

**Frances Creek, Ochre Hill (MLA24727) and Millers deposit proposed Iron Mine  
Cultural Heritage Study**

**Prepared for  
Territory Iron Ltd**

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## 1.0 Introduction

The proposed Frances Creek Iron Mine cultural heritage assessment was commissioned by Territory Iron Ltd., Suite 4, 111 Colin Street, West Perth, WA 6005, to undertake historical and Aboriginal sites survey and significance assessment on the Frances Creek, Ochre Hill and Millers deposits, Pine Creek, NT. The report is structured as per the Office of Environment and Heritage Scope of Works and was prepared by Tim Hill- Tim Hill Heritage Management and Planning. Field survey work was undertaken by Tim Hill.

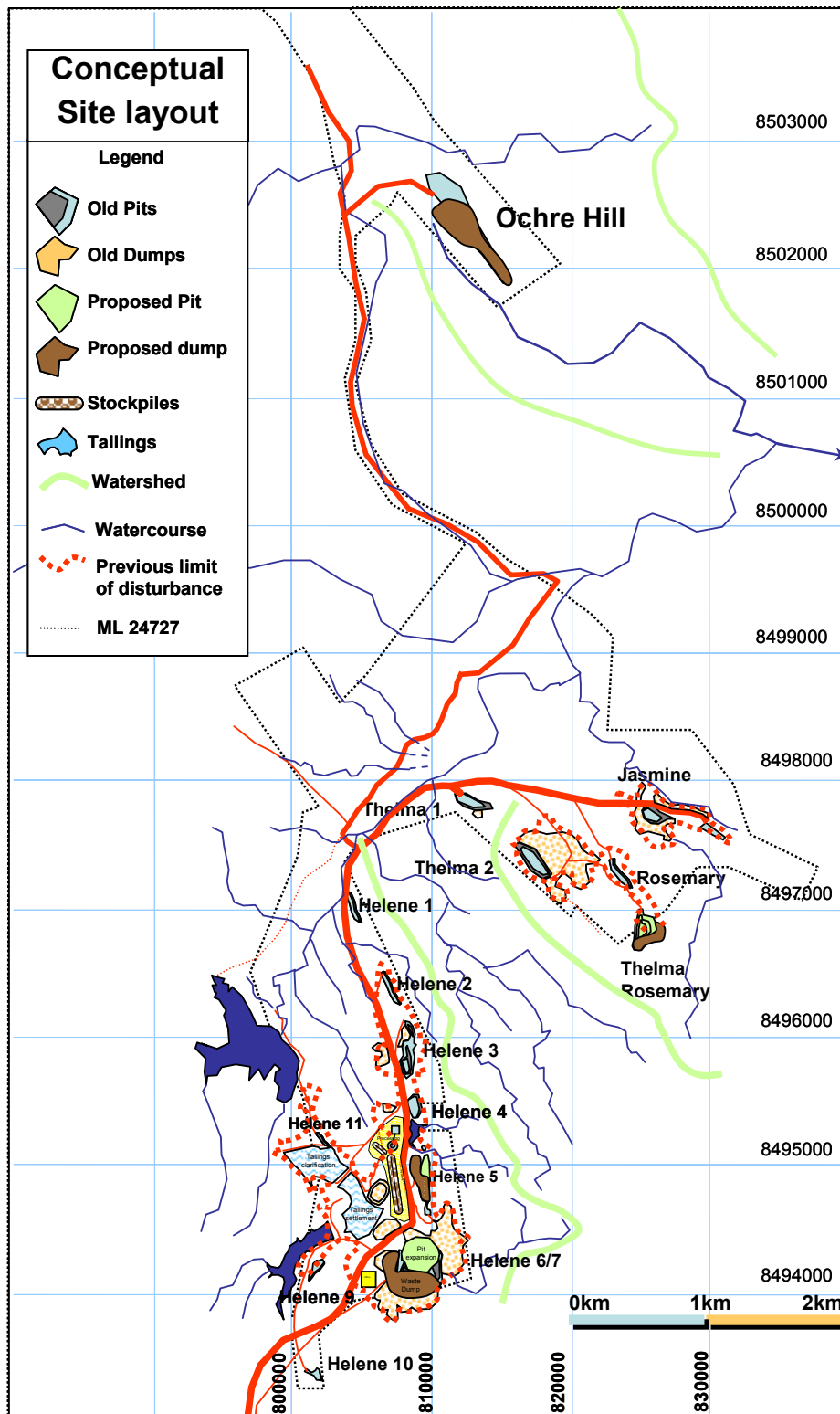
The cultural heritage assessment was undertaken on the Frances Creek, Ochre Hill and Millers iron deposits on Exploration License Areas 24045, 10137, 9999 & 23824 located on Ban Ban Springs and Mary River West Pastoral Stations. The immediate proposed works are to expand the existing mining pits at Frances Creek and Ochre Hill. The Millers deposit was included within the terms of reference for potential future development, as such concept plans for this section have not been developed.

