH13-01** | Rock hole | 497870 mE / 6768259mN | New Target 16 |

*Map 4: South Island PDA results overview*



*Map 5: Southern Areas results overview*



## 4.1 Heritage places identified within the PDA

### 4.1.1 HUSC13-01 (Site complex)

#### *4.1.1.1 Location and environment*

HUSC13-01 is located in the central portion of the New Target 17 / Hurley PDA. The heritage place is situated on a terrace comprising compacted red alluvial deposits overlain by small sorted laterite and dolerite gibber. The overall ground surface visibility was 70 %, mainly restricted by the presence of a developed network of drainage system and occasional vegetation thickets.

HUSC13-01 is surrounded by dense mixed Acacia scrub, a characteristic of vegetation throughout the wider area. Mature Mulga trees less than 4 m in height dominate the upperstorey, with occasional mulga, Kurara bushes being noted throughout. The sparse understorey is comprised of small Acacia shrubs and seasonal bushes. Large, mature *Eucalypts* were present throughout the south of HUSC13-01.

*Plate 12: View west from southern boundary of HUSC13-01*

#### *4.1.1.2 Condition and integrity*

The ground surface integrity of HUSC13-01 was considered to be moderate at the time of recording. One existing light vehicle track intersects with the heritage place along the western boundary. Ground disturbance caused by sheet and rill erosion activity has impacted HUSC13-01 along the southern margin of the heritage place (see plate 13).

*Plate 13: Drainage system within southern boundary of HUSC13-01*

#### *4.1.1.3 Recording methodology and justification of boundary*

HUSC13-01 is an extended, low density background artefact scatter with maximum dimensions of 574 m east to west and 266 m north to south. The heritage place covers a total area of 5.59 ha. Due to time limitations, as outlined section 1, the boundary was assessed by a quick and intensive targeted inspection with every artefact and high artefact concentration location encountered recorded with a GPS point. Utilising GIS methods, the boundary for the heritage place was established by the extent of the artefactual material distribution.

#### *4.1.1.4 Fabric*

HUSC13-01 is a large, discrete heritage place consisting of a mainly dolerite lithology background scatter and associated grinding implements.

The recorded artefact assemblage at HUSC13-01 was comprised of dolerite, with one BIF, one crystal-quartz and one granite artefact also being noted. Of the 19 artefacts recorded, 47 % were complete flakes (n=9), 16 % were broken flakes (n=3) and 20% were cores (n=4). No presence of formal and retouched tools was recorded within the site.

*Plate 14: Detail SPC dolerite core within HUSC13-01*


*Plate 15: Detail of a Basal grinding stone fragment within HUSC13-01*

#### *4.1.1.5 Application of the Act*

Newly identified HUSC13-01 is a background artefact scatter associated with grinding implements which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It is represents a place where the ancestors of the Badimia Traditional Owners undertook activities associated with traditional cultural life. Raw lithic material was sourced from nearby outcrops and creek beds, quarried and modified as people travelled through the landscape to undertake subsistence activities, such as seed grinding and butchering activities.

Background scatter sites in general are important as they provide information about the direction and extent of material preferred for repeated occupation and use of specific ecosystem by Aboriginal people in the past. They are also able to provide information relating to trade routes and migratory routes, as stone tools can be sourced back to their original location.

#### *4.1.1.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding HUSC13-01:

- HUSC13-01 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place HUSC13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that while a pre-existing access track that intersects with HUSC13-01 may continue to be used, it is not altered or widened in any way. It is the preference of the Badimia Traditional Owners that fencing is erected where the existing track intersects with the site so as to avoid accidental damage; and
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place HUSC13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 4.1.2 HUSC13-02 (Site complex)

#### *4.1.2.1 Location and environment*

HUSC13-02 is located in the north-eastern portion of the New Target 17 / Hurley PDA. The heritage place is situated on a terrace comprising compacted red alluvial deposits overlain by small sorted laterite and dolerite gibber. The overall ground surface visibility was 90 %, mainly restricted by the presence of the drainage system network and occasional dense vegetation thickets.

HUSC13-02 is surrounded by dense mixed Acacia scrub, a characteristic of vegetation throughout the wider area. This heritage place occupies a transition location between different vegetation ecosystems. The south-eastern margin comprises Kurara and other Acacia shrubs while the north-eastern section of the heritage place supports Chenopod shrubs with patchy *Eucalypt* upperstoreys located near ephemeral pools.

*Plate 16: View east with fireplaces in foreground and Eucalypts near creek line in background*

#### *4.1.2.2 Condition and integrity of deposit*

The ground surface integrity of HUSC13-02 was deemed to be good at the time of recording. One old light vehicle track allows a partial access with the heritage place boundaries on its north eastern boundary. Moreover, limited ground disturbance caused by sheet and rill erosion activity have impacted HUSC13-02. Only the effects of precipitation seems to have partially and moderately affected the surface scatter area, which is localised on a very low gradient slope.

### *4.1.2.3 Recording methodology and justification of boundary*

HUAS13-02 is an extended, moderate density background artefact scatter with maximum dimensions of 363 m east to west and 116 m north to south. The heritage place covers a total area of 2.56 ha. Due to time limitations, as outlined in previously in section 1, the boundary was assessed by a quick and intensive targeted inspection with every artefact and high artefact concentration location encountered recorded with a GPS waypoint. Utilising GIS methods, the boundary for the heritage place was established by the extent of the artefactual material distribution.

*Plate 17: View North-West of Second fire places location with Track access in the background*

### *4.1.2.4 Fabric*

HUSC13-02 is a medium to large-sized heritage place consisting of mainly of a dolerite background scatter associated with grinding implements and open air fireplaces.

An extensive range of lithologies was noted within HUSC13-02 with the recorded artefact assemblage mainly comprising dolerite. Of the 50 artefacts recorded, 44 % were complete flakes (n=22), 18 % were broken flakes (n=9) and 28% were cores (n=14). A further 6 % of the assemblage exhibited retouch or were formal tools.

*Plate 18: Detail of a crystal-quartz flake within HUSC13-02*


*Plate 19: Detail of a Muller fragment within HUSC13-02*

*Plate 20: View West with first fire places location in foreground (scale 2m)*

#### *4.1.2.5 Application of the Act*

Newly identified HUSC13-02 is a site complex which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It is represents a place where the ancestors of the Badimia Traditional Owners undertook activities associated with traditional cultural life. Raw lithic material was sourced, quarried and modified here as people travelled through the landscape. Evidence of grinding activities have also been noted within the site. Spatial organisation of the site could be approached by the relative analysis of the scattering and segregation of the site area potentially dedicated to different activities and genders. HUSC13-02 also presents very rare features of open air fireplaces in two locations within into the area.

Other than providing information relating to trade routes and migratory routes, as stone tools can be sourced back to their original location, this site complex could also present potential for dating human occupation throughout these ecosystems.

Additionally, open air fire places features are very rare in the broader region, and more largely in Western Australian recorded archaeological features. This makes HUSC13-02 an exceptional heritage place in the broader cultural context.