**Figure 1. Location of proposed Frances creek mine.**



The proposed development involves expanding existing pits at Helene 5, Helene 6/7, Jasmine, Rosemary and Thelma Rosemary and mining undeveloped iron deposits at Marion, Ochre Hill and Millers deposits. Ancillary impacts will be tailing dumps, processing/sorting areas and upgrading tracks sufficient for 20 ton trucks.

**Figure 2. Concept Plan for Frances Creek and Ochre Hill deposits.**



## 2.0 Physical Environment.

The survey area comprises part of the Mary River and McKinley River catchments and is predominately sedimentary hill country. The area forms part of the Pine Creek Orogen and inferred deposits are mainly located on the 'Lower Proterozoic Wildman Siltstone' within the lower-middle slopes and above quaternary alluvium associated to Frances Creek. 'Gerowie Tuff' is a fine grained siliceous material and is located around the Frances Creek area, mainly to the west, and has excellent knapping qualities.

The highest point in the project area is 257 metres, which occurs on the eastern edge of the MLA24727. The lowest point is around 160 metres in height and is located near the point where the Frances Creek exits the project area. At a broader scale, the Watts Creek floodplain is around 50m.a.s.l. and the highest point is (307m.a.s.l.). The highest areas in the northern area around Millers deposit are 228 and 232m.a.s.l.

The main proposed mining area is located in the secondary arms of Frances Creek, an eastern flowing tributary of the Mary River. The Ochre Hill proposed mining area is located within the same area but on the northern side of Frances Creek and southern catchment of Maude Creek-which flows northeast into the Mary River. The Miller deposit is located in the northern section, in the hills east of the McKinley River wetlands/ black soil plain. This section of the plateau has lower relief than the Frances Creek/Ochre Hill deposits and drainage consists of seasonal gullies which flood-out into swamps.

The deposit area is located within open woodland, the lower areas being dominated by *E. tectifical/E. latifolia* with an understorey of *Sorghumm spp.* and *Heteropogon Tritecus*. This vegetation structure typically consists of sparse trees with a canopy height of approx. 12m. The upper areas of the study area are typically dominated by *E. tintinnias* with an understorey of *Sorghumm spp.* and *Heteropogon Tritecus* (Russel Smith 1995:134-135, 140). A feature of this vegetation is the relatively shallow and gravelly soils.

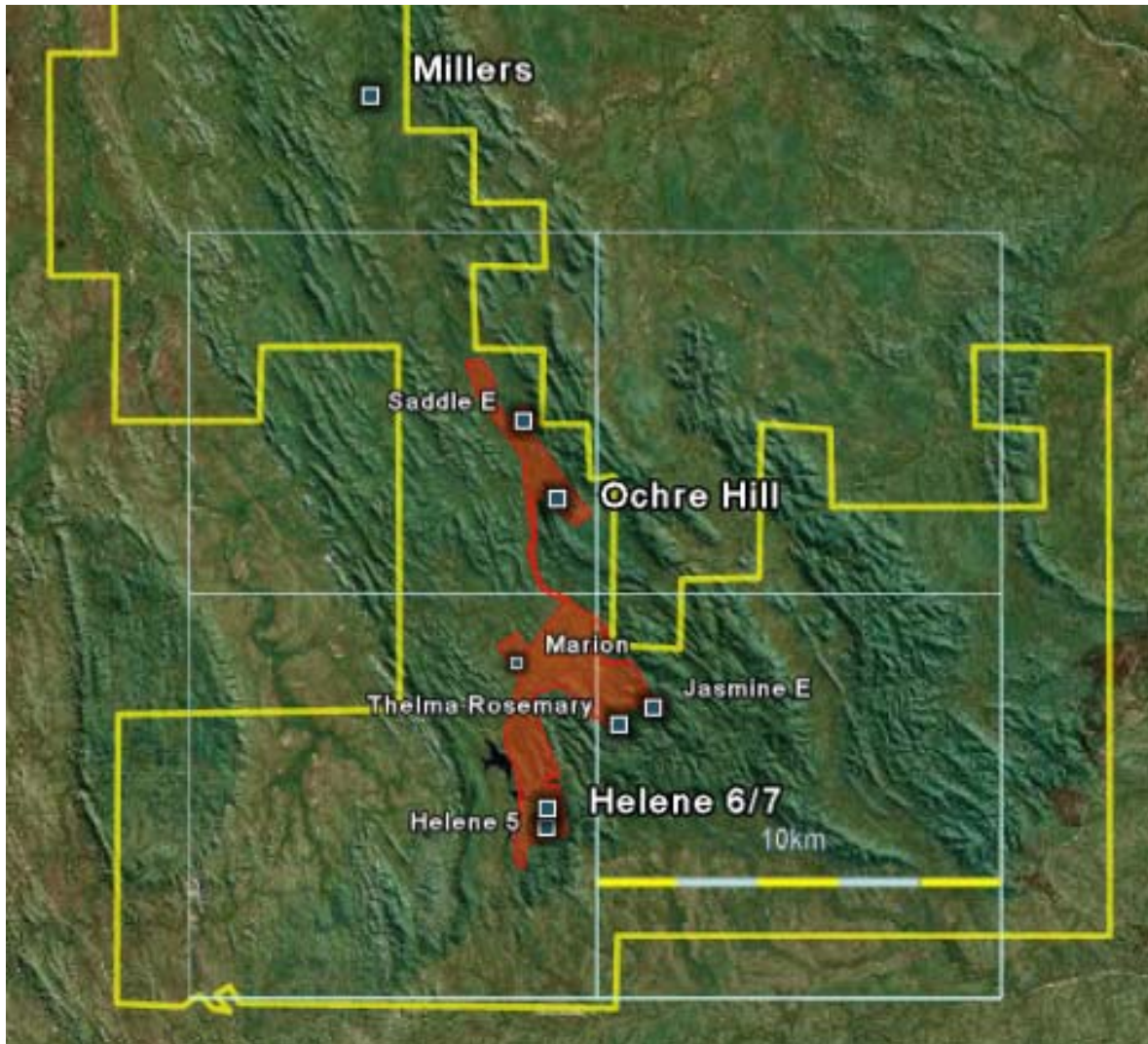
Typical of the ecology of wetlands across the region, vegetation on the black soil plain of McKinley River/Watts Creek to the west is seasonally variable but is classified as low open-woodland dominated by *Meleleuca viridifolia*, *E. Polycarpa* and *E.latifolia* with a dense grassy understorey of *Chrysopogon fallax*, *Sorghummspp.* and *Heteropogon Tritecus*.

Ban Ban Springs and Mary River West Pastoral Stations have had little impact on the environment as the country is marginal grazing land. Impacts typical of pastoralism include the introduction of weed species, increases in rates of erosion /sedimentation and changes to fire regimes, however these impacts have not significantly changed the integrity of the area. Wild horses, buffalo and pig are all present on the mining lease and have had varying impacts on the environment, most markedly around more permanent water sources.

The main Frances Creek deposit landscape is regenerating after the original iron mines which operated between the 1966-1974. Understorey vegetation has re-established and eucalypt species are near maturity, making it difficult to distinguish disturbed and undisturbed areas based on forest structure. The landscape and vegetation structure of the Ochre Hill and Miller deposits are likely to be relatively similar to pre-pastoralism landscapes. A series of fires had gone through parts of the study area in the months preceding the survey.



Figure 3. Satellite photo of proposed development area.