#### *4.1.2.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding HUSC13-01:

- HUSC13-02 exhibits heritage place attributes consistent with s5(a) of the Act;

- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place HUSC13-02 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place HUSC13-02 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 4.1.3 NT14SC13-01 (Site complex)

#### *4.1.3.1 Location and environment*

NT14SC13-01 is located in the south central section of the New Target 14 PDA. The heritage place is situated on a slight gradient terrace comprising compacted red alluvial deposits overlain by small sorted laterite and dolerite gibber. The overall ground surface visibility was 80 %, mainly restricted by the presence of the drainage system network and occasional dense vegetation thickets.

NT14SC13-01 is surrounded by dense mixed Acacia scrub, a characteristic of vegetation throughout the wider area. This heritage place is stated on a transition location between different vegetation ecosystems within the PDA. On the south-eastern margin the area is comprised of Kurara and other Acacia scrubs, while the north-eastern section supports dense mulga scrub with the presence of semi-permanent pools and rock holes within the large gully in the north.

*Plate 21: View east towards the south section of NT14SC13-01 with a quartz basal grindstone in the foreground*

#### *4.1.3.2 Condition and integrity of deposit*

The ground surface integrity of NT14SC13-01 was assessed as moderate at the time of recording. One rough light vehicle track allows access with the heritage place on the heritage place's northern boundary, which bisecting the main creek system. Moreover, little ground disturbance caused by sheet and rill erosion activity have impacted NT14SC13-01. Only the effects of precipitation seems to partially and moderately have affected the surface scatter area, which is localised on a low gradient slope and protected by relatively dense vegetation throughout (see plate 21).

#### *4.1.3.3 Recording methodology and justification of boundary*

NT14SC13-01 is an extended, moderate to high density background artefact scatter with maximum dimensions of 161 m east to west and 310 m north to south. The heritage place covers a total area of 3.48 ha. Due to time limitations, as outlined previously in section 1, the boundary was assessed by a quick and intensive targeted inspection with every artefact and high artefact concentration location encountered being recorded with a GPS waypoint. Utilising GIS methods, the boundary for the heritage place was established by the extent of the artefactual material distribution.

#### *4.1.3.4 Fabric*

NT14SC13-01 is a medium to large-sized heritage place consisting of a main dolerite lithology background scatter associated with grinding implements and formal tools.

An extensive range of lithologies was noted in the heritage place, with the recorded artefact assemblage at NT14SC13-01 mainly comprised of dolerite (70%). Of the 46 artefacts recorded, 46 % were complete flakes (n=22), 41 % were broken flakes (n=19) and 24% were cores (n=19). A further 4 % of the assemblage exhibited retouch or were formal tools.

*Plate 22: Detail of a dolerite TBFP found NT14SC13-01*

*Plate 23: Detail of the ground hatchet sharpening artefact found within NT14SC13-01*


### *4.1.3.5 Application of the Act*

Newly identified NT14SC13-01 is a site complex which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It is represents a place where the ancestors of the Badimia Traditional Owners undertook subsistence activities associated with traditional cultural life.

Raw lithic material was sourced, quarried and modified here as people travelled through the landscape. At least three knapping floors areas have been localised within NT14SC13-01 indicating that disturbance over the site is low. Grinding activities have also taken place within the heritage place as several grinding implements were recorded within the southern boundary of the heritage place. As with newly identified heritage place HUSC13-02, the spatial organisation of the site could be approached by the relative analysis of the scattering and segregation of the site area potentially dedicated to different activities according to genders. NT14SC13-01 also presents a very rare sharpening artefact which exhibits evidence of usewear that might also bear cultural significance.

This site complex presents potential for investigation regarding the preservation of assemblages, their association with grinding activities, and the potential significance of the sharpening stone artefacts.

Further to this, salvaging the sharpening tool identified within the heritage place is recommended in order to undertake further archaeological investigation related to the presence of residue and to determine the origin of usewear. Such stone ground hatchet sharpening tools also are rare features in the broader region, and more broadly in the Western Australian archaeological record. This makes the site quite exceptional in the broader context.

#### *4.1.3.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT14SC13-01:

- NT14SC13-01 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT14SC13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is requested that the ground hatchet sharpening artefact found within NT14SC13-01 be salvaged by the Badimia Traditional Owners and a qualified archaeologist;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place NT14SC13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 4.1.4 NT14SC13-02 (Site complex)

#### *4.1.4.1 Location and environment*

NT14SC13-02 is located in the central section of the NT14 PDA. The heritage place is situated on a moderate gradient slope comprising compacted red alluvial deposits overlain by small, sorted laterite, dolerite gibber and granitic exfoliated cobbles. The overall ground surface visibility within the heritage place was 80 %.

NT14SC13-02 is surrounded by moderate mixed Acacia scrub, a characteristic of vegetation throughout the wider area. The heritage place occupies the bottom of the slope in direct relation with the exfoliating granitic outcrop present in the northern extent of to the assessment area. This section is overlain by moderate amounts of quartz gibber supporting basic and sparse Mulga scrubs with the presence of rock holes.

*Plate 24: View West of NT14SC13-02 with a basal grindstone in foreground*

#### *4.1.4.2 Condition and integrity of deposit*

NT15AS13-02 is in relatively good condition, with the exception of the nearby modern prospector camp occupation that might have previously impacted the heritage place. NT15AS13-02 is located on the track used to access rock holes present in the area. Further to this, some minor post-deposition of archaeological material is possible from water erosion so close from the high gradient granitic slope in the northern portion of the heritage place.

#### *4.1.4.3 Recording methodology and justification of boundary*

NT14SC13-02 is a discrete, small site complex comprised of a small artefact scatter and a grinding implement. The heritage place has a maximum dimension of 30 m east to west and 30 m north to south and covers a total area of 0.25 ha. Due to time limitations, as outlined previously in section 1, the boundary was assessed by a quick and intensive targeted

inspection with every artefact and high artefact concentration location encountered being recorded with a GPS waypoint. Utilising GIS methodology, the boundary for the heritage place was established by the extent of the artefactual material distribution.

#### *4.1.4.4 Fabric*

Three flakes have been recorded near the grinding implement and are mainly comprised of quartz and one a single dolerite lithology. No formal tools and retouched artefacts have been found nearby.

*Plate 25: Detail of broken quartz flakes found at NT14SC13-01*

#### *4.1.4.5 Application of the Act*

Newly identified NT14SC13-02 is a site complex near two *gnamma* holes which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a heritage place in which the ancestors of the Badimia Traditional Owners camped and undertook activities directly associated with traditional cultural life.

The overall distribution of Aboriginal sites so close from the granitic gully and the settlement of the modern prospector camp in its vicinity encompass the fact that this area presents some practical resources that confirms the significance of the establishment of aboriginal heritage places at this location. Being located on the same side as heritage place NT14SC13-01 on the terrace on the eastern side of the creek, NT14SC13-02 might have been related to the extensive background scatter present in the southern central section of the PDA.

#### *4.1.4.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT14SC13-02:

- NT14SC13-02 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT14SC13-02 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place NT14SC13-02 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 4.1.5 NT14RH13-01 (Gnamma hole)

#### *4.1.5.1 Location and environment*

Newly identified *gnamma* hole NT14RH13-01 is located in the north central section of the New Target 14 PDA. The heritage place is situated on a moderate gradient slope in close proximity to the granite outcrop that makes up the northern PDA hill formation. Low, rocky granitic hills and exfoliated boulder block occur within the north extent of the boundary of the heritage place.