### 3.0. Cultural Setting

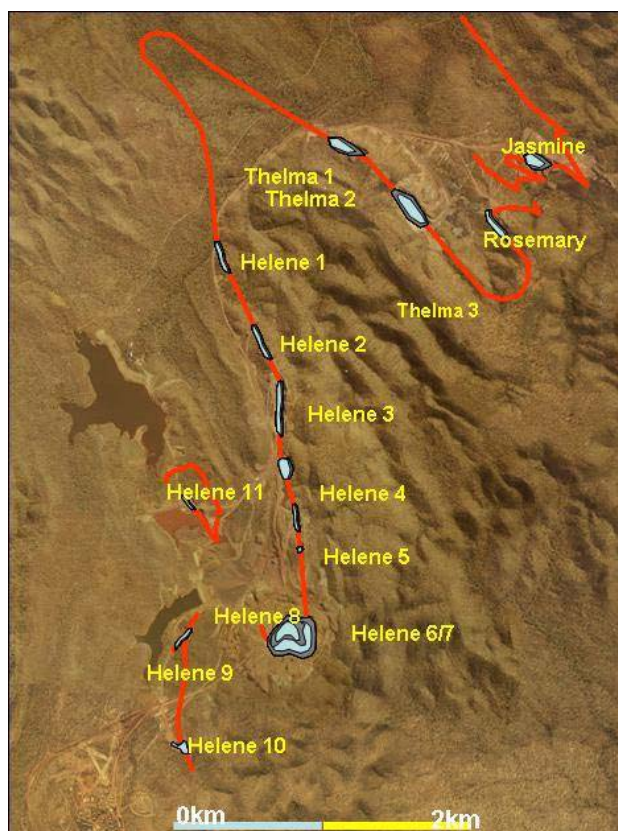
#### 3.1. Non-Aboriginal history.

The Frances Creek area was first ‘explored’ by McKinley in 1866, coming south from the Adelaide River system and then north east across the South Alligator/Jim Jim River to the East Alligator River system (Levitus 1995:66). Attempts to establish pastoral stations in the late 1800’s were largely unsuccessful, with the better pastoral land of the Victoria River Downs proving superior country. The most significant early pastoral station of the region was Goodparla, which was run until the late 1930’s by George Cook.

The township of Pine Creek is one of the last remaining mining communities in the Northern Territory and the mining history of the area is integral to the community’s identity. The most significant phase of mining was the gold rush in the 1870’s which was later bolstered by the construction of the railway line to Pine Creek. As many as 15 mines operated in the 1890’s and the population exceeded 3000, many of whom were Chinese labourers working on the railway. Gold was gradually replaced with tin and wolfram in the early 1900’s, but it is estimated that during the period 1870-1915 a total of 75 000 ounces were extracted from the area (Flinders Ranges Research 2005).

The Frances Creek mine site is part of a second phase of mining in the region based on Iron and Uranium. The Frances Creek iron mine operated from 1966 until the closure of the Darwin railway in 1974 (Flinders Ranges Research 2005). The mine produced 8 million tonnes of iron during the period 1966-1974. Key factors leading to the cessation of operations were tropical cyclone Tracey which led to the closure of the railway and associated infrastructure, and weakening demand from international markets.

**Figure 4. existing pits on Frances Creek section**



### 3.2. Aboriginal history.

The Frances Creek area is in the north west part of 'Jawoyn country' which extends south and east to include the southern part of Kakadu NP, Nitmiluk National Park and the Katherine region (Smith 2004:6). Traditional owners from this area identify themselves as 'Munggay', although many have family connections with 'Bining/Mayali' people to the north.. The nearest Aboriginal Community is located at Kybrook Farm and residents identify as Jawoyn, Wagaman, Agicondi, Arigoolia people. The Aboriginal population of Pine Creek area is approximately 130 (Pine Creek Community Council 2002).

*After work was finished for the dry season, then I walked back to my country. That way I still know who I am. I know country, places, songs. (Felix Holmes, South Alligator River in Davis 1994:36)*

The lower Mary River area is regarded as having a rich Aboriginal cultural heritage, in part due to the nature of the culture itself, traditional population demography and geography, the capacity of traditional owners to maintain their heritage through the European contact period and the nature of the landscape which is conducive to site preservation. Of relevance to the study, Jawoyn had only a minor role in mining around Pine Creek in the 1900's and gained employment on mines in the region in the 1960's and 1970's. The development of large scale uranium mines had a significant social impact across the top end, by environmental impacts affecting traditional hunting areas, by increasing the availability of alcohol and marginalizing traditional owners in decision making processes (i.e. Lawrence 2000:110).

Across the region Jawoyn hold land through totems, recognised responsibilities for the management of sacred sites and recognised responsibilities for management of land associated with sacred sites (Breedon and Wright 1991:22-27, Smith 2004). Totems are obtained through association of dreaming tracks around places of conception and birth and the areas 'owned' by families. The historical land tenure and land use at Frances Creek (Levitus 1995, Gibson 1999), allowed Jawoyn born up until the 1960's to regularly use the area up to and during the original operation of the mine.

Adjacent Kakadu National Park has a World Heritage listing for its cultural heritage and archaeological values. It is estimated that 15 000 rock art sites exist in the plateau area of nearby Kakadu National Park, 5000 of these have already been recorded (Kakadu Board of Management 1998:96). Four distinct art styles/chronologies are identified in the regional art sequence –Pre-estuarine period (prior to 8000bp); Estuarine period (8000-1500bp); freshwater period (1500bp-200bp) and the most recent Macassan/European contact period (Lawrence 2000:115). Archaeological dating of sequences at Malakununja II and Nauwalabila I indicate that human occupation of the region may extend to 60-50 000 years (Brockwell et.al 1995:24). The majority of art and stratified occupation sites date to within the last 10 000 years (Breedon and Wright 1991:32-33), while more open sites are likely to date to within the period of environmental stability (1500 years to present).

*They sit down one day only. If him really good place, might sit down two days. Find everything, fish, kangaroo, bush tucker. My father used to kill two kangaroos or three. We used to stay for two days and go on. Other times one day, one day, one day, all the way. Only ceremony time might be stay in one place three or four month. Hunting all over the place, kill kangaroo or bush tucker, yam, or lily, water lily, cheeky yam, any sort of tucker. (Jimmy Wesan, Barunga Community, in Smith 2004:25)*

Unlike the floodplain and riverine environments, the woodland open forests of the upper Mary River catchment have a low diversity of resources- less than 5 taxa of predominately meat and



egg species (Brockwell et. A 1995:55-59). Aboriginal land-use models suggest that Aboriginal people from the tropical savannah and wetland regions moved between the wetlands (dry season) and escarpment country (wet season) depending on resource availability (Layton 1992:66, Brockwell et.al 1995:55-59). Areas in the upper-Mary River catchment which are likely to have the higher archaeological potential are those which are not regularly flooded yet provide access to the greater number of habitat types associated with the billabong floodplains- with smaller groups targeting specific resources, such as red ochre and stone quarries, in the surrounding dry country and escarpments (Layton 1992:69, Levitus 1995:87).

*I got to be buried at South Alligator[River]...Then after one or two years, Take my bones and paint them. Paint them with red ochre first...* (Felix Holmes, South Alligator River in Davis 1994:41)

A sacred site has been recorded within the Frances Creek area (approx. e808939 n8945369). A large area associated with the Bula tradition- known as 'sickness country' covers the escarpment country in the south-east section of Kakadu (Kakadu Board of Management 1998:94) and demonstrates the reality of sacred sites to Jawoyn today. This is well outside the Frances Creek area.

### **3.3. Oral History provided by Bessie Coleman.**

During the on-site survey Bessie talked in detail about use of the area by Munggay. The following points are relevant to the study;

- Munggay traditionally utilised both the floodplain areas and hills. The main food resources in the hill country were red kangaroo and fish which came up to spawn in the wet seasons.
- Many Munggay were born on cattle stations from the 1940's onwards, Ban Ban Springs, Mt. Wells and Burrundie were important places where Munggay gained pastoral work. This took them into the hill country a lot.
- Bessie's great-great grandmother was buried to the east of Pine Creek.
- Bessie can remember travelling through the Frances Creek area in her twenties, coming up in Toyotas to swim in the dam and travel through to the north.
- Bessie's mother came from the North Jawoyn area around Frances Creek but her father came from West Arnhem Land. This was common and men and families often walked long distances to be with each other. Munggay usually took shortcuts and waterways such as Frances Creek were used as travelling routes.
- Bessie and her family still actively use their lands and are always taking their children and grandchildren out to maintain their culture.
- The red ochre from iron rich hills were traded as far as Jabiru and Daly Waters. This material was a key part of mortuary ceremonies.
- Bessie can remember working in the administration area of Mt. Todd mine as a young woman, and noted the amount of 'partying' she did at that time.
- The hill country was mainly used in the wet season as Munggay went down to the rivers and floodplains during the dry.
- When living in the hills, people preferred camping along creeks which provided shade and shelter, and on elevated hills near creeks which were windy to cool people off.
- The Millers area was considered not to be a good camping area as it was too far from water, although it contained the largest patch of sand palms Bessie had seen.
- Munggay adopted metal to make spear points to kill introduced animals such as buffalo and pigs.
- The Jawoyn calendar is marked by 6 distinct seasons which guide Munggay's use of the land.