The ground surface of NT14RH13-01 is characterised by occasional soft pan red alluvial deposits overlain dense laterite, ironstone and dolerite gibber and granitic scree from the north of the area. The overall ground surface visibility is at 80 %. NT14RH13-01 is situated within moderately dense, mixed Acacia woodlands dominated by Mulga, Jam and Kurara bush in the north.

*Plate 26: View North-West of NT14RH13-01 with Frank Walsh and creek line in background*

#### *4.1.5.2 Condition and integrity of deposit*

Although NT14RH13-01 presently still collects water, a nearby modern excavation and mining shaft has partially altered and extended the original water hole at this location. The Traditional Owners present during the fieldwork commented that modern prospectors have extended the margins of the rock hole in order to provide sufficient water collection. Therefore, the original integrity of the *gnamma* hole has been entirely reshaped by modern prospectors.

### *4.1.5.3 Recording methodology and justification of boundary*

NT14RH13-01 is comprised of a *gnamma* hole. A single centre point was taken as only one feature was recorded, and a 30m buffer was added around the heritage place location in order to preserve the integrity of the heritage place.

### *4.1.5.4 Fabric*

Newly identified heritage place NT14RH13-01 is a large water source comprised of a *gnamma* hole. It is situated predominantly within a low-lying catchment area prone to holding water. An ephemeral, *Eucalypt*-lined creek is directly present to the west of the heritage place, and another *gnamma* hole place is located nearby, providing another ephemeral water source.

NT14RH13-01 (see plate 26 and plate 27) is a large, deep *gnamma* hole measuring 3.80m in length by 1.80 m in width. It is situated on a low granitic outcrop outskirt near the creek line.

*Plate 27: View south towards NT14RH13-01*

### *4.1.5.5 Application of the Act*

Newly identified NT14RH13-01 is a *gnamma* hole which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a heritage place in which the ancestors of the Badimia Traditional Owners camped and undertook activities directly associated with traditional cultural life, even though the overall integrity of the heritage places has been highly disturbed by modern occupation.

The *gnamma* hole presents within NT14RH13-01 hold significance for the Badimia Traditional Owners because of the scarcity of water within the PDA and the region. For the Traditional Owners, *gnamma* holes are a physical representation of connection to country,

illustrating the past occupation of the area by ancestors. Such holes were specifically used to collect water for drinking and attracting animals to the area for hunting. The Traditional Owners present during the fieldwork noted that animals such as kangaroos, malleefowl, emu and goats would have visited the water source. They stated that the *gnamma* hole would have been used as resting places while travelling, with areas nearby being occupied for one to two days.

While it is not possible to determine how many *gnamma* holes are on the DAA Register within 100 km of the PDA due to labelling issues, it is the Traditional Owners' request to protect these rare water sources where fauna, which is at the basis of their ancestor cultural life and subsistence, could also get water. This, combined with the level of importance attributed to *gnamma* holes by the Badimia Traditional Owners increases the significance of this heritage place.

#### *4.1.5.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT14RH13-01:

- NT14RH13-01 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT14RH13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place NT14RH13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 4.1.6 NT14RH13-02 (Gnamma hole)

#### *4.1.6.1 Location and environment*

Newly identified *gnamma* hole NT14RH13-02 is located in the north central section of the New Target 14 PDA. The heritage place is situated on a moderate gradient slope right next to the granitic outcrop that composes the northern hill formation of the PDA. Low, rocky granitic hills and exfoliated boulder block occur within the south extent of the boundary of the heritage place.

The ground surface of NT14RH13-02 is characterised by occasional soft pan red alluvial deposits overlain dense laterite, ironstone and dolerite gibber in the south and granitic scree from the north. The overall ground surface visibility was noted to be 80 % at the time of assessment.

*Plate 28: View West from NT14RH13-02 towards the gully within granitic formations*

NT14RH13-02 is situated on the exfoliating granitic outcrop boulder, surrounded by moderately dense, mixed Acacia woodlands dominated by Mulga, Jam and Kurara bush. *Solanum* spp, small Acacia shrubs and flannel bushes comprise the sparse understorey.

#### *4.1.6.2 Condition and integrity of deposit*

NT14RH13-02 has not been modified by modern prospectors or the natural granitic exfoliating process of the outcrop. Therefore, the original integrity of the *gnamma* hole seems to have been preserved.

### *4.1.6.3 Recording methodology and justification of boundary*

NT14RH13-02 is a small *gnamma* hole. A single centre point was taken as only one feature was recorded, and a 30 m buffer was added around the heritage place location in order to preserve the integrity of the heritage place.

### *4.1.6.4 Fabric*

Newly identified heritage place NT14RH13-02 is a small rock hole and water source identified as a *gnamma* hole. It is situated predominantly within a low-lying catchment area prone to holding water at the bottom of the granitic slope coming down from the adjacent hill. An ephemeral, *Eucalypt*-lined creek is located 50 m west of the heritage place, and another identified *gnamma* hole (NT14RH13-01) is located nearby (50 m) providing another ephemeral water source.

NT14RH13-02 (see plate 29) is a small, moderately deep *gnamma* hole measuring 0.60 m in length by 0.40 m in width by 0.50 m in diameter. It is situated on a low granitic outcrop outskirt near the creek line.

*Plate 29: Detail of gnamma hole within NT14RH13-02*

### *4.1.6.5 Application of the Act*

Newly identified NT14RH13-02 is a *gnamma* hole which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a heritage place in which the ancestors of the Badimia Traditional Owners collected water to support their lifestyle and activities directly associated with traditional cultural life.

The *gnamma* hole presents within NT14RH13-02 hold significance for the Badimia Traditional Owners because of the scarcity of water within the PDA and surrounding area. The rock holes were utilised to collect rainwater, which is viewed as significant by the Traditional Owners. They are also physical representations of connection to country, illustrating the past occupation of the area by the Traditional Owners' ancestors. Such holes were specifically used to collect water for drinking and attracting animals to the area for hunting. The Traditional Owners present during the fieldwork commented that animals, such as kangaroos, Malleefowl, emu and goats, would have visited the water source. They stated that NT14RH13-02 and nearby NT14RH13-01 *gnamma* holes would have been used as resting places while travelling, with other heritage places nearby being occupied for one to two days.

While it is not possible to determine how many *gnamma* holes are on the DAA Register within 100 km of the PDA due to labelling issues, it is the Traditional Owners' request to protect the rare water sources where fauna, which is at the basis of their ancestor cultural life and subsistence, could also get water from. This, combined with the level of importance attributed to *gnamma* holes by the Badimia Traditional Owners increases the significance of significance and importance of this heritage place.

#### *4.1.6.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT14RH13-02:

- NT14RH13-02 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT14RH13-02 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place NT14RH13-02 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 4.1.7 NT2AS13-01 (Artefact scatter)

#### *4.1.7.1 Location and environment*

Newly identified artefact scatter NT2AS13-01 is located in the central northern portion of the New Target 2 PDA on a relatively open wash zone which slopes gently down towards the north. Low, rocky laterite hills occur within the southern extent of the boundary of the heritage place.

The ground surface of NT2AS13-01 is characterised by soft pan red alluvial deposits overlain by fine ironstone gravels in the south, and hard pan red alluvium overlain by dense laterite, ironstone and dolerite gibber in the north. The overall ground surface visibility varies across the heritage place, with 80 % visibility in the north and 60 % in the south, due to the density of Acacia scrub cover.