## **4.0 Previous Archaeological Research.**

### **4.1. Data Base Searches.**

A search of the Register of the National Estate (RNE) was undertaken on-line and no areas within the Frances Creek area were registered.

A search of the NT Dept. of Environment and Heritage Archaeological Resource Database was undertaken for the Pine Creek 1:250K map sheet and archaeological research undertaken in the Pine Creek area was undertaken. No Aboriginal archaeological or registered historical sites were recorded in the Frances Creek area on the register.

### **4.2. Archaeological Literature Review**

A survey of historical archaeological sites was undertaken on Frances Creek as part of a regional study of mine sites around Pine Creek by Mitchell in 1994 for the National Trust of Australia (NT Branch). None of the heritage sites were determined to be of significance and subsequently not nominated for declaration to the NT Heritage Register. The basis for this assessment was primarily the extent to which the buildings had been demolished.

A regional assessment of Aboriginal sites around Pine Creek was undertaken for AAPA by Pearce (1983) and identified site complexes in the mesa country west of Pine Creek.

The nearby Mt. Porter area was surveyed for Aboriginal archaeological sites by Mulvaney (Mulvaney 1993) and more recently by Gunn (Gunn 2005). A complex of sites was located at Mt. Porter, the most relevant for the Frances Creek study being the stone quarry sites on the Gerowie Tuff deposits- the likely source for stone material used at Frances Creek. Within the area covered by 1993 survey 43 sites were located, and a further 6 located during the 2005 survey (Gunn 2005). These sites include rock art, stone quarries, stone artefact scatters, grinding grooves and occupation deposits in rock shelters. Typical stone artefact typologies included bifacial points and blade scrapers on siltstone (Mulvaney 1993). An important feature of the Mt. Porter archaeological sites assemblage is the presence of Granite in the landscape, which is not present on Frances Creek. Granitic areas typically provide shelters and therefore stratified occupation sites, and are of a relatively non-friable nature which preserves rock art and have abrasive qualities (due to silica content) suitable for grinding both stone and plant resources.

Both studies identify a relationship between the location of Aboriginal sites and water resources and elevated ridges/saddles- consistent with the views of Bessie Coleman on selection of camping sites. The Mt Porter complex also identifies springs as a key determinate of site location. Gunn (2005:19) concludes;

*The archaeological sites around Mt Porter can be seen as a single complex of a number of different site types, all of which are related to the exploitation of the silicified siltstone seam on the ridge area north of Mt Porter (site MP34). As such they provide a record of the overall landuse of the area incorporating specialist quarrying (including leilira blade production), specialist working of the raw material in to particular artifacts (points and straight-edged scrapers), opportunistic use of other stone outcrops (quartz and fine grained siliceous), stone axehead production sites (grinding grooves) and general campsites. (Gunn 2005:19)*

### **4.3. Aboriginal sites predictive model**

The following site distribution is expected;

- Aboriginal archaeological remains will primarily consist of stone artefact scatters- other remains eroding quickly in tropical environments.
- Stone artefact scatters will primarily be located in close proximity to water sources and in close by areas which provided shade and wind.
- Aboriginal sites will not be located on mid slope and gully landforms due to their unsuitability for camping.
- Stone artefact assemblages will not be highly reduced given the diversity of raw materials available in the tuff and siltstone geology. Sites will primarily consist of formed blades, low relative proportions of debitage and cores and low artefact densities.
- Stone artefact scatters will be located in areas associated with use for ceremonial or trade purposes.
- Aboriginal use of the area will date to historical timeframes.
- Archaeological sites will not be located at Millers section due to distance from water.

## **5.0. Methodology.**

### **5.1. Historical sites**

The survey methodology targeted historical material at existing mine areas. Historical objects were located, site location recorded and documented using digital photography. General features/identifiers were recorded and descriptions of the integrity and context of the object(s) were recorded. Information from the historical objects survey was recorded onto a spreadsheet and entered into a GIS.

### **5.2. Aboriginal Sites**

The aboriginal sites survey was undertaken between the 17<sup>th</sup> and 21<sup>st</sup> of October 2005, this included participation by Bessie Coleman and her son-in-law Muhamed on the 20<sup>th</sup> October to undertake wider surveys of identified sites and areas which Bessie considered would be likely to be Aboriginal sites. Management considerations were discussed at each site.

Due to the extent of existing disturbance the survey strategy employed was pedestrian transect surveys around areas of the proposed development and in undisturbed areas outside the development to identify site conservation zones on the mining lease. Survey areas identified were Frances Creek Village section, Frances Creek section, Helene section, Marion section, Jasmine West section, Jasmine East section, Ochre Hill section and Millers section. The boundaries of survey units were defined in the field based on landform, access to undisturbed landforms and site access, which was greatly restricted in areas where exploration work was taking place in and around pits.

The estimated transect length was calculated by the percentage of each transect not vegetated reduced by the percentage of the transect not disturbed. (i.e. in transect 1 effective visibility through vegetation was 90% and the percentage of transect not disturbed was 95% making the effective transect visibility 85.5 (86)%). The transect area was then reduced by the percentage disturbance to estimate actual transect length (i.e. for transect 1  $514\text{m} \times 0.855 = 440\text{m}$ ).

The effective survey coverage was calculated based on the undisturbed portion of each survey area, calculated using GIS as total area of survey unit minus disturbed portion of survey unit. (i.e. for Jasmine west section the survey unit was  $938070\text{m}^2$  minus disturbed area of  $67236\text{m}^2$  therefore undisturbed survey area was approx.  $870834\text{m}^2$ ). The estimated transect lengths per survey unit were combined and multiplied by 2 (to factor the 2m width of the survey) and then calculated as a percentage of the undisturbed survey area. (i.e. Jasmine West estimated transect length was  $4630\text{m} / 870834 \times 100 = 0.51\%$ )

The survey aimed to undertake approximately 20km of transects across different landforms. Survey transects were within each landform and were 2 metres wide. At Aboriginal sites transects meandered to cover areas of greater visibility. In the Millers section the survey was restricted to blade scrapes due to the density of ground cover vegetation. Although these scrapes are technically 100% disturbed experience at Marion indicated they do not inhibit site identification- as such disturbance at on these transects was estimated to reduce survey effectiveness by only 20%-providing 80% ground visibility.

Standard archaeological site identification techniques were applied and included modification consisted with known archaeological material and context of the sites/object within the natural and cultural landscape (most notably quartz artefacts). Site boundaries were defined with Bessie Coleman and considered likely landuse, environmental context, proximity to other sites and site management issues. Sites locations were recorded by GPS in GDA94, zone 52.

## 6.0 Results.

### 6.1. Historical heritage sites.

Seven historical areas relating to the original Frances Creek mine were relocated and recorded during the survey (Appendix 1). The historical sites were predominately located in the southern Frances Creek section and relate to the old village, on-site offices, mining infrastructure and metal dumps. No objects relating to gold mining in the late 1800's were recorded and apart from the old tracks, no objects or sites associated to the pastoral industry were located during the study.

The most common site types were tips and metal dumps. No complete buildings were recorded and the only remains were concrete pads and building material. During the survey I was informed by the exploration team that the Frances Creek church was still intact- except for the doors which were stolen in 2003. Access to the Village site is now marked as private property.

The Frances Creek railway line is marked by cuttings and formed bridges over floodways. The original rails have been re-used in Pine Creek. Several signs and markers were recorded during the survey.