*Plate 30: View north towards main concentration and sheet erosion patterns*

NT2AS13-01 is situated within moderately dense, mixed Acacia woodlands dominated by Mulga, Jam and Kurara bush in the north, with mature *Eucalypts* sp. less than 15 m in height occurring in the large clearings in the northern portion. *Solanum* spp, small Acacia shrubs and flannel bushes comprise the sparse understorey.

#### *4.1.7.2 Condition and integrity of deposit*

NT2AS13-01 is in relatively good condition. Some minor redeposition of archaeological material is highly possible from sheet water erosion in the central section of the heritage place (see plate 30).

#### *4.1.7.3 Recording methodology and justification of boundary*

NT2AS13-01 is a moderate, sparse artefact scatter. The maximum dimensions of the heritage place are 39 m east to west and 42 m north to south, covering a total area of approximately 1,042 $m^2$.

The heritage place boundaries were obtained by conducting an intensive pedestrian inspection of the area, with the Traditional Owners and heritage consultants marking out the extent of cultural materials on handheld GPS units and identifying prominent natural and cultural features within and surrounding the site. Boundary nodes were then demarcated around these where fitting, with the boundaries largely defined by the extent of artefactual materials. Each node has been marked with pink and black heritage flagging tape.

One 5 m by 5 m sample square was recorded within the heritage place boundary. This totalled a sampled area of 25 $m^2$, representing 2.4 % of the total heritage place area. The sample square was positioned in order to capture the highest artefact density across the site. This methodology resulted in a representative sample of the artefact assemblage being recorded. Every visible surface artefact within the sample squares was recorded to site avoidance standards.

Numerous photographs were taken for the duration of the heritage place recording in order to create an accurate pictorial record. Photographs of in situ and unusual examples of artefacts were also captured.

#### *4.1.7.4 Fabric*

Newly identified heritage place NT2AS13-01 is a small, discrete artefact scatter. It is situated among a series of low laterite and granite hills in the central portion of the New Target 2 PDA.

A total of 13 artefacts were recorded, comprising 100% of the visible assemblage in the sample square. The assemblage was comprised overwhelmingly of dolerite (n=6), which represented 49 % of the total assemblage. Several crystal-quartz and quartz artefacts plus one chert artefact were identified, comprising the rest of the assemblage. Broken flakes and flake fragments (n=9) constitute 70 % of the assemblage, while complete flakes (n=4) constitute 30 %. Only a single broken flake presents some retouch.

#### *4.1.7.5 Application of the Act*

Newly identified NT2AS13-01 is a small artefact scatter which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a heritage place in which the ancestors of the Badimia Traditional Owners undertook activities directly associated with traditional cultural life.

A search of the Register of a 100 km box around the PDA revealed that artefact scatters are the most common site type in the region. Of the 181 Registered Sites and OHPs in the designated search area, 52 % (n=94) are artefact scatters.

*Plate 31: Detail of the ventral face of Dolerite LBFR within NT2AS13-01*


*Plate 32: Detail of the dorsal face of Chert TBFP within NT2AS13-01*

#### *4.1.7.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT2AS13-01:

- NT2AS13-01 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT2AS13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place NT2AS13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 4.1.8 PCRH13-01 (Gnamma hole)

#### *4.1.8.1 Location and environment*

Newly identified *gnamma* hole PCRH13-01 is located immediately outside the north-western section of the Paradise City PDA. However, the heritage place boundary buffer will impact the assessed PDA. The heritage place is located on important gradient slope right next to basalt and greenstone low hill that composes the north-western PDA hill formation. Low, rocky granitic hills and an exfoliated boulder block occur within the western and southern extent of the heritage place.

The ground surface of PCRH13-01 is characterised by punctuated exfoliated granitic scree from the north-east down the slope to the west. The overall ground surface visibility in the heritage place was noted at 80 %.

PCRH13-01 is situated on the exfoliating granitic shield boulder, surrounded by moderately dense, mixed Acacia woodlands dominated by Mulga, Jam and Kurara bush.

*Plate 33: View of gnamma hole and the slope gradient of the granitic hill formation - with Warren Walsh*

*Plate 34: View of the south-west landscape from PCRH13-01*

#### *4.1.8.2 Condition and integrity of deposit*

PCRH13-01 was noted to still collect water. No modification by modern prospectors or the natural granitic exfoliating process has affected the condition of the heritage place. Therefore, the original integrity of the *gnamma* hole seems to have been preserved.

#### *4.1.8.3 Recording methodology and justification of boundary*

PCRH13-01 is a small *gnamma* hole. A single centre point was taken as only one feature was recorded, and a 30m buffer was added around the heritage place location in order to preserve the integrity of the heritage place.

#### *4.1.8.4 Fabric*

Newly identified heritage place PCRH13-01 is a small rock hole and water source identified as a *gnamma* hole. It is situated on a granitic area prone to holding water at the bottom of the granitic hill formation coming down from the adjacent ridge.

PCRH13-01 (see plate 33 and plate 35) is a small, deep *gnamma* hole measuring 0.40 m in length by 0.35 m in width by 0.15 m in diameter. It is situated on a low granitic outcrop outskirt, 30m up the hill slope.

*Plate 35: Detail of PCRH13-01*

### *4.1.8.5 Application of the Act*

Newly identified PCRH13-01 is a *gnamma* hole which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a heritage place in which the ancestors of the Badimia Traditional Owners have collected water to support their life style and subsistence activities directly associated with traditional cultural life.

The *gnamma* hole present within PCRH13-02 holds significance for the Badimia Traditional Owners because of the scarcity of water within the PDA and surrounding area. The rock holes were utilised to collect rainwater, which is viewed as significant by the Traditional Owners. They are also physical representations of connection to country, illustrating the past occupation of the area by ancestors. Such holes were specifically used to collect water for drinking and attracting animals to the area for hunting. The Traditional Owners noted that animals such as kangaroos, Malleefowl, emu and goats would have visited the water source.

The Traditional Owners requested the protection of these rare water sources where fauna, which is at the basis of their ancestor cultural life and subsistence, could also get water from. This, combined with the level of importance attributed to *gnamma* holes by the Badimia Traditional Owners increases the significance and importance of this heritage place.