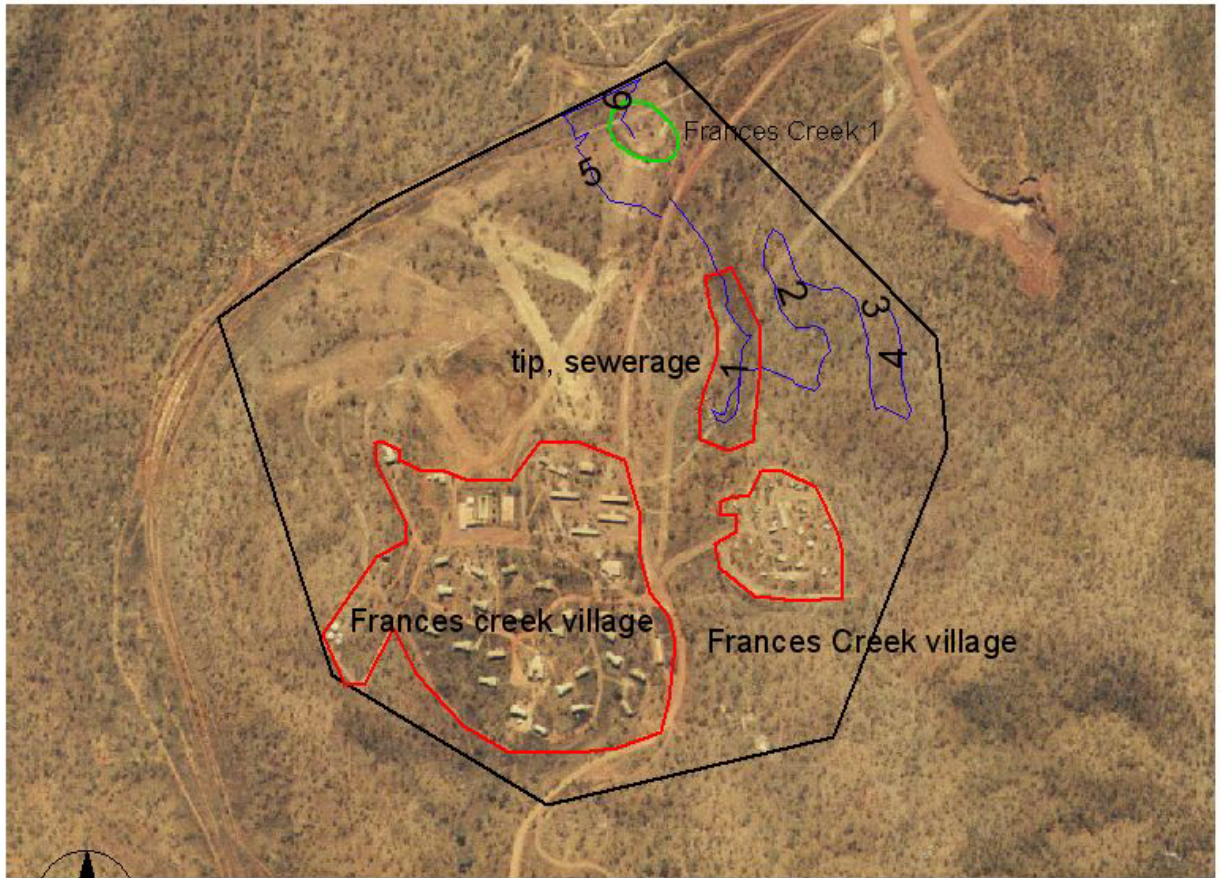
A metal blade was located in Frances Creek 2 Aboriginal site indicating use of the area by Munggay in historical times. This object was recorded as part of the Frances Creek 2 site.

**Table 1. Summary of historic heritage sites.**

| <b>Historic area</b>       | <b>Heritage items</b>   | <b>Location</b>                                    |
|----------------------------|---|--|
| Frances Creek Village      | Swimming pool,<br>building footings,<br>old tree,<br>bulldozer,<br>public building, | e807460 n8493051                                   |
| Frances Creek village tip  | Car dump,<br>2x septic/separators and trench,<br>various metal waste.               | e807770 n8493215                                   |
| Mine offices               | Building foundations (x2),<br>metal dump,<br>car bodies,<br>corrugated iron tanks.  | e808500 n8494280                                   |
| Helene loading area        | Loading ramp,<br>tailings dump,<br>60 tonne scales,<br>loading buckets              | e808430 n8494160                                   |
| Frances Creek railway line | Line foundations,<br>various signs,<br>rail relocated to Pine Creek.                | approx. e807132 n8492654<br>to<br>e808430 n8494160 |
| Metal dump                 | 44 gallon drums,<br>wire mesh,  | e808487 n8495325                                   |
| Thelma 2 infrastructure.   | Iron ladder,<br>building base,<br>excavated trench                                  | e809650 n8467731                                   |



**Map 6.1. Frances Creek Village survey**



-  Frances creek aboriginal sites.shp
-  Frances creek historic sites.shp
-  Survey areas.shp
-  Frances creek transects.shp