### *4.1.8.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding PCRH13-02:

- PCRH13-02 exhibits heritage place attributes consistent with s5(a) of the Act;

- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place PCRH13-02 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place PCRH13-02 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

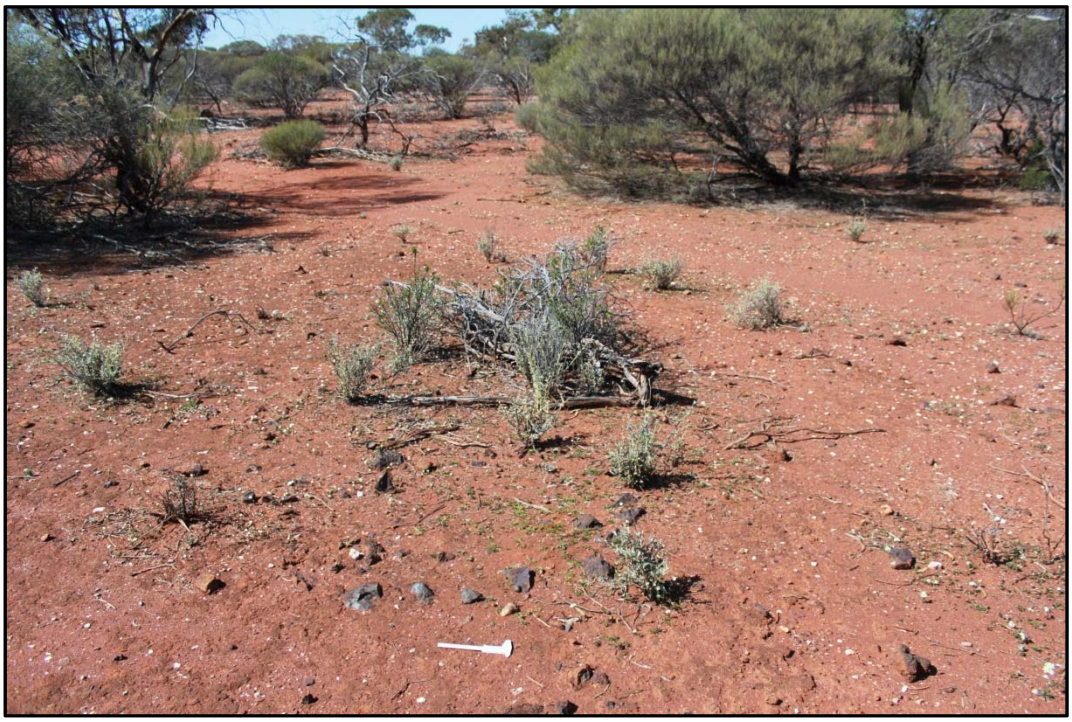
### 4.1.9 PCQU13-01 (Quarry)

#### *4.1.9.1 Location and environment*

PCQU13-01 is located in the central portion of the Paradise City PDA. The heritage place is situated on a gentle slope with the ground surface comprised of compacted yellow alluvial deposits overlain by dense basalt, laterite and dolerite gibber. Weathered ironstone and crystal quartz was noted to be eroding out of the ground surface throughout the greater area. The overall ground surface visibility was 80 %.

PCQU13-01 is surrounded by sparse mixed Acacia scrub, a characteristic of vegetation throughout the wider area. Mature Mulga trees less than 4 m in height dominate the upperstorey, with occasional Kurara bushes being noted throughout. The sparse understorey is comprised of small Acacia shrubs and flannel bushes.

*Plate 36: View South East of PCQU13-01 - scale 15 cm*



#### *4.1.9.2 Condition and integrity of deposit*

The ground surface integrity of PCQU13-01 was considered to be moderate at the time of recording. One old light vehicle track almost intersects with the heritage place along the southern boundary, while potential heavy ground disturbance caused by historical mining activity and a nearby prospector camp may have impacted PCQU13-01further.

#### *4.1.9.3 Recording methodology and justification of boundary*

PCQU13-01 is a small, very low density quarry with maximum dimensions recorded as a single landscape feature. The traditional owners showed significant interest in this raw material present within a large back ground scatter of heat treated crystal quartz. A 30 m buffer was added around the heritage place location in order to preserve the integrity of the heritage place.

#### *4.1.9.4 Fabric*

PCQU13-01 is a discrete, low-sized heritage place consisting of an ironstone quarry. While the broader area is overlain by coarse, low-grade basalt and crystal-quartz fragments, the source material utilised is of a higher quality and has been potentially selected for this reason.

The recorded artefact assemblage at PCQU13-01 was only comprised of a single ironstone complete flake.

*Plate 37: Detail of the remains of Ironstone outcrop within PCQU13-01 - scale 15 cm*

#### *4.1.9.5 Application of the Act*

Newly identified PCQU13-01 is a quarry which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It is represents a place where the ancestors of the Badimia Traditional Owners undertook activities associated with traditional cultural life. Raw lithic material was potentially sourced, quarried and carried away to be modified afterwards as people travelled through the landscape.

Quarry sites in general are important as they provide information about the types of material preferred for use by Aboriginal people in the past. They are also able to provide information relating to trade routes and migratory routes, as stone tools can be sourced back to their original location. Further to this, quarry sites are not common in the broader region, with only 10 % of all Registered Sites and OHPs within 100 km of the PDA being quarry sites. This makes them quite rare in the broader context.

#### *4.1.9.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding PCQU13-01:

- PCQU13-01 exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place PCQU13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place PCQU13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

### 4.1.10 NT16RH13-01 (Gnamma hole)

#### *4.1.10.1 Location and environment*

Newly identified *gnamma* hole NT16RH13-01 is located just in the central section of the New Target 16 PDA. The heritage place is located on a low gradient slope next to a low rise of iron base conglomerate that composes the centre of the PDA.

The ground surface of NT16RH13-01 is characterised by a yellow indurated hard pan alluvial conglomerate overlain by sporadic dense, small ironstone and laterite gibber. The overall ground surface visibility was noted to be good at 90 %.

NT16RH13-01 is surrounded by chenopods and sporadic Acacia shrublands with a patchy *Eucalypt* upperstorey.

*Plate 38: View South East of NT16RH13-01 with yellow indurated hardpan formation - with Glynn Fogarty - 2 m scale*

#### *4.1.10.2 Condition and integrity of deposit*

NT16RH13-01 was noted to still collect water. No modification by modern prospectors or the natural granitic exfoliating process has damaged the condition of the site. Therefore, the original integrity of the gnamma hole seems to have been preserved.

#### *4.1.10.3 Recording methodology and justification of boundary*

NT16RH13-01 is a small *gnamma* hole. A single centre point was taken as only one feature was recorded, and a 30 m buffer was added around the heritage place location in order to preserve the integrity of the heritage place.

### *4.1.10.4 Fabric*

Newly identified heritage place NT16RH13-01 is a small rock hole and water source identified as a *gnamma* hole. It is situated on a yellow indurated hard pan alluvial conglomerate prone to holding water, and located in the central section of the PDA. No other outcrop of this indurated conglomerate was noted in the area.

This *gnamma* hole (see plate 39) is a small, moderately deep *gnamma* hole measuring 0.20 m in length by 0.20 m in width by 0.15 m in diameter. It is situated on a low granitic outcrop outskirt, 30 m up the hill slope.

*Plate 39: Detail of Rock holes with the yellow indurated hardpan in NT16RH13-01*

### *4.1.10.5 Application of the Act*

Newly identified NT16RH13-01 is a *gnamma* hole which exhibits characteristics consistent with a heritage place under section 5(a) of the Act. It represents a heritage place in which the ancestors of the Badimia Traditional Owners have collected water to support their life style and subsistence activities linked with cultural life.

The *gnamma* hole presents within NT16RH13-01 hold significance for the Badimia Traditional Owners because of the scarcity of water within the PDA and surrounding vicinity. The rock holes were utilised to collect rainwater, which is viewed as significant by the Traditional Owners. They are also physical representations of the Traditional Owners' connection to country, illustrating the past occupation of the area by ancestors.

The Traditional Owners requested the protection of these rare water sources where fauna, which is at the basis of their ancestor cultural life and subsistence, could also get water from. Such holes were specifically used to collect water for drinking and attracting animals to the area for hunting. The Traditional Owners noted that animals such as kangaroos, malleefowl, emu and goats would have visited the water source. This, combined with the level of importance attributed to *gnamma* holes by the Badimia Traditional Owners increases the significance and importance of this heritage place.

#### *4.1.10.6 Preliminary heritage management considerations and recommendations*

The following heritage management considerations and recommendations have been developed in conjunction with the representatives of the Badimia Traditional Owner Group regarding NT16RH13-01:

- NT16RH13-01exhibits heritage place attributes consistent with s5(a) of the Act;
- It is recommended that a 30 m buffer be added to the original boundary of newly identified heritage place NT16RH13-01 so as to protect it from inadvertent damage caused by works in the vicinity;
- It is recommended that two Badimia Traditional Owners are engaged to monitor any works that may occur within the 30 m buffer zone around the heritage place. Monitors are recommended to ensure that any heritage objects associated with the heritage place that are uncovered during vegetation clearing or earth works are managed appropriately; and
- If MJG proposes to utilise the area in which heritage place NT16RH13-01 has been identified, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.

## 4.2 Isolated objects

Following thorough investigation, if objects were deemed to be present in insufficient densities to constitute heritage places, artefacts were recorded as isolated material. During the heritage assessment a number of isolated objects, which were not associated with a heritage place, were identified within the PDA. Details of these objects were recorded and are reported below in accordance with s15 of the Act, which requires that anyone who has knowledge of the existence of anything in the nature of an object to which the Act applies shall report its existence to the Registrar.

**Forty-two** isolated objects were identified within the PDAs. The location, artefact lithology and typology of isolated objects were recorded. Details of isolated objects are provided below. Artefact recording codes are defined in appendix 1.

*Table 6: Isolated artefacts identified within the PDA*

| Typology | Lithology | Retouch / Utilisation | Easting (mE) | Northing (mN) |
|---|---|---|---|---|
| SPC | QZ | | 499328 | 6773696 |
| F | CQ | | 499218 | 6773771 |
| H | DOL | | 499287 | 6773703 |
| TBFM | DOL | | 499282 | 6773694 |
| TBFP | DOL | | 499281 | 6773695 |
| F | DOL | | 499239 | 6773689 |
| TBFP | QZ | | 499140 | 6773181 |
| MF | QZ | | 499228 | 6773718 |
| LBFL | DOL | | 499230 | 6773723 |
| TBFP | CQ | | 498953 | 6773239 |
| F | BIF | | 501844 | 6772810 |
| F | CQ | | 501967 | 6772843 |
| MPC | DOL | | 502170 | 6772919 |
| F | CQ | | 501438 | 6773417 |
| MPC | DOL | | 501389 | 6773089 |
| F | DOL | | 501429 | 6772986 |

| Typology | Lithology | Retouch / Utilisation | Easting (mE) | Northing (mN) |
|---|---|---|---|---|
| LBFR | DOL | | 501429 | 6772986 |
| SPC | GR | | 501489 | 6772856 |
| F | QI | | 501776 | 6773013 |
| F | CQ | | 500349 | 6773204 |
| TBFD | CQ | | 500465 | 6773851 |
| BGF | DOL | | 500298 | 6773259 |
| F | DOL | | 501921 | 6770718 |
| F | DOL | | 498882 | 6772013 |
| SPC | QZ | | 499120 | 6772056 |
| LBFR | CQ | | 499178 | 6772176 |
| F | QI | | 500436 | 6771640 |
| Flake core | DOL | | 498860 | 6769597 |
| TBFP | CH | | 498840 | 6769593 |
| FF | CH | | 498840 | 6769609 |
| TBFP | CQ | | 498835 | 6769601 |
| F | DOL | | 498296 | 6769966 |
| FF | DOL | | 498328 | 6769969 |
| MF | DOL | | 498260 | 6768145 |
| Dentate/scraper | QI | Retouched | 497676 | 6767883 |
| TBFD/scraper | DOL | | 497623 | 6767970 |
| A | DOL | | 497585 | 6768114 |
| FF | QI | | 498307 | 6768331 |
| FF | QI | | 497566 | 6768474 |
| MPC | DOL | | 497899 | 6770547 |

| Typology | Lithology | Retouch / Utilisation | Easting (mE) | Northing (mN) |
|---|---|---|---|---|
| F | DOL | | 497713 | 6770538 |
| F | CQ | | 497760 | 6770363 |

Of the isolated objects identified during the Heritage assessment, 70 % were located in the PDAs were heritage places have been recorded (see figure 1 below). This is congruent to the identification of heritage places across the whole PDAs. Of the isolated objects identified, 33 % were complete flakes, while 26 % were broken flakes and flake fragments. A further 17 % of all isolated objects were cores and the final 2 % is represented by a single grinding base fragment (see figure 2). Formal tools were also recorded as isolated artefact mainly found within New Target 16.

*Figure 1: Percentages of Isolated artefact per PDAs*

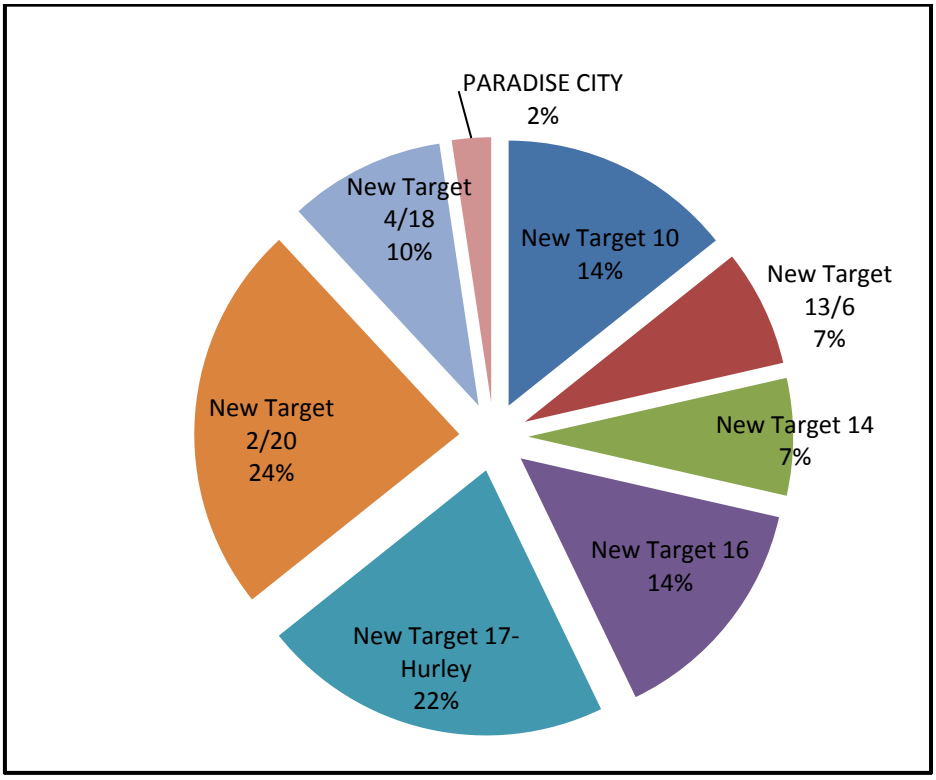
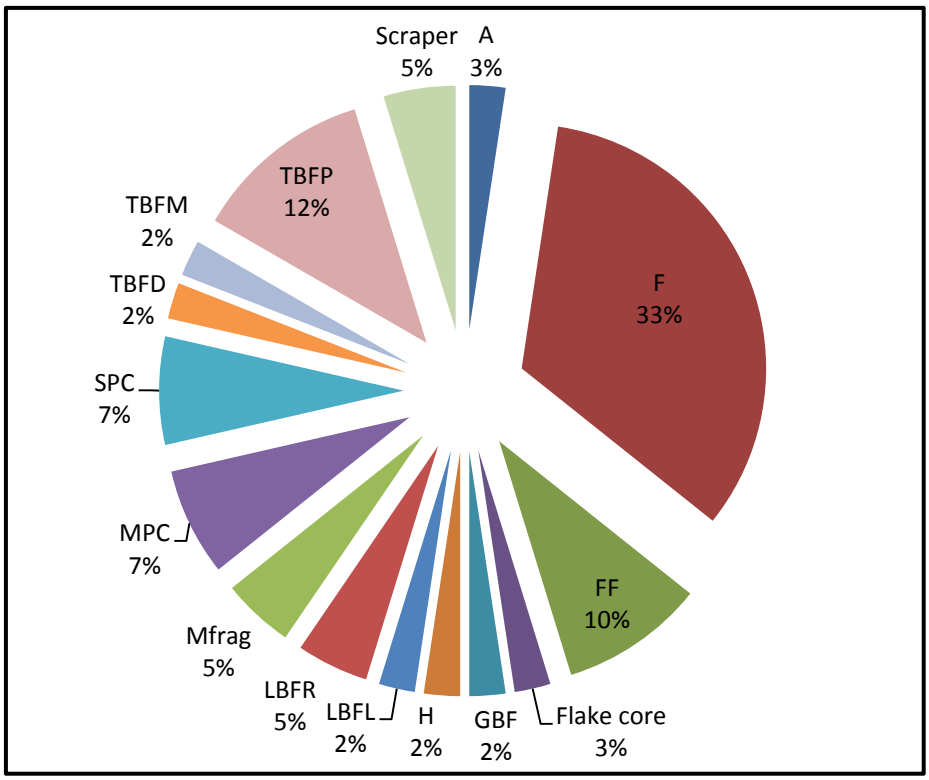


*Figure 2: Percentages of types of isolated objects identified across the 10 PDAs*



# 5 RECOMMENDATIONS

The following conclusions and recommendations have been approved by the Badimia Traditional Owner representatives who were present during the field work:

1. **MJG is advised that the archaeological and ethnographic site avoidance heritage assessment of the New Target 2 / 20, New Target 13, New Target 17 / Hurley, Paradise city, New Target 10, New Target 16, New Target 18 / 4, New Target 14, New Target 21 and South Island PDAs is complete.**

   A total of ten heritage places have been newly identified within five of the ten PDAs and recorded to site avoidance standard. Details of the newly identified heritage places are summarised in table 5 and boundary coordinates are provided in appendix 2. A total of 42 isolated objects were identified during the heritage assessment of the ten PDAs (see table 6).

   MJG are advised that beyond the 30 m buffer zones surrounding the newly identified heritage places, the assessed areas within the New Target 2 / 20, New Target 13, New Target 17 / Hurley, Paradise city, New Target 10, New Target 16, New Target 18 / 4, New Target 14, New Target 21 and South Island are archaeologically and ethnographically clear for works to proceed.

2. **The Traditional Owners have requested that a 30 m buffer zone be observed in addition to the heritage place boundaries provided in appendix 2. MJG is advised to engage two Badimia representatives to monitor all ground disturbing works within the 30 m buffer zone around the heritage places.**

   It is recommended that a 30 m buffer be added to the boundary of the newly identified heritage places so as to protect the areas from inadvertent damage caused by works in the vicinity

   The presence of Badimia Traditional Owner representatives as monitors is advised so that any subsurface cultural material, associated with the heritage places, that may be unearthed during works is managed appropriately.

3. **It is requested that the ground hatchet sharpening artefact found within NT14SC13-01 be salvaged by the Badimia Traditional Owners and a qualified archaeologist.**

   The artefact is of high value with the Badimia Traditional Owners, who assert traditional custodianship over the area, and are culturally and socially responsible for heritage places, objects and interests within Badimia country. It is therefore requested that the object be salvaged in accordance with wishes of the Badimia Traditional Owners. Additionally, salvaging the sharpening tool identified within the heritage place is recommended in order to undertake further archaeological investigation related to the presence of residue and to determine the origin of usewear. Such stone ground hatchet sharpening tools also are rare features in the broader region, and more broadly in the Western Australian archaeological record.

4. **MJG is advised that the pre-existing access track which intersects heritage place HUSC13-01 may continue to be used. However, the track should not be altered or widened in any way beyond its existing extent.**

Widening the track will impact the fabric and further disturb the condition of the heritage place. It is preference of the Badimia Traditional Owners that fencing is erected where the existing track intersects with HUSC13-01 so as to avoid accidental damage.

5. **It is recommended that prior to conducting any activity within the PDA, MJG peg the boundaries of the heritage places at regular intervals and mark with pink and black heritage colours.**

   The marking and flagging of heritage places is standard heritage management practice. It provides a visual, on-the-ground marker of the physical boundaries of the areas that need to be avoided to prevent breaches of s17 of the Act.

6. **The Badimia Traditional Owners request that all water sources in the PDAs be protected.**

   The Badimia Traditional Owners consider all water sources in the area, including soaks and rock holes, to be important to the ongoing well-being of the country. Where possible they request that these water sources are not impacted.

7. **All employees and contractors working within the above PDAs should be made aware of the location and boundaries of all heritage places identified therein and be clearly instructed to restrict access and works to areas that MJG has clearance to utilise.**

   Under s17 of the Act it is an offence to disturb an Aboriginal heritage place without prior written permission to do so under s16 or s18 of the Act. Financial penalties may be applied against individuals or corporations who disturb a heritage place, whether that heritage place is catalogued with the DAA or not.

   It is recommended that MJG employees and contractors are fully briefed on their obligations regarding heritage places and objects under the Act, attend cultural awareness training if available, and are clearly instructed to confine their activities to those areas that MJG has clearance to utilise.

8. **If MJG proposes to utilise areas inside the boundaries of heritage places, MJG is advised to consult with the Badimia Traditional Owners and arrange assessment of those heritage places to a site identification standard prior to applying to disturb the areas under s18 of the Act.**

   As noted above, it is an offence to disturb an Aboriginal heritage place without prior written permission to do so under s16 or s18 of the Act. Financial penalties may be applied against individuals or corporations who disturb a heritage place, whether that heritage place is catalogued with the DAA or not.

   S18 of the Act details the statutory provision for applications to be made to the Minister to utilise areas in which Aboriginal heritage places may exist. Approval to utilise areas in which Aboriginal heritage places may exist is subject to evaluation by the ACMC and the conditions of the Act.

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**DAA registered Aboriginal site and OHP files**

DAA 24588 – MM01 (access unavailable for closed places)

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**DAA heritage reports**

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# APPENDIX 1

## Artefact Recording Codes

## Artefact type

Artefact types were identified in accordance with the site avoidance method outlined above. The following abbreviations have been employed in this report.

| | | | |
|---|---|---|---|
| **ADB** | *Burin Adze* | **LBFM** | *Longitudinally Broken Flake – Medial* |
| **ADT** | *Tula Adze* | **LBFR** | *Longitudinally Broken Flake – Right* |
| **BL** | *Blade* | **MPC** | *Multi-Platform Core* |
| **BGF** | *Basal Grind Fragment* | **MU** | *Muller* |
| **BGS** | *Basal Grindstone* | **MF** | *Muller Fragment* |
| **CF** | *Core Fragment* | **RUP** | *Re-touched/Utilised Piece* |
| **CT** | *Core Tool* | **SPC** | *Single Platform Core* |
| **F** | *Complete Flake* | **SR** | *Scraper* |
| **FF** | *Flake Fragment* | **TBFD** | *Transverse Broken Flake – Distal* |
| **GM** | *Geometric Microlith* | **TBFM** | *Transverse Broken Flake – Medial* |
| **HS** | *Hammer Stone* | **TBFP** | *Transverse Broken Flake – Proximal* |
| **LBFL** | *Longitudinally Broken Flake – Left* | **NA** | *Not applicable/not present* |

## Lithology

Lithology describes the material from which the artefact was manufactured. The following abbreviations have been employed in this report.

| | | | |
|---|---|---|---|
| **B** | *Bone* | **IS** | *Ironstone* |
| **BS** | *Basalt* | **KAL** | *Kaolinite* |
| **BIF** | *Banded Ironstone Formation* | **LM** | *Limestone* |
| **CA** | *Canga* | **LT** | *Laterite* |
| **CH** | *Chert* | **MUD** | *Mudstone* |
| **CQ** | *Crystal Quartz* | **SIL** | *Silcrete* |
| **CY** | *Chalcedony* | **SL** | *Siliceous Limestone* |
| **DOL** | *Dolerite* | **QI** | *Quartzite* |
| **GR** | *Granite* | **QZ** | *Quartz* |

# APPENDIX 2

## Heritage Place Boundary Coordinates

*Table 7: HUSC13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 501574 | 6773032 |
| 501565 | 6773049 |
| 501705 | 6773138 |
| 502056 | 6773298 |
| 502090 | 6773293 |
| 502103 | 6773290 |
| 502140 | 6773124 |
| 501965 | 6773104 |
| 501856 | 6773133 |
| 501763 | 6773091 |
| 501574 | 6773032 |

*Table 8: HUSC13-02 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 502268 | 6773435 |
| 502259 | 6773420 |
| 502164 | 6773452 |
| 502023 | 6773443 |
| 501996 | 6773476 |
| 501914 | 6773482 |
| 501905 | 6773491 |
| 501907 | 6773510 |
| 501959 | 6773528 |
| 501987 | 6773531 |

| Easting (mE) | Northing (mN) |
|---|---|
| 502212 | 6773535 |
| 502234 | 6773497 |

*Table 9: NT14SC13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 497584 | 6770434 |
| 497668 | 6770424 |
| 497683 | 6770406 |
| 497688 | 6770360 |
| 497689 | 6770302 |
| 497652 | 6770201 |
| 497561 | 6770124 |
| 497537 | 6770129 |
| 497528 | 6770148 |
| 497530 | 6770243 |

*Table 10: NT14SC13-02 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 497630 | 6770573 |
| 497636 | 6770573 |
| 497641 | 6770571 |
| 497646 | 6770568 |
| 497651 | 6770565 |
| 497654 | 6770561 |
| 497657 | 6770556 |

| Easting (mE) | Northing (mN) |
|---|---|
| 497658 | 6770550 |
| 497659 | 6770545 |
| 497658 | 6770539 |
| 497657 | 6770534 |
| 497654 | 6770529 |
| 497651 | 6770524 |
| 497646 | 6770521 |
| 497641 | 6770518 |
| 497636 | 6770516 |
| 497630 | 6770516 |
| 497625 | 6770516 |
| 497619 | 6770518 |
| 497614 | 6770521 |
| 497610 | 6770524 |
| 497606 | 6770529 |
| 497604 | 6770534 |
| 497602 | 6770539 |
| 497602 | 6770545 |
| 497602 | 6770550 |
| 497603.5 | 6770556 |
| 497606 | 6770561 |
| 497610 | 6770565 |
| 497614 | 6770568 |
| 497619 | 6770571 |

| Easting (mE) | Northing (mN) |
|---|---|
| 497625 | 6770573 |
| 497630 | 6770573 |

*Table 11: NT14RH13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 497630 | 6770589 |

*Table 12: NT14RH13-02 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 497659 | 6770627 |

*Table 13: NT2AS13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 499351 | 6773422 |
| 499333 | 6773429 |
| 499316 | 6773446 |
| 499331 | 6773462 |
| 499347 | 6773464 |
| 499355 | 6773453 |
| 499351 | 6773422 |

*Table 14: NT16RH13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 497870 | 6768259 |

*Table 15: PCRH13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 501627 | 6770731 |

*Table 16: PCQU13-01 boundary coordinates*

| Easting (mE) | Northing (mN) |
|---|---|
| 502032 | 6770657 |

# APPENDIX 3:

## Historical Place and Feature Coordinates

*Table 17: Historical features found during survey*

| Description | m / E | m / N | PDA |
|---|---|---|---|
| **Prospector camp place** | 499287 | 6773703 | New Target 2 / 20 |
| **Shaft** | 499282 | 6773694 | New Target 2 / 20 |
| **Shaft** | 499281 | 6773695 | New Target 2 / 20 |
| **Series of shafts** | 497594 | 6772516 | New Target 21 |
| **Old prospectors fireplace** | 500786 | 6773263 | New Target 13 |
| **Water well with abduction system** | 500700 | 6773248 | New Target 13 |
| **Old prospector working shed** | 500685 | 6773249 | New Target 13 |
| **Working battery area** | 500659 | 6773237 | New Target 13 |
| **Mine shafts** | 500537 | 6773577 | New Target 13 |
| **Old sampling area** | 500124 | 6773580 | New Target 13 |
| **Stone circles** | 500178 | 6773542 | New Target 13 |
| **Stone circles** | 500179 | 6773545 | New Target 13 |
| **Old mining lease Peg** | 502198 | 6770598 | Paradise City |
| **Old mine camp** | 501816 | 6770591 | Paradise City |
| **Old mine shaft** | 501768 | 6770598 | Paradise City |
| **Old prospector fire place** | 501752 | 6770585 | Paradise City |

| Description | m / E | m / N | PDA |
|---|---|---|---|
| **Old drill hole with tag (March 1969)** | 499379 | 6771653 | New Target 4 / 18 |
| **Old Bull dozed area** | 499013 | 6772070 | New Target 4 / 18 |
| **Old Bull dozed area** | 499064 | 6772069 | New Target 4 / 18 |
| **Old prospector fire place** | 499341 | 6772139 | New Target 4 / 18 |
| **Old mine sump** | 497617 | 6770480 | New Target 14 |
| **Old mine shaft** | 497591 | 6770555 | New Target 14 |
| **Old mine trench** | 497897 | 6770728 | New Target 14 |
| **Old mine trench** | 497899 | 6770699 | New Target 14 |
| **Old mine trench** | 497909 | 6770675 | New Target 14 |